Montague DeRose and Associates, 2007). The presence of a non-tolled I-205 bridge poses a significant financial risk to the holders of bonds backed by tolls on the I-5 bridge. The dangers are that the I-205 bridge would encourage substantial diversion of traffic that would otherwise cross the I-5 bridge and pay tolls, and would also greatly limit the ability to increase toll rates in the future (because increasing I-5 tolls would simply divert more traffic to I-205). These considerations prompted one Independent Review Panelist, Dr. Michael Meyers, to candidly label the failure to toll both bridges as "stupid." (Independent Review Panel Meeting, June 17, 2010). For these reasons, it is likely that bond underwriters will push strongly for tolls on I-205 as well as I-5. In the absence of tolling both bridges, bond underwriters are likely to deeply discount the amount of debt that can be issued against future I-5 toll revenues. The financial analyses prepared by the Columbia River Crossing do not address this issue.

It may not be legal for the CRC to use toll revenues from the I-205 bridge to retire debt for the construction of a new I-5 bridge. According to the Federal Highway Administration, it is not legal for a state to use toll revenues from an interstate project to pay for a different project. According to FHWA, "The Interstate System Reconstruction and Rehabilitation Pilot Program requires that revenue from tolls be used only to improve the tolled facility . . . FHWA rejected Pennsylvania's request to use the money for other projects, because ". . . the application did not meet the federal requirement that toll revenues be used exclusively for the facility being tolled" (Federal Highway Administration, 2010).

As noted in section 1 of this report, there are serious flaws in the traffic projections prepared to date. In particular, the over-estimation of traffic under current non-tolled conditions, the very high value assumed for travel time, and the decision to manually adjust traffic model outputs to shift more vehicles to the I-5 crossing all inflate estimates of toll revenue. In reality, total traffic volumes may be much less, and diversion to the I-205 bridge is likely to be much higher than CRC projections estimate.

Tolling I-205 will require specific permission from the Federal Government, and may be illegal under federal law. And if I-205 is tolled, toll revenues from that bridge may not be legally available to pay costs associated with construction of the CRC. The uncertainty surrounding the toll regime, and potential revenues available for the CRC is a major risk to the project.

3.5 Unconditional Guarantee Risk

The states of Oregon and Washington would likely be required to offer an unconditional guarantee to bond holders, exposing the states to the risks of revenue shortfalls and cost-overruns. For example, if the cost of the project exceeded the $3.6 billion now estimated for the revised project, the two states would be liable for these costs. If the toll revenues from the project were insufficient to repay the bonds and interest, the two states would be legally bound to divert other revenues or raise taxes to repay bond holders. The financial plan does not estimate the costs to the states from these guarantees.

The likelihood is that additional funds will be needed. As noted earlier, 90 percent of mega-projects experience cost-overruns. Other sources of revenue may fall short of targeted contributions to the project either initially or over time. Bond rating agencies are likely to say that the project will support a smaller level of borrowing than the amounts estimated by the CRC. In addition, if traffic levels fall short of forecasts, it may be impossible to generate additional toll revenues by raising toll rates, because toll increases will trigger additional diversion of traffic, and lower traffic volumes will more than offset revenue gained from higher rates. It is also possible that federal funding may be less than expected, or may arrive more slowly than anticipated. All of these events have the effect of triggering additional liability for project guarantors.

The likelihood that the states will be called upon to guarantee bond purchasers against the effects of cost-overruns and revenue shortfalls has an added negative effect on the due diligence bond purchasers would otherwise provide for the project. If their financial return is guaranteed by the full faith and credit of the two states, investors have no reason to insist on a careful review of project forecasts. Under normal circumstances, lenders will provide a valuable service by independently evaluating key project assumptions. A guarantee undercuts this added review, and in effect represents a moral hazard in the construction and operation of the project, as bond holders have no incentive to offer strong oversight of the project because they are guaranteed repayment by the state whether or not the project succeeds.

3.6 Foregone Road Pricing Revenue Risk

Establishing tolls for the I-5 bridge may foreclose the opportunity to apply road-pricing to other segments of the highway system in the Portland metropolitan area. One reason that travelers will be willing to pay a toll to use a new I-5 bridge is that they are not charged a toll for using any of the highways that lead to I-5.

For the past several years, Oregon has been investigating comprehensive systems of road pricing. The 2009 Legislature adopted HB 2001 that requires a pilot congestion pricing program in the Portland metropolitan area not later than 2012 (Section 3). As gas prices rise, and as vehicle fuel efficiency improves and as alternative fuel vehicles emerge, it is

apparent that the gasoline tax may need to be replaced as a means of financing the transportation system.

Tolls assessed for crossing the I-5 bridges do not solely reflect the value travelers attach to the bridge, but reflect the value of the other infrastructure that enables travel to the bridge. Once the two states start collecting in excess of $100 million per year from travelers crossing the bridge, they will find it extremely difficult to persuade users to pay additional fees for using other parts of the highway system that function as bridge approaches. Those who purchase bonds secured by toll-revenues on the I-5 bridge may want assurances that the two states do not establish tolls or road pricing on the approaches to the bridge, because this would have the effect of lowering traffic on the bridge, and also lowering the willingness of travelers to pay higher tolls over time to use the bridge.

3.7 Federal Earmark Shortfall Risk

The CRC financing plan assumes a massive and politically uncertain level of federal earmarks. The CRC has asserted that the region can expect $400 million in federal earmarks for this project, and that because of the project's alleged unique characteristics these monies will be over and above federal revenue that the region could expect to get in the future.

But this level of earmarks dwarfs what has gone to any single project. And the climate for earmarks has changed dramatically from the last transportation bill in 2005. Senator Patty Murray—chair of the transportation subcommittee of the appropriations committee—has warned against expecting big funding for this project (Hamilton, 2008).

While the public statements of the CRC imply that this project can expect some special funding, the reality is quite different. The "Corridors of the Future" program which CRC implies is a special category, is defined to include freeway mileage that carries fully one-third of the nation's traffic, and is a bureaucratically created program of the Bush Administration, funded at a total of only $66.2 million nationally (U.S. Department of Transportation, 2008).

It is apparent that that the CRC will compete for virtually every federal dollar flowing into the region. In the text of the DEIS, the CRC makes it clear that every other source of federal money flowing to Oregon and Washington for transportation is fair game for the CRC, including monies dedicated to preservation and maintenance of the highway system (DEIS, Section 4-3).

In documents released to the Independent Review Panel, it is apparent that the Columbia River Crossing will compete for existing "formula" funds that are distributed to the states, and that are available for a wide range of transportation projects (Columbia River Crossing, 2010a).

3.8 New Starts Funding Shortfall Risk

The project's financing plan assumes that the federal government will provide $850 million in federal transit administration funding for the construction of light rail as part of the project.

There is a $100 million discrepancy between the project budget reviewed by the Federal Transit Administration and the amount of funding projected to be received from FTA. The FY 2011 New Starts report indicates that the CRC has requested $750 million for transit (Federal Transit Administration, 2010). The funding plan CRC submitted to the Independent Review Panel indicates that the project will receive $850 million in New Starts Funding from FTA (Independent Review Panel 2010, page 173).

The project assumes a very high rate of federal match, which may not be realistic. According to the FTA, the CRC project funding assumes that federal funds will cover 79 percent of the cost of the transit portion of the CRC (Federal Transit Administration, 2010). This is the second highest level of federal match anticipated by any project; most projects are asking for federal funding of 50 percent or less. The project competes with projects in other regions, and locally, including the Portland-Milwaukie Light Rail line, which has a higher priority in the New Starts evaluation process, and which is being funded at a 50 percent level of matching.

According to the IRP, it is uncertain whether the project will successfully compete for new starts funding, and if it does, whether it will receive the requested level of funding. In its evaluation, the FTA questioned the project's local funding support and its operating cost support. As a result, the IRP concluded:

> In the FY2011 New Starts Report, FTA noted concerns relative to the assumptions affecting the capital finance plan and the operating finance. Should the New Starts ratings decrease as a result of changes in assumptions, or as a result of economic conditions, or as a result of changes in project definition, or escalation of project costs, the project's ability to maintain the Medium rating needed to advance through the New Starts process [to] secure a recommendation for a FFGA (full funding grant agreement) could be at risk.
> (Independent Review Panel, 2010, page 181).

3.9 Schedule Delay Risks

Many of the costs associated with the Columbia River Crossing are influenced by how well the project can execute scheduled tasks. There are a variety of cost risks associated with delay. In the event of price inflation, a delay can produce higher prices, for labor or for materials. Delays also have a financial cost; if project completion is delayed, then interest expense rises and net revenue from tolling will be reduced.

The size and complexity of the Columbia River Crossing makes it difficult to accurately estimate project schedules. The record of the project's planning stages clearly illustrates these difficulties. The project has repeatedly fallen behind its stated schedule in achieving key planning milestones. For example, in December 2006, the CRC predicted it would issue a Final Environmental Impact Statement in September 2008 (Columbia River Crossing, 2006).

In May, 2009, the CRC schedule indicated that the Final Environmental Impact Statement would be issued in February, 2010 (Columbia River Crossing, 2009a).

Other special considerations make the project vulnerable to delays. Not only does the project involve managing construction in a heavily traveled interstate highway corridor, it also takes place in an environmentally significant area. The seasonal migration patterns of Columbia River Salmon—some of them listed as threatened or endangered species—require that in-water work be done only at certain times when fish are unlikely to be present. Small delays can be magnified if the project misses an opportunity to do construction in one of these available "in-water windows." According to the Independent Review Panel, the existing project schedule assumes that construction will be able to take place year-round, with no requirements to suspend in-water work during migration periods. However, it now appears that Endangered Species Act protections will require that in-water work take place only in four-month windows, rather than year-round. This seriously jeopardizes the ability of the project to be completed according to the current schedule.

> The IRP also understands that upon completion of the ESA draft that the in-water time period to perform work is a specific four-month window and there is no probability that it can potentially be eight months or even the entire year, thus severely restricting when in-water works can be performed. (Independent Review Panel, 2010, page 168).

Construction delays are a regular occurrence in such projects, as the experience with ODOT's largest current construction project, the U.S. 20 Pioneer-Mountain to Eddyville project indicates. The project is years behind schedule, having been delayed by previously unidentified geological problems, and a contractor's failure to adequately protect salmon habitat. Most recently, ODOT announced that construction is being suspended on four of the bridges that are part of the project because of concerns about geological stability. A routine examination found two bridge columns out of plumb in February, 2010, leading ODOT to suspend construction in June. It is not known when construction will resume on these bridges (Oregon Department of Transportation, 2010).

Conclusion

As currently proposed, this project faces three broad areas of very significant risk.

The cost of the project, as determined from CRC documents, is more than double the widely-publicized $3.6 billion construction-only costs. CRC's financial projections indicate that over thirty years, total costs of building and operating the project will exceed $8 billion dollars. Supplemental costs for related improvements, as recommended by the Independent Review Panel, will push costs to $10 billion, possibly more. Yet additional costs from potential and probable "mega-project" cost-overruns are unquantifiable.

The projected revenue from tolls is significantly overstated due to errors in the underlying traffic assumptions. These errors exaggerate expected cash-flow, and overstate the project's ability to service debt. Because no serious, independent investment grade analysis of tolling has been undertaken, the project's ability to secure favorable bond ratings and obtain the amount of debt needed is highly doubtful.

The project relies on funding from multiple federal programs, and it is highly improbable that all programs will be available, or that they will produce the optimistic levels of funding projected for each program, for the period of time that the funds will be required.

Each factor separately poses significant risk for Oregon's finances, since only the two states can fill the gaps caused by increased costs, toll revenue shortfalls, and unfavorable federal funding actions and timing. Together these risk factors compound to create virtually certain additional demands on the states' finances that have not been adequately addressed or analyzed.

Proceeding with this project based on the unreliable and highly over-optimistic work done to date exposes the region to enormous financial risks. Just as one would insist on an independent certification that the bridge's physical design was sound, decision-makers should insist that the financial plan for the Columbia River Crossing is not one which is so poorly designed that it is liable to collapse. Before taking any further steps which would commit to this risky course of action, the region's leaders should insist on a careful, professional and completely independent review of the project's financial plan.

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Laura Dawson-Bodner

From: Shirley Craddick
Sent: Monday, June 06, 2011 11:47 AM
To: Laura Dawson-Bodner
Subject: FW: About the CRC hearing on June 9 at 2 p.m.

From: Ron Buel [ronb@donavoncards.com]
Sent: Friday, June 03, 2011 3:32 PM
To: Shirley Craddick
Subject: FW: About the CRC hearing on June 9 at 2 p.m.

Ms. Craddick:

I enjoyed meeting you and showing you our cheaper, better and faster alternative to the CRC.

Should be a good turn-out of opponents at your hearing next Thursday on the CRC. I will be sending you an e-mail on the substantive specifics of 11-4264.

Thought Nigel did a good job on the CRC in this weeks' Willamette Week - did you read it? The Oregonian now has a real reporter, Jeff Manning, working on this CRC story. The pro-CRC joint memorial in the legislature doesn't look like it will pass out of committee, although there is still the possibility of a surprise. The anti-CRC people who are organizing against tolls in Vancouver expect 1,000 people for the CRC discussion in East Vancouver this Saturday at 1 p.m. Go to www.Couv.com<http://www.Couv.com> to see their anti-CRC stuff.

Your fellow Metro councilors should be aware that the worm is turning, and they are stepping into a big, muddy money pit. Neither of the two U.S. Reps who have this project in their districts are supporting it publicly - Blumenauer or Herrera-Butler. There is no construction money yet from Oregon, Washington or the Feds. I feel confident that Vancouver isn't going to pass light rail.

Might as well put Metro out on a big limb, saying that the majority-passed air pollution and greenhouse gas resolution in 2008 introduced by Councilor Collette has been satisfied. That, of course, just isn't true. The URS study says that, in the Southbound a.m. peak, with a ten-lane bridge, and seven lanes (including two coming off Marine Drive) merging into three lanes at Delta Park, congestion will actually be worse than it is today, backing up people all of the way into the bridge every workday morning. This means claims that traffic will speed up and congestion will be reduced - the basis of the reductions in the DEIS in air pollution and carbon, -- are simply wrong. How does that make Carlotta's resolution, which called for an independent study, satisfied?

In the Metro story on the web, Carl Hosticka says the CRC has been spending $1 million a month. The $80 million for the current biennium that ends on June 30 (this month) came $50 million from Washington and $30 million of "discretionary funds" (meaning no legislative approval) from the Oregon Transportation Commission. For the coming biennium, WashDot has agreed to put up $25 million if Oregon will put up the $50 million, which I imagine the OTC will do. The $80 million divided by 24 months comes out to $3.3 million a month the CRC is now spending, not $1 million a month as Carl said. Next biennium, the number will still be over $3 million a month at $75 million for the biennium. These are figures which the CRC has handed out. It's quite a little slush fund which has been used to pay lobbyists, strategists, and consultants of many different stripes. It will continue for at least two more years, and there's not anything Metro can do about that, except of course to say it's

not going to issue a land-use permit. Maybe there will be a majority for that position after the 2012 election?

If you want to put your neck out for this project, you should think twice. I don't think anyone is doing you a favor by making you vote at this time for this project. You should understand you are being used by the McCaig-Roberts duo of long standing to win back some of the credibility the project has lost in the legislature and the press recently, and there will be more problems to come (has anyone talked to you about the in-water work window and the salmon runs for example?). Court suits, a losing vote on light rail in Vancouver, failure to gain funding for construction of a $3.8 billion project, embarrassment when an investment grade advisory report is done on the back-loaded toll revenue bonds, and so forth. You are just pawns in the larger game. No one of the proponents cares that you have to put yourself forward on behalf of this loser project, and for no good reason at this time. My strong recommendation, is to find a way to stall such a vote, or to join Carl Hosticka in opposition.

Regards, Ron Buel (503-358-8677)

Laura Dawson-Bodner

From: Ina Zucker on behalf of Carlotta Collette
Sent: Wednesday, June 08, 2011 4:52 PM
To: Laura Dawson-Bodner
Subject: FW: An appeal to reason.... Stop the CRC!
Attachments: Networked Transportation Presentation.pdf; ATT00001..htm

Public comment on CRC

From: Steve Gutmann [mailto:gutmann.steve@gmail.com]
Sent: Friday, June 03, 2011 3:48 PM
To: Barbara Roberts; Carlotta Collette
Cc: Robert Liberty
Subject: An appeal to reason.... Stop the CRC!

Dear Councilors Roberts and Collette-

I've been following the CRC for years, and I'm absolutely dumbfounded that this disaster is still moving forward, despite all appeals to common sense and fiscal responsibility.

Traffic counts across the I-5 bridge have been falling since BEFORE the recession began, and that trend has only just begun.

All sorts of innovative Transportation Demand Management technologies -- **electronic tolling, electronic ride-sharing, peer to peer car-sharing, variable parking pricing, improved telecommuting, etc.** -- are already starting to free up roadway capacity, and get even more people to ride public transportation. And yet, fueled by big labor, countless consulting firms, and backward-looking ODOT engineers, we're still pouring money into this boondoggle.

I've been to hearings, etc., and to this date I have NEVER heard any logical explanation -- other than downright lack of guts -- why we're not tolling the existing bridge right now, to see if we can't manage the congestion through a HOT lane. A single lane in each direction, tolled at variable rates to keep it flowing at 45 MPH, would allow trucks, busses and people in a hurry to get through at 45 MPH at all times. This is off-the-shelf technology. It's being used very effectively in Singapore, all over Europe, and even in Los Angeles! People in their Single Occupant Vehicles would see the busses whizzing by, or they'd either set up carpools to halve the cost of the tolls or get on a bus, and pretty soon, we'd be rid of the problem. We'd also have started saving up money to shore up the existing bridge, which may not be great, but it's paid for.

Please stop this terrible waste of money. Traffic counts are already falling. Once we start tolling to pay for the big bridge, they'll fall further. And the general fund will have to bail out the project.

I really hope you'll reconsider your support for this terribly wasteful project. And please flip through the attached PPT presentation, and/or read this article:

http://www.prospectmagazine.co.uk/2011/04/end-of-the-road/

Transportation DEMAND Management is cheap and effective. The CRC is horribly expensive.

Please do the right thing -- and help stop it.

Steve Gutmann
Director of Business Development
Getaround

steve@getaround.com
503-333-7564
skype: sgutmann1

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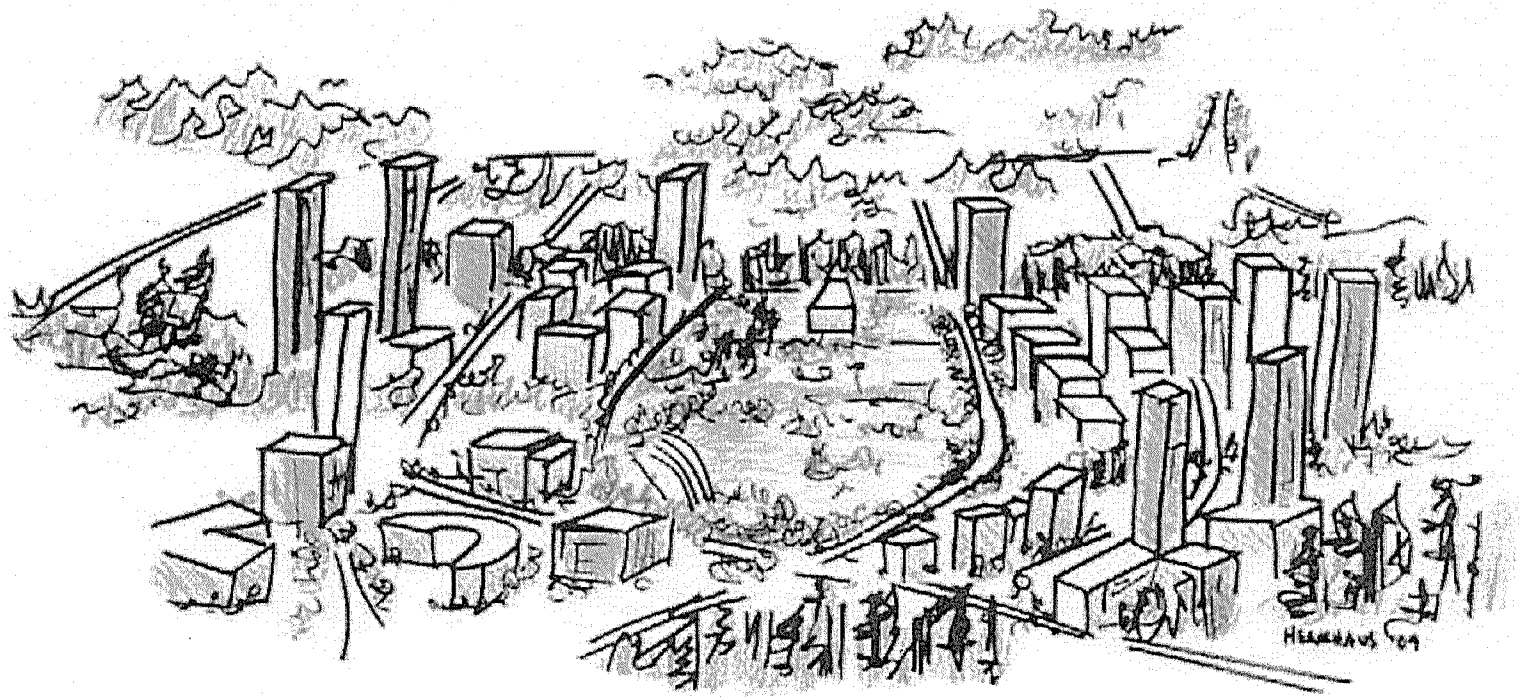
Networked Mobility

Accelerating Sustainable Transportation for the Portland Metro Area



Create a vibrant regional activity center enlivened with high-quality pedestrian and environmental amenities, taking advantage of the region's light rail system.

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HISTORY

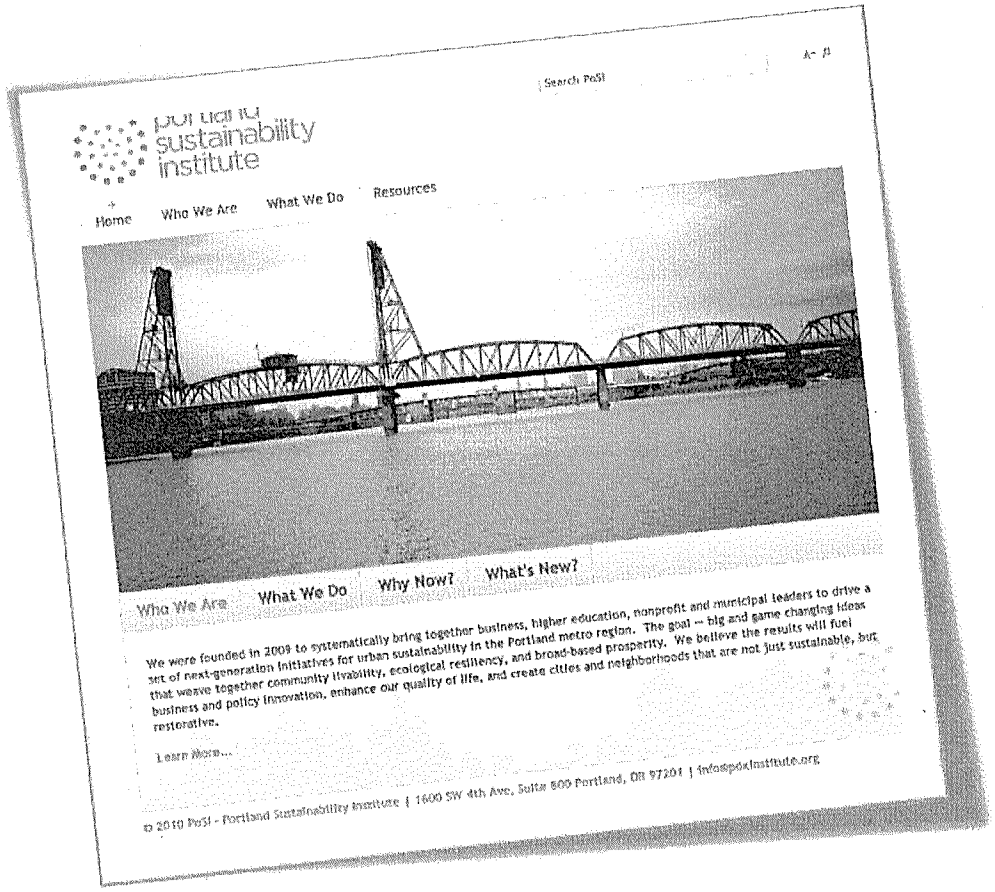
- Founded 2009
- Cross sector leadership

ACTIONS

- Drive high impact projects at the neighborhood scale
- Accelerate global best practices

ECODISTRICT INITIATIVE

- District Energy
- Commercial Energy Efficiency/Smart Grid
- Networked Transportation



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ECODISTRICTS

A roadmap to sustainable neighborhoods

- An EcoDistrict is a neighborhood committed to improving its sustainability performance over time, with engaged people, green buildings and smart infrastructure.

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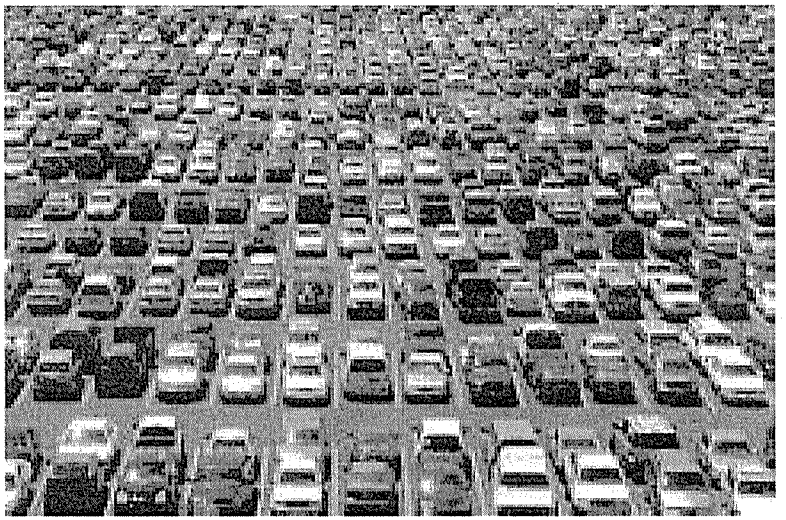
Barriers to great NEIGHBORHOODS

- Many diverse property owners and stakeholders.

- Yesterday's solutions are entrenched, but ill-suited to today's needs, and budgets



- Neighborhoods need updated:
  - Governance structures
  - Policy frameworks
  - Technologies & approaches
  - Financing mechanisms

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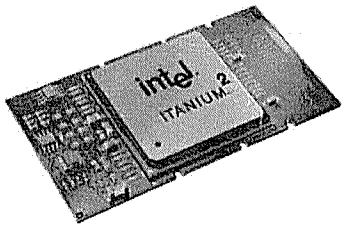
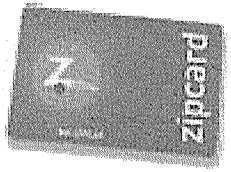
What does IT have to do with TRANSPORTATION?

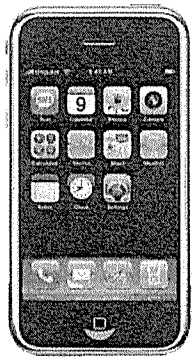
- Traditional transportation infrastructure is expensive.
- Fiber, chips and sensors are *cheap*

- Public sector is stretched
- Tech companies are driving innovation in the public sector, including transportation

- Auto sales are declining
- Urban residents are increasingly connected







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What is so-called SMART TRANSPORTATION?

- Fiber instead of asphalt
- Reduces congestion by managing demand & improving efficiency vs. increasing capacity.
- Analogous to a shift underway in the energy sector, away from generation and toward efficiency, net metering and the smart grid.

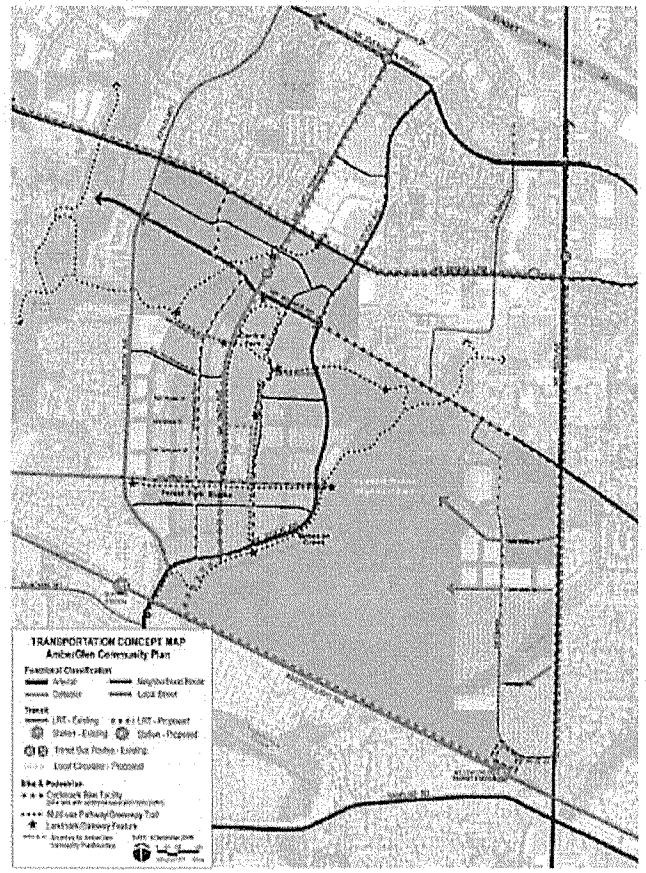

Figure 3-2: Transportation Concept Map

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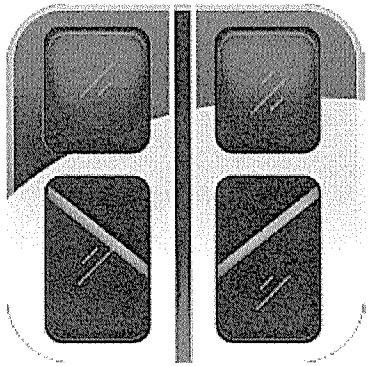
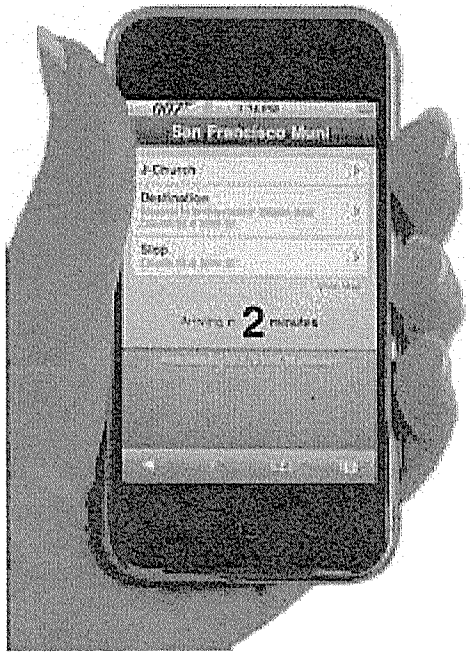
Dynamic Transit Information

NEXTbus





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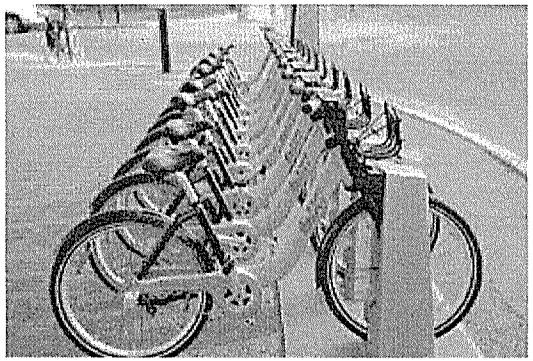
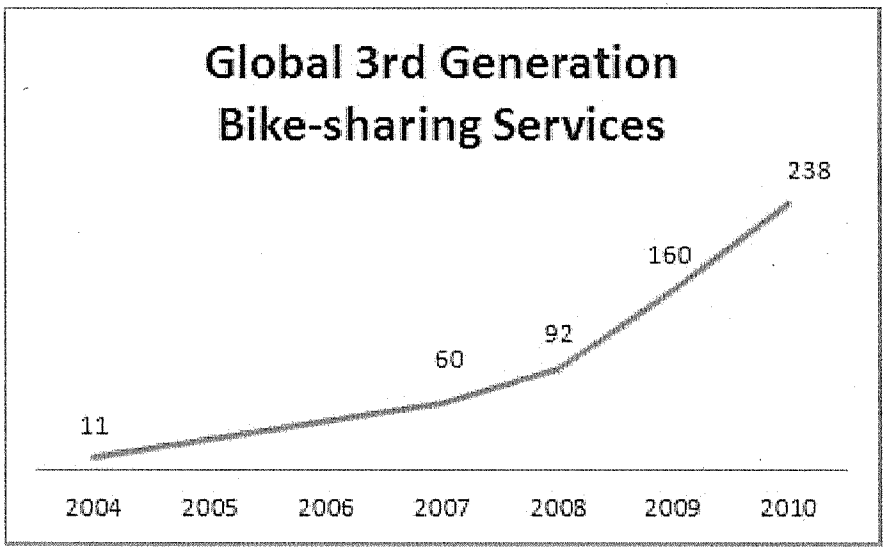
BikeSharing

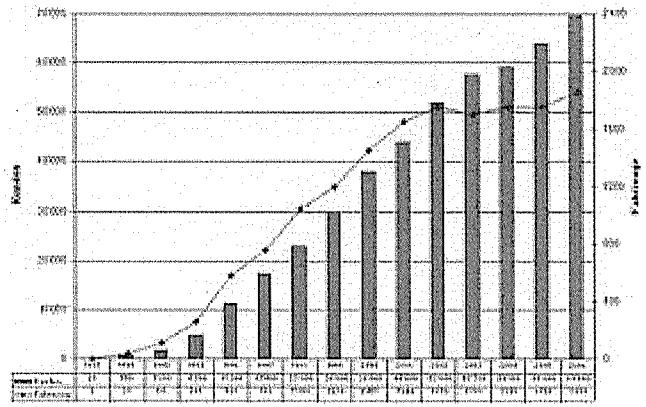


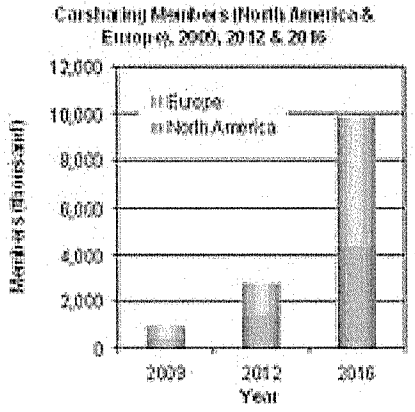
DENVER B cycle

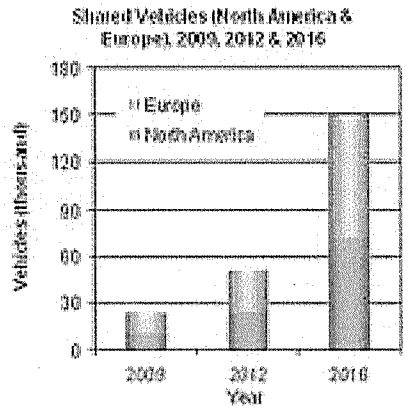


Networked, Smart Transportation

CarSharing 1.0, 2.0 & 3.0







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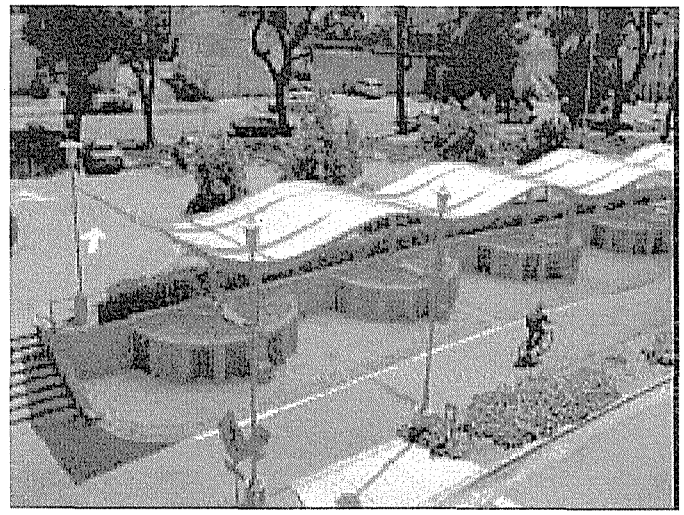
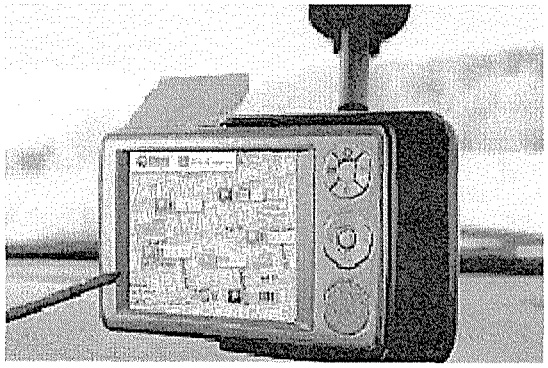
Networked, Smart Transportation

Smart Parking





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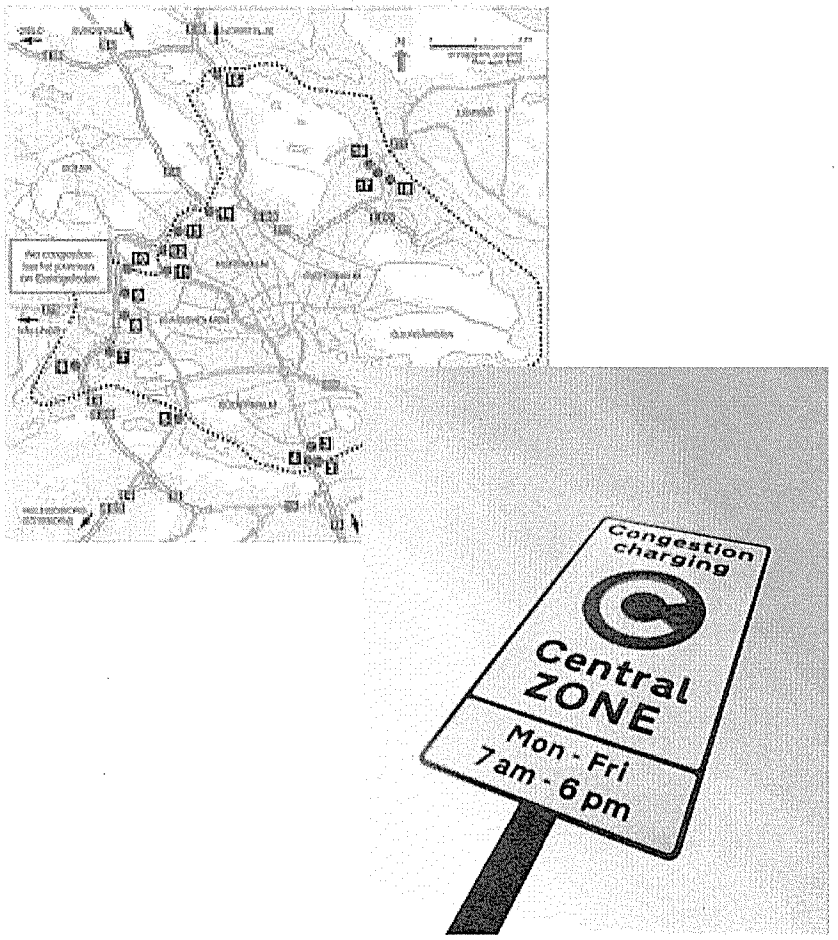
Networked, Smart Transportation

Smart Tolling



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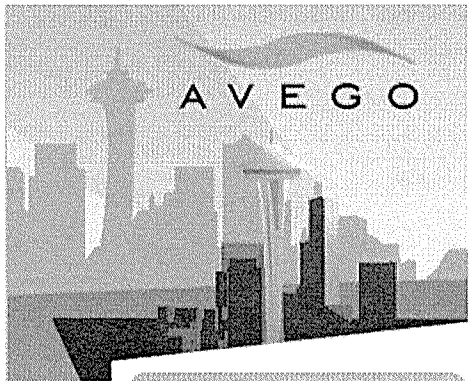
Networked Transportation

Ride Sharing

zimride
share the ride



nuride

CarpoolMatchNW.org
LOG ON · MATCH UP · DRIVE OFF

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Is our current approach

SUSTAINABLE?

$9,519 Excluding loan payments, that's how much a person can expect to pay driving a medium sedan 15,000 miles a year.

17% According to the U.S. Bureau of Labor Statistics, transportation costs were the second largest household expense in America in 2008 after housing. Those costs comprised 17% of annual household income. In comparison, we spent 5.9% of our annual income on healthcare and 12.8% on food.

92% Percentage of time your car is idle.

5.33 Ratio of U.S. oil consumption share: population share

China = 0.42
India = 0.18

We use more than 5 times our 'fair' share of world oil!

50% Approximate portion of urban real estate that is used to store cars.

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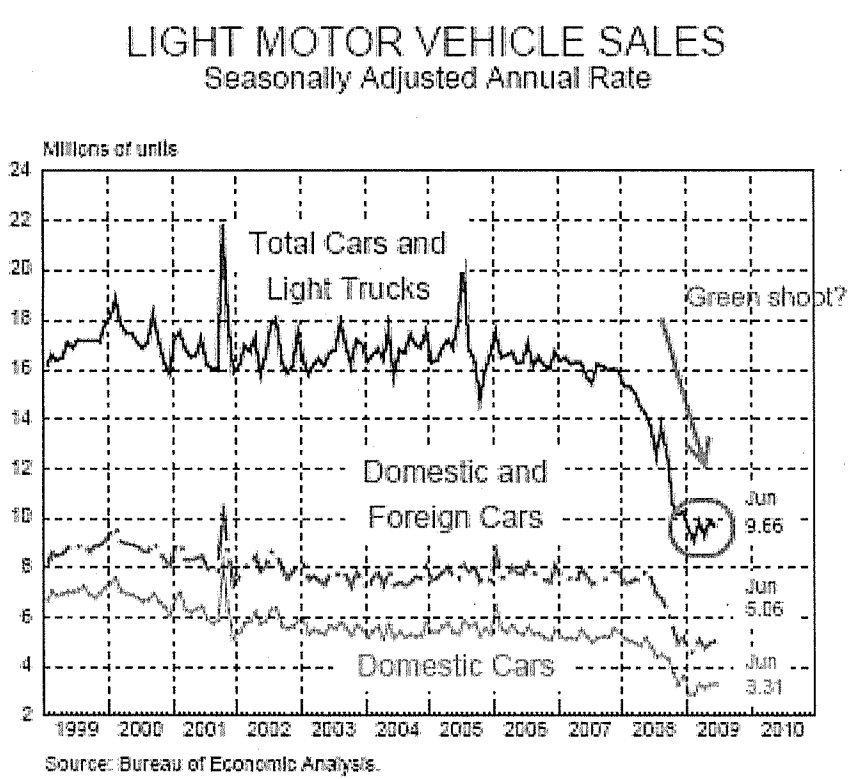
Since even *before* the recession…

AUTO SALES ARE DROPPING



Autos msnbc.com

Carmakers' next problem: Generation Y

People in their teens and twenties are more interested in gadgets than cars

Friday, November 5, 2010

Young People on Car Ownership: Meh

by Angie Schmitt on November 5, 2010

Car Ownership Falling in Japan

posted August 21st, 2009 by jonfrench

April 30th, 2010 at 8:17 am

Britons Are Turning Their Backs on Car Ownership Because of Soaring Costs

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So…

HOW DO WE *FIX* THIS?

- Throw out the rulebook.
- Question all assumptions.
- Don't settle for "that's how it's always done."
- We have an incredible opportunity to do something remarkable.
- *Get involved, and collaborate.*

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The essential ingredient…

KEY PARTNERSHIPS

- Combine innovation, affordability, livability & efficiency

- Leverage our region's core strengths:
  - Transportation
  - Semiconductors/Sensors/Chips
  - Innovative clean technologies

- "Networked transportation" partners:
  - TriMet, Streetcar, Vanpool operatorss
  - Bixi, B-cycle, BikeLink
  - Getaround, Daimler Car2Go, BMW DriveNow, Zipcar
  - Intel, IBM, Cisco & The Linux Foundation

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A challenge for

THE ENTIRE REGION

- **What does a *regional* smart transportation system look like?**
  - When transit, bikes, and IT are the key components, what happens to:
    - parking demand and urban form?
    - public health and livability?
    - the cost of living and quality of life?
    - pressures on the UGB?
    - carbon dioxide emissions?
- The Portland Metro Area can show the world a new way forward.

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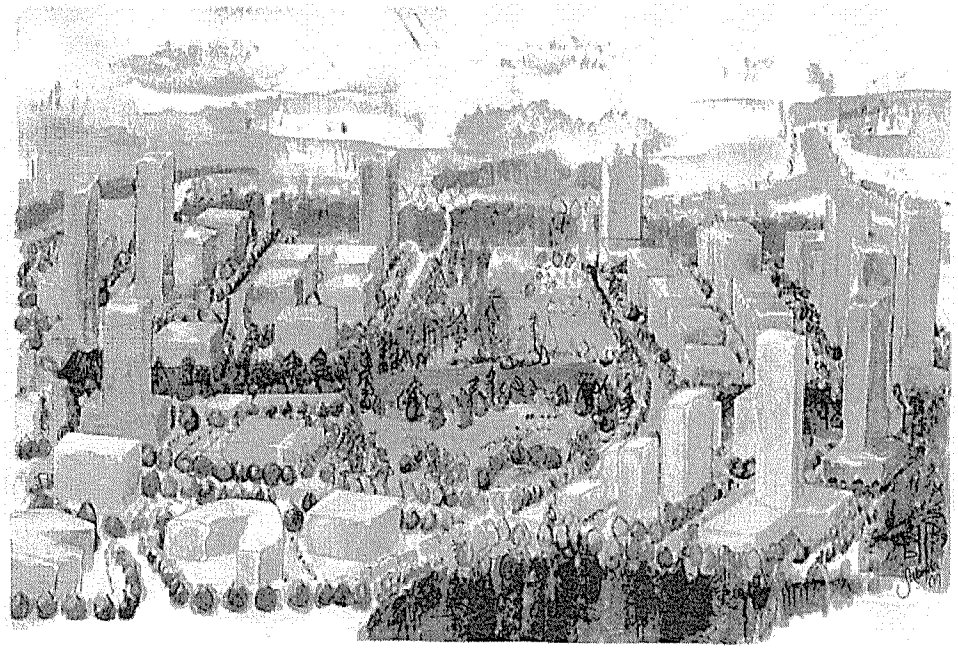
Thank You



Steve Gutmann
sgutmann@pdxinstitute.org
503-333-7564

portland sustainability institute

Laura Dawson-Bodner

From: Ina Zucker on behalf of Carlotta Collette
Sent: Wednesday, June 08, 2011 4:51 PM
To: Laura Dawson-Bodner
Subject: FW: Please make the CRC be a reasonable investment

Public comment on the CRC

From: maralena [mailto:maralena.murphy@gmail.com]
Sent: Friday, June 03, 2011 3:44 PM
To: Carlotta Collette
Subject: Please make the CRC be a reasonable investment

Dear Carlotta,

I am aware that you are a public figure and thus quite often receive e-mails from people you've never met asking you to first comprehend, then digest, and then nothing less than *act upon* their opinion(s), no matter how inane or different from your own.

So, apologies that my name is now just another notch in the stick of faceless, mediated political interactions. Know that I normally reserve my energy for exchanges much more rooted in the personal and interactive. Forgive me.

That said, I've been told that you are (one of) my representative(s) in the ongoing discussion about the bridge rebuild across the Columbia. For countless reasons, including those of social, economic and environmental justice, I am opposed to the plan as it currently stands. I am writing you today to ask you to vote no on Resolution No. 11-4264, when the time comes.

Please contact me if you have any questions or desire me to explicate my position further.

Regards,
Maralena

Laura Dawson-Bodner

From: jr [jr@quixotecycles.com]
Sent: Friday, June 03, 2011 12:25 PM
To: Barbara Roberts
Subject: Please do not approve the CRC resolution 11-4264

Dear Councilor Roberts,

I urge you to vote "No" at upcoming opportunities on Resolution 11-4624 regarding the proposed Columbia River Crossing project.

The proposed bridge will not solve any congestion problems and will worsen congestion at other points along the corridor.
There are other infrastructural priorities that should come first.
We have no way to pay for it and projects of this size are notorious for going over even the most conservative budget estimates. I do not believe that ODOT is working in the interest of the State of Oregon, Washington or its citizens.
Other job creating solutions do exist which are more likely to achieve the variety of this project's goals at a lower cost.

Please vote no and demand that we do it better.
Thank you for your leadership.

Jonathan Reed
Portland, OR

Laura Dawson-Bodner

From: Eleanor Blue [eleanor.blue@gmail.com]
Sent: Friday, June 03, 2011 12:25 PM
To: Barbara Roberts
Subject: please vote no on the CRC

Dear Councilor Roberts,

I have been following the design and planning process of the CRC closely for the past several years and have developed several concerns.

One of the project staff, Dave Parisi, sat down with me in 2008 and walked me through a packet of maps and data that showed how the planned CRC would create a bottleneck of gridlock traffic in the Rose Quarter and downtown Portland. Mr. Parisi freely admitted this outcome, but explained that it was balanced by allowing freeway speeds to be reached more safely on the span of the bridge and its interchanges. I am concerned that this would create more congestion on the freeway as well as on city streets, and contribute to the degradation of air quality in North and central Portland, as well as to the significant health problems, ranging from heart disease to asthma to autism, that are linked with exposure to auto pollution.

My concerns were heightened when it became clear that the projects bicycle advisory committee, convened with the stated purpose of developing a world class bicycle facility across the Columbia, was asked to rubber stamp a substandard bike route under the bridge with inadequate access on either end.

Further concerning have been economist Joe Cortwright's analysis showing that the project could cost as much as $11 billion, and more recent revelations that the entire project is founded on faulty land use and budget projections. In times of budget crisis. Even a small portion of that money, if invested into other transportation projects, would create mobility and opportunity rather than gridlock and pollution.

Our region cannot afford this project financially, and we truly can't afford the economic, social, and environmental consequences that will result from it being built. Please say NO to the CRC.

Thank you,
Elly Blue
3827 SE Lincoln
503 810 9443

Laura Dawson-Bodner

From: Jessica Roberts [jr0berts23@yahoo.com]
Sent: Friday, June 03, 2011 11:09 PM
To: Rex Burkholder
Subject: Please vote no on Resolution No. 11-4264

Dear Rex,

I'm writing because I am very concerned about the Columbia River Crossing project. By now it is clear that this project is basing its both its excessive size and its optimistic budget on faulty assumptions about increasing auto use in the corridor. The risk to Oregon taxpayers is very high that we will end up picking up the tab for a project that is very likely to go over budget during construction, and even more likely to miss its purported toll income targets. We have now also learned that project supporters have repeatedly misrepresented the facts about the bridge corridor's safety record, seismic risk, and congestion.

Oregon simply cannot afford to let this out-of-control juggernaut of a project suck up the greater portion of our regional transportation funds for the forseeable future. According to the Willamette Week, spending $3.6 billion dollars would, at best, reduce an auto trip for a Vancouver commuter by a measly minute. Let's spend our money on projects that are cost-effective, address real safety problems, and help reduce auto use.

Please, vote no on Resolution 11-4264.

Yours,
Jessica Roberts
6337 N Albina Ave
Portland, OR 97217

Laura Dawson-Bodner

From: Bradley Delay [bradleyjasondelay@gmail.com]
Sent: Friday, June 03, 2011 7:18 PM
To: Rex Burkholder
Subject: bad bridge

Dear Rex,

Do not build the CRC bridge, stop wasting money. Stop it! Build a train, make them take a bus or ride a bike.

Thank you,
Bradley Delay, voter

Laura Dawson-Bodner

From: Mitchell Santine Gould [mitchgould@generalpicture.com]
Sent: Friday, June 03, 2011 6:56 PM
To: Rex Burkholder
Subject: Columbia Double Crossing

Dear Councilor,

I wish to express my longstanding and deep-seated opposition to the Columbia Double Crossing.
I view this project as a spectacular boondoggle, of no value to Oregonians and of far less potential value to Vancouverites than they fondly assume.
The only real beneficiaries will be steel foundries, high-priced and incompetent consultants, and the petro-asphalt industry.
The rest of us will be paying for the rest of our lives for this cynical project.
There is a rush to lock us into this plan at a time when our economy is in the toilet, gas prices are headed up permanently, and car traffic has plumetted.
In addition, those of us exposed to Portland's bumper crop of air toxics will have our dosages increased.
I urge you to read the recent Williamette Week expose on the blatant falsehoods used to expedite the pork, and please kill this undead monster.

Ciao,

Mitchell Santine Gould
7551 N Woolsey Ave
Portland
OR 97203

Laura Dawson-Bodner

From: Mary Vogel [mvogelpnw@gmail.com]
Sent: Friday, June 03, 2011 3:52 PM
To: Rex Burkholder
Subject: consider voting NO on Resolution No. 11-4264

Rex,

Maybe you still get BTA notices, but in case you don't I'm including the first two paragraphs of one I just got. I had just picked up Willamette Week on my way back from City Club and read the article linked below while eating lunch. For those of us who have followed the project somewhat closely, there was no bombshell news, just a nice summary of what we already know--although I didn't know about the opposition of Rep. Katie Eyre Brewer.

> *It's been a big week for the Columbia River Crossing highway expansion project. If you haven't seen it yet, take a look at the point by point article written by Nigel Jaquiss with the Willamette Week debunking major myths surrounding the project, as well as a thoughtful roundup by Evan Manvel on BlueOregon.com.*
>
> *Next week our own Metro Regional Government is scheduled to vote on a resolution supporting the new highway expansion on Wednesday, June 9th at 2:00pm. You can view the Resolution No. 11-4264 here.*

Considering all the good stuff you've been doing lately on Climate Leadership, etc., I'm asking you to read the first two links above and consider voting NO on Resolution No. 11-4264. I'm hoping to testify on behalf of CNU Cascadia Chapter next Thurs.
Thanks,
Mary

Mary Vogel, CNU-A
PlanGreen
A Woman Business Enterprise/Emerging Small Business in Oregon
503-245-7858

Laura Dawson-Bodner

From: Kevin Rudiger [kevin.rudiger@gmail.com]
Sent: Friday, June 03, 2011 3:32 PM
To: Rex Burkholder
Subject: Please vote "No" on Resolution No. 11-4264

Councilor Burkholder -
I am a constituent and I'm writing to urge you to vote "no" on Resolution 11-4264 regarding the Columbia River Crossing project.

In 2008, when Metro adopted a Locally Preferred Alternative, you placed a set of conditions on their approval. On Thursday of next week Metro Councilors are being asked to say that the project's highway consultants have satisfied Metro's conditions. They haven't.

This costly highway project, despite substantial and repeated shortcomings on such key issues as project financing, multi-modal
accommodations, and community impacts, continues to move forward. I
urge you to vote no to ensure that these key issues are addressed.

Thank you.

Kevin Rudiger
3536 NE US Grant Place
Portland, OR 97212

Laura Dawson-Bodner

From: Regina Hauser [regina.hauser@cascadiagbc.org] on behalf of Regina Hauser [regina.hauser@thenaturalstep.org]
Sent: Friday, June 03, 2011 3:16 PM
To: Rex Burkholder
Subject: resolution 11-2464 (aka CRC)

Rex,

The more I read about the CRC the more I have to believe that this is the wrong answer to the problems of access, human mobility and freight mobility between Vancouver and Portland. Rather than repeat what is contained in the Coalition for Living Future's report on how the current proposal does not meet Metro's previously expressed concerns, I simply refer to the points in that report. The article in the Willamette Week (5.31.11) also pointed out a number of erroneous assumptions and flaws in the current proposal. During every phase of this project public concerns seem to be ignored, except tcost. Thus we've ended up with the ugliest span possible, with vague commitments to light rail (good luck on getting Vancouver residents to vote for it) and weak bicycle access. What hasn't been addressed is lower cost alternatives to building the monstrosity in the first place. ODOT and WASHDOT historically prefer big engineering projects rather than an understanding of roads as part of a human and community system. I respectfully urge you to vote against the resolution.
best regards,
Regina

Regina Hauser

Director | The Natural Step Network USA
721 NW 9th Ave, Suite 195| Portland, OR 97209 | t 503-241-1140 ext 2#

Regina.hauser@thenaturalstep.org

www.naturalstepUSA.org

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and on Twitter at http://twitter.com/NaturalStepUSA

Accelerating change toward sustainability

Laura Dawson-Bodner

From: Christine Kendrick [kendrick.christine@gmail.com]
Sent: Friday, June 03, 2011 3:04 PM
To: Rex Burkholder
Subject: CRC Concerns

Hello Metro Councilor Rex Burkholder

I am a resident of Portland, OR and I am writing to ask you to please vote no on Resolution No. 11-4264. I know Metro has adopted a Locally Preferred Alternative to the Columbia River Crossing, but conditions have still not been met and there are additional concerns for residents of Portland and Oregon.

The current design for the Columbia River Crossing has been pushed through very quickly and even with a quick re-design, the CRC is a project that is not getting appropriate critical review for the roadway design and money infrastructure development. This is a large project that will affect Oregonians for many years to come and I wish this process to be more democratic.

I understand there needs to be investment in a new CRC but I hope that the design can be critically reviewed by engineering experts, consider the multiple needs of the surrounding communities, and be more cost effective. The current design and solution is preferred by the Departments of Transportation based on old school thinking and a focus on very large highway projects. Many varieties of transportation experts with conservative and liberal backgrounds have all found fault with the current design and predict the costs will be too much and this project will become a burden to Oregonians. There have been many different types of alternatives offered that are shown to be more cost effective, designs that are streamlined towards solving the actual transportation issues of the CRC while also taking into consideration transportation problems of the greater area between the two counties and states. A lot of money could be saved with alternative designs that will still fulfill the traffic related needs of this project. The new CRC needs to be picked based on a democratic process and with consideration of the current economic situation and other infrastructure needs of the area.

I am currently getting my PhD in Environmental Science, work in an air quality lab and on an interdisciplinary research team with transportation engineers. The surrounding communities by the CRC are already impacted by a multitude of air toxics problems and sources due to traffic, industry, and wind patterns. Alternative designs can also better protect these citizens and save money with less health care costs and childhood asthma and long term morbidity.

The people of Portland are feeling railroaded by this project and the process that has been applied to push through a design for the CRC. Please help make us feel like local government can work for us and take the time to consider alternative design solutions, a critical impact analysis, and consider the needs of different communities that will be impacted by this crossing.

Please vote no on Resolution No. 11-4264 and look at alternative designs solutions and help make this a meaningful process for those who this project will impact. Also please help residents of Portland feel money is being used responsibly by government and approve designs that can be paid for and target the actual congestion problems.

Thank you
Christine Kendrick

Laura Dawson-Bodner

From: Alex Joyce [alex@frego.com]
Sent: Friday, June 03, 2011 2:30 PM
To: Rex Burkholder
Subject: please fight the CRC

Rex,

The CRC is too big – and specifically too big on car lanes. I support rebuilding the bridge, but not using Texas design standards! We should be more creative and forward thinking – this is the chance. We are standing at the edge of a massive black hole of future funding, and all to make a Texas-style freeway? Yes to transit, yes to pedestrian and bicycle facilities, and yes to a new bridge – but why the hell do we need a 12 lane monster bridge? Our region is better than that, more innovative than that and our elected leaders should be too.

This is not just a tree in the forest. Your base is pretty clear on this, please listen.

http://www.bta4bikes.org/btablog/2011/01/04/bta-supports-the-right-bridge-for-the-i-5-corridor/

Alex Joyce
Project Manager
Fregonese Associates
1525 SW Park Ave, Suite 200
Portland OR 97201
503.228.3054
alex@frego.com

Laura Dawson-Bodner

From: Kevin Martin [skoema@gmail.com]
Sent: Friday, June 03, 2011 2:03 PM
To: Rex Burkholder
Subject: Columbia River Crossing resolution #11-4264

Rex -

This freeway project is overly costly, unnecessary, does little to meet our regional climate goals, and -- most irritatingly -- is completely uninspired in terms of design. $4,000 dollars per household to build a bridge that would make Robert Moses proud.

I urge you to vote "no" on the resolution next Wednesday.

- Kevin

Kevin Martin | 1224 SE 41st Ave | Portland | OR | 97214
skoema@gmail.com

Laura Dawson-Bodner

From: Scott Cohen [scottbencohen@gmail.com]
Sent: Friday, June 03, 2011 1:29 PM
To: Rex Burkholder
Subject: Resolution No. 11-4264

Councilor Burkholder -

I am writing to ask that you vote no on Resolution No. 11-4264. Mara Gross, from the Coalition for a Livable Future, sums up perfectly why you should vote no on the resolution:

When Metro approved the Locally Preferred Alternative in 2008, it simultaneously found numerous issues that "will need to be satisfactorily addressed" and included these concerns in Exhibit A to Resolution No 08-3960. Many of these concerns have not yet been addressed, making Resolution No. 11-4264 premature, and the CRC project has refused to address several of Metro's issues, including Community Enhancements and tolling I-205.

There are many many problems and unknowns with the CRC as it stands right now. For a project that is slated to be the biggest public works endeavor in our region and state's history, I believe we must have more of the CRC's outstanding issues resolved before moving forward.

Thanks for your consideration,

Scott Cohen
2613 N Russet St
Portland OR 97217

Laura Dawson-Bodner

From: Josh Berezin [joshb@well.com]
Sent: Friday, June 03, 2011 1:27 PM
To: Rex Burkholder
Subject: CRC vote

Councilor:

I know the CRC vote is coming up next week, and I'm nervous. I feel that the project, in its current form, simply doesn't meet the goals of our community and our region.

Until issues like light rail, world-class bike & pedestrian access, and regional tolling are addressed, I don't feel confident that we're approving the bridge we've been promised. Furthermore, the disparity between projected and actual traffic volumes in the corridor lead me to believe we're not building a facility with the appropriate level of capacity.

There's no question that the early phases of this project have gone badly. But it feels that we're rushing ahead despite the tremendous uncertainty generated by this bumpy process. Let's wait to move forward until we get it right. Please vote no on Resolution No. 11-4264.

Thank you.

Sincerely,
Josh Berezin
6337 N Albina Ave
Portland, OR 97217

Laura Dawson-Bodner

From: Gabriel Graff [gabriel.graff@gmail.com]
Sent: Friday, June 03, 2011 12:21 PM
To: Rex Burkholder
Subject: please vote no on Resolution No. 11-4264

Hi Councilor Burkholder,

It's become increasingly clear the CRC is a bad deal for our region in every way. Please help us turn the tide and vote no on Resolution No. 11-4264.

Thanks!
Gabe

Gabriel Graff
6355 N Haight
Portland OR 97217

Laura Dawson-Bodner

From: Dave Feucht [poetas@gmail.com]
Sent: Friday, June 03, 2011 12:48 PM
To: Rex Burkholder
Subject: Columbia River Crossing Project

Mr. Burkholder,

I just want to first thank you for your contributions to our region - you're a well-known figure in helping to make the Portland area a more liveable place, and I and many others really appreciate the role you've played in that.

I just wanted to write regarding the upcoming vote from the Metro Council on whether to approve the plans for the Columbia River Crossing project. I feel that it's obvious that the Oregon Department of Transportation and others are pushing this project with false information, based on false assumptions (in some cases which they know to be false), and I personally feel like we will be getting ourselves into something extremely burdensome and destructive if we go ahead with the plans as they stand now. I feel like, rather than try to accommodate more and more single-occupancy automobile traffic, we ought to instead aim to first maintain the infrastructure we have, and attempt to provide people with other feasible means of travel which accommodate the same numbers of people with less space taken, less cost, and less harm to our communities than ever-expanding freeways. It may be that a new bridge here is required, but I don't believe that a freeway expansion through the region is going to be helpful to our communities in the long run, and I would be saddened to see this project go forward as-is. I feel this is an incredibly important moment for the region, and my wife and I, as a citizens of Portland under Metro, would encourage a decision that would force more thought, honesty, and transparency to go into this project, so that we come out with a solution that more accurately represents the stated goals of our region, helps to keep the Portland area the way we have come to love it, and not burden our State and City, along with the citizens thereof, with unnecessary debt, to pile on the already growing heap.

Thank you for your consideration, and for all your work in Metro.

Sincerely,

Dave Feucht
--
"There's more to life than speeding it up" --Mahatma Gandhi

Laura Dawson-Bodner

From: Norman Hamilton [norman7766@hotmail.com]
Sent: Thursday, June 02, 2011 9:38 AM
To: Barbara Roberts
Subject: Opposition to the Columbia River Crossing

Dear Barbara Roberts,

I'm a constituent and I'd like to urge you to reconsider your support for the Columbia River Crossing. This project has many flaws and will be a disaster for this community if it is built.

There are many critics of this project. Joe Cortright has done some great research in this area. I hope you'll take the time to become familiar with his work.

My State Representative Jules Bailey also has many concerns about this project. In fact on third of the Oregon of Representatives signed a letter calling for a pause in the process.

The Willamette Week just published an article that calls out the fallacies that have been used by CRC proponents.

It's time to put a stop to the CRC. There are better options out there.

Norman Hamilton

1422 SE 28th Portland

U.S. DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

Oregon Division Office
530 Center Street,
Suite 420
Salem, Oregon 97301
503-399-5749

Washington Division Office
711 S. Capitol Way
Suite 501
Olympia, WA 98501
360-753-9889

Federal Transit Administration

Region 10
915 Second Avenue
Room 3142
Seattle, Washington 98174-1002
206-220-7954

June 2, 2011

Ms. Nancy Boyd
Project Director
I-5 Columbia River Crossing
700 Washington Street, Suite 300
Vancouver, WA 98660

RE: Environmental Revaluation, I-5 Columbia River Crossing Project (CRC)

Dear Ms. Boyd:

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) reviewed an Environmental Re-Evaluation Consultation and its supporting documentation which the CRC Project team submitted on May 5, 2011, and attached to this letter. The re-evaluation assessed how environmental impacts for the current Locally Preferred Alternative (LPA) differ from the impacts evaluated in the CRC Draft Environmental Impact Statement (DEIS) submitted in May 2008. The design changes and refinements considered in the re-evaluation are located at various points along the length of the project. The re-evaluation does not address design changes or refinements which were re-evaluated previously, such as the 17th Street transit alignment (March 2010) or the Composite Truss bridge type (March 2011). The impacts from the 17th Street alignment change and the bridge type change were determined not to require additional documentation and were incorporated into the project design. Therefore, they are part of the project that forms the baseline project of the May 2011 re-evaluation. You have offered this information seeking FHWA's and FTA's determination whether the design changes and refinements described in the submittal will require a Supplemental Draft Environmental Impact Statement (SDEIS) under the National Environmental Policy Act (NEPA).

The main design change and refinement covered in the re-evaluation pertains to the decision to retain the existing I-5 bridges over the North Portland Harbor rather than replacing them as shown in the DEIS. This change occurred as a result of the Cost Reduction/Savings Measures that the project identified in 2009.

The re-evaluation also addresses design changes and refinements for the following items:

- Marine Drive interchange,
- State Route 14 interchange,
- Other minor refinements at the other highway interchanges,

- Number of lanes on the main river crossing,
- Number of bridges over the Columbia River,
- Light rail alignments across Hayden Island and in downtown Vancouver,
- Size and location of park and ride facilities,
- Size and location of transit station platforms,
- Community Connector in Vancouver,
- Multi-use path in Portland and Vancouver,
- Construction buffer necessary to build the new supplemental structures (ramps, transit) over the North Portland Harbor.

Impacts associated with the above design changes and refinements have been considered during consultation under the Endangered Species Act and the Marine Mammal Protection Act. The above changes and refinements were also included in the project's Area of Potential Effect (APE) for Section 106 of the National Historic Preservation Act, and no additional use of Section 4(f) (Department of Transportation Act of 1966) resources has been identified.

In our review of this re-evaluation, we considered whether the changes and design refinements present significant environmental impacts which were not reviewed in the DEIS (23CFR771.129). Based upon the information you provided, FHWA and FTA agree that the design changes and refinements incorporated in the project since our approval of the DEIS do not create new environmental impacts that require a Supplemental DEIS.

Please note that we offer this determination solely on the limited question of whether the changes summarized in the May 5, 2011, Environmental Re-Evaluation Consultation require a Supplemental DEIS. Any future changes or design refinements prior to the publication of the FEIS require additional evaluation.

Sincerely,

Phillip A. Ditzler
Division Administrator – Oregon
Federal Highway Administration

R.F. Krochalis
Regional Administrator – Region 10
Federal Transit Administration

Daniel Mathis
Division Administrator – Washington
Federal Highway Administration

Attachment: May 5, 2011 Environmental Re-Evaluation Consultation

ENVIRONMENTAL RE-EVALUATION CONSULTATION

Note: The purpose of this worksheet is to assist sponsoring agencies in gathering and organizing materials for re-evaluations required under the National Environmental Policy Act (NEPA). Submission of the worksheet by itself does not meet NEPA requirements. FTA & FHWA must concur in writing with its determination and/or the sponsoring agency's NEPA recommendation. Contact the FTA Region 10 office at (206) 220-7954 or FHWA CRC Project Manager at (360) 619-7591 if you have any questions regarding this worksheet. We strongly encourage you to contact us to discuss your project changes before you fill out this worksheet.

For Agency Use *Date Received:*	
Recommendation by FTA Planner or Engineer: ☐ *Accept* ☐ *Return for Revisions* ☐ *Not Eligible* *Recommendation by FHWA Planner or Engineer:* ☐ *Accept* ☐ *Return for Revisions* ☐ *Not Eligible*	*Reviewed By:* *Date:* *Reviewed By:* *Date:*
Comments:	
Concurrence by FTA Counsel: ☐ *Accept Recommendation* ☐ *Return with Comments* *Concurrence by FHWA Counsel:* ☐ *Accept Recommendation* ☐ *Return with Comments*	*Reviewed By:* *Date:* *Reviewed By:* *Date:*
Comments:	
Concurrence by Approving Officials: *FTA:* *FHWA:*	*Reviewed By:* *Date:* *Reviewed By:* *Date:*

Please answer the following questions, fill out the impact chart and attach project area and site maps. Using a site map from the previously approved NEPA document, show project changes using a different color. Include additional site maps to help reviewer understand project changes.

PROJECT TITLE
Columbia River Crossing—changes in impacts from DEIS to current LPA

LIST CURRENT, APPROVED ENVIRONMENTAL DOCUMENTS (e.g. EIS/ROD, EA/FONSI, BA, RE-EVALUATION, etc.) If Re-evaluation, briefly describe.
Title: DEIS Date: May 2008 Type and Date of Last Federal Action
Title: Biological Assessment Date: June 2010 Type and Date of Last Federal Action: Received Biological Opinion in January 2011
Title: Biological Opinion Date: January 2011 Type and Date of Last Federal Action

HAS THE MOST CURRENT AND OTHER PERTINENT APPROVED ENVIRONMENTAL DOCUMENTS BEEN *RE-READ* TO COMPARE PROPOSED PROJECT CHANGES?

☐ **NO (STOP! The most current approved environmental document MUST be re-read prior to completing a re-evaluation.)**

☒ **YES NAME: Seth English-Young, Jeff Heilman DATE: April 10, 2011**

IS THE PROJECT CURRENTLY UNDER ☒ **DESIGN OR** ☐ **CONSTRUCTION?**

REASON FOR RE-EVALUATION

The purpose of this re-evaluation is to assess how environmental impacts for the current LPA are different from the impacts evaluated in the DEIS. This re-evaluation does not specifically address changes that were covered in previous re-evaluations, such as the 17th Street transit alignment (March 2010) and the Composite Truss bridge type (March 2011). However, where this re-evaluation discusses total impacts from the LPA, those totals include all changes that have been incorporated since the DEIS.

The DEIS assessed the impacts from No-Build (Alternative 1) and four build alternatives (Alternatives 2-5). No preliminary LPA was identified in the DEIS. There were a series of components that comprised the Alternatives:

Components	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Multimodal River Crossing and Highway	Existing	Replacement	Replacement	Supplemental	Supplemental
HCT Mode	None	Bus Rapid Transit	Light Rail	Bus Rapid Transit	Light Rail
HCT Terminus	N/A	(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	(A) Kiggins Bowl, (B) Lincoln, (C) Clark College MOS, or (D) Mill Plain MOS
TDM/TSM	Current Programs	Expanded TDM/TSM programs			
I-5 Bridge Toll	None	Standard rate	Standard rate	Higher rate	Higher rate
Transit Operations	Existing	Efficient	Efficient	Increased	Increased

Because of the different components included in each alternative, the DEIS reported a range of impacts. This re-evaluation compares the LPA to the range of impacts evaluated in the DEIS.

Since publication of the DEIS the LPA has been defined and refined. The LPA was adopted in July 2008 as follows:

- A replacement bridge as the preferred river crossing
- Light rail transit as the preferred high-capacity transit mode
- Clark College as the preferred northern terminus for the light rail extension.

The LPA is most similar to DEIS Alternative 3—Replacement bridge with light rail and the Clark College MOS terminus.

The LPA has been refined since its adoption. The changes were the result of on-going evaluation of design issues, costs, impacts, benefits and constructability, and have been determined through ongoing public and other stakeholder input. These elements are described in detail in the *Description of Project Changes* section below.

The following are the primary transportation improvements included in the LPA as currently described. All of these elements were included in the DEIS:

- The replacement river crossing over the Columbia River and the I-5 highway improvements, including seven interchanges, north and south of the river.
- Extension of light rail from the Expo Center in Portland to Clark College in Vancouver, and associated transit improvements, including transit stations, park and rides, bus route changes, and expansion of a light rail transit maintenance facility.
- Bicycle and pedestrian improvements throughout the project corridor.
- A toll on motorists using the river crossing.
- Transportation demand and system management measures to be implemented with the project.

DESCRIPTION OF PROJECT CHANGES OR NEW INFORMATION

For the purpose of this re-evaluation, all project changes and associated changes in environmental impacts from the DEIS to the current LPA are analyzed (the *Change in Impacts* matrix at the end of this document describes these changes in environmental impacts). For the project as a whole, the total impacts from the current LPA are compared to the range of impacts reported in the DEIS. The current LPA is similar to DEIS Alternative 3 (replacement bridge with light rail and the Clark College MOS terminus). In general, the total impacts from the LPA are within the range reported in the DEIS.

The re-evaluation is divided into two sections:

(1) *Main Project Changes* and
(2) *Other Design Changes and Refinements.*

The *Main Project Changes* are described first, and entail the main project changes since the DEIS was published. The changes in environmental impacts resulting from these design changes are described in the *Change in Impacts* matrix at the end of this document. The *Main Project Changes* occur in the North Portland Harbor, Marine Drive, and Hayden Island interchange areas. These changes are reflected in "LPA Option A" and to a lesser extent in "LPA Option B".

All other project changes are included in the *Other Design Changes and Refinements* section. Most these design changes make no or very little difference in environmental impacts. Any notable changes in environmental impacts are described in the *Change in Impacts* matrix. The project design changes and refinements included in this section are:

- Transit Station Platforms
- Park and Rides
- Marine Drive Interchange Design
- Number of Lanes on the River Crossing
- Number of Bridges over the Columbia River
- Light Rail Alignment over Hayden Island
- Light Rail Alignment in Downtown Vancouver
- Cost Reduction/Saving Measures

- SR 14 Interchange
- Fourth Plain Interchange
- SR 500 Interchange
- Community Connector
- Multi-Use Path
- Construction Buffer in North Portland Harbor

(1) Main Project Changes

The *Main Project Changes* described below are those changes since the DEIS that have resulted in most of the changes in impacts. The changes in environmental impacts resulting from these design changes are described in the *Change in Impacts* matrix at the end of this document.

LPA Option A and Option B

In the DEIS alternatives, the I-5 North Portland Harbor bridge was proposed to be removed and four new structures with added functions built in its place. The largest new structure would accommodate I-5 mainline and the smaller structures would accommodate on and off movements, auxiliary lanes, local traffic connections, light rail transit and a multi-use path. For the LPA (Options A and B), the I-5 North Portland Harbor bridge would be retained rather than replaced. This change occurred as a result of the Cost Reduction/Savings Measures that the project identified in 2009 (as described later in this section). The other smaller structures would still be built with Options A or B, but the functions of some would vary from the DEIS alternatives. Both options, as well as the DEIS alternatives, include two new bridges to carry traffic merging onto or exiting off of mainline I-5 between the Marine Drive and Hayden Island interchanges. The new structure on the west side of I-5 would serve as a collector-distributor road for southbound traffic, while the new structure on the east side of I-5 would serve as a collector-distributor road for northbound traffic.

Other changes in this location were made in response to comments received during the DEIS comment period. These comments led to a public process to refine the Hayden Island interchange design. The City of Portland, a co-sponsor for the project, also raised concerns about the size of the interchange. In the design at that time, the collector-distributor lanes ran adjacent to the I-5 mainline between the Hayden Island and Marine Drive interchanges, adding width to the footprint of the highway on the Island. To address these concerns, the CRC project worked with the City of Portland and local stakeholders to refine the design for the Hayden Island and Marine Drive interchanges, resulting in what is referred to in the FEIS as LPA Option A. Option A and Option B are described in detail below.

LPA Option A:

The main differences between Option A and the DEIS alternatives is that Option A retains rather than replaces the I-5 North Portland Harbor bridge, and it includes vehicle traffic lanes on the proposed LRT bridge to provide local vehicle access from Hayden Island to Marine Drive. In Option B, as well as in the DEIS build alternatives, access between Hayden Island and Marine Drive/Martin Luther King Jr. Blvd (MLK) is via collector-distributor lanes built on new structures adjacent to the I-5 mainline. Option A also has these collector-distributor lanes but they are on generally narrower structures.

Option A would also build four new, narrower parallel structures across the waterway, three on the west side and one on the east side of the existing bridge. The DEIS design also had four structures crossing the river, but the functions and precise locations varied from Option A. All the same traffic movements exist within Option A, Option B, and the DEIS option.

Three of the new structures would carry on- and off-ramps to mainline I-5. This includes two structures west of the existing bridges that would carry traffic merging onto or exiting off of I-5 southbound, and

one new structure on the east side of I-5 that would serve as an on-ramp for traffic merging onto I-5 northbound.

The fourth new structure would be built slightly farther west and would include light rail transit, a multi-use path for pedestrians and bicyclists, and two roadway lanes to carry local traffic to and from Hayden Island. This same bridge, without the local traffic lanes, was included among the range of DEIS alternatives. The length of each new structure would be between 800 and 1,000 feet, depending on its location and the angle relative to the channel. Span lengths would vary by bridge, and the existing navigation channel would be preserved. All of the new structures would have at least as much vertical clearance over the river as the existing North Portland Harbor bridges.

This option is the preferred option and is shown as the "Current Plan" in Exhibits A, B and C, which compare Option A to the DEIS design. Option A and Option B are compared to each other in Exhibit H and Exhibit I.

LPA Option B: As noted above, Option B is also a variation on the DEIS designs. Like Option A, the North Portland Harbor bridges would be retained rather than replaced. The main difference between Option B and Option A is how local traffic would connect from Hayden Island to Marine Drive across North Portland Harbor. This local traffic would travel on the collector-distributor lanes that would parallel each side of I-5 over North Portland Harbor rather than on local traffic lanes on the LRT bridge. Traffic would not need to merge onto mainline I-5 to travel between the island and Marine Drive/MLK. (See Exhibit C – North Portland Harbor)

Option B would build the same number of new structures over North Portland Harbor as Option A, although the locations of certain functions on those bridges would differ. The same movements that are in Option A are in Option B, but in a different configuration.

With LPA Option B, the new structure on the west side of I-5 would serve as a collector-distributor road for southbound traffic, while the new structure on the east side of I-5 would serve as a collector-distributor road for northbound traffic. The overall footprint of the Hayden Island interchange is slightly wider with Option B than Option A due to the collector-distributor lanes running parallel to the I-5 mainline (Option A and Option B are compared to each other in Exhibit H and Exhibit I).

DEIS design:
All DEIS alternatives called for replacing the North Portland Harbor Bridge and building four new structures. Vehicle movements for all DEIS alternatives are very similar to LPA Option B: I-5 through traffic would travel on the mainline; local traffic access would be provided via collector-distributor lanes located on the two new structures adjacent to the highway bridge; the light rail/ multi-use path bridge (located farthest to the west) would not include local vehicle traffic (The DEIS design for Hayden Island, North Portland Harbor and Marine Drive is illustrated in Exhibits A, B and C).

(2) Other Design Changes and Refinements

Transit Station Platforms
Since the publication of the DEIS there have been changes to the light rail transit station platform locations. The current LPA has the same number of station platforms, but the locations of some have changed (see Exhibit E – Vancouver Light Rail). These changes are described below.

The table below shows the locations of the transit station platforms in the DEIS and the current LPA.

DEIS Transit Stations	*LPA Transit Stations*
Elevated on Hayden Island	Elevated on Hayden Island

A split platform on 6th between Washington and Main and between 6th and 7th on Washington	Dual platforms between 5th and 6th on Washington
Between 11th and 12th on Washington and Broadway	Between 9th and Evergreen on Washington and Broadway
Between 15th and 16th on Washington and Broadway	Between 15th and 16th on Washington and Broadway
At Clark College (either in the Park and Ride or on McLoughlin)	At Clark College (on McLoughlin)

Additional investigation, coordination with the City of Vancouver and the public, 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 made for two reasons: 1) to provide equal spacing between the 6th St. platform and the Mill Plain platforms; and 2) to locate the station closer to planned development in Downtown Vancouver, including the Riverwest development, much of which is expected to occur in the southern part of downtown.

The change in location of the station platforms would not have a change in environmental impacts—there would still be the same number of stations. The blocks for the DEIS and LPA station locations are located in the downtown Vancouver central business district, with commercial retail and office and residential uses. Acquisitions would not be impacted because the station platforms are located within existing ROW.

Park and Rides

The DEIS reported up to 8 park and ride facilities and the current LPA includes three of those park and rides. The table below outlines the locations of the park and rides in the DEIS and the LPA.

DEIS Park and Rides	*LPA Park and Rides*
Clark College: bounded by I-5, McLoughlin, and Clark College	Clark College: bounded by I-5, McLoughlin, and Clark College
Mill Plain (two locations reported in the DEIS): 1) bounded by Washington, Main, 15th and 16th 2) bounded by Broadway, Main, 16th and 17th	Mill Plain: bounded by Washington, Main, 15th and 16th
Columbia: bounded by Washington, Columbia, 4th, and 5th	Columbia, bounded by Washington, Columbia, 5th, and including half the block between 3rd and 4th
Three surface lots: bounded by 5th, railroad tracks,	*Not included in LPA*

I-5 and Columbia.	
Kiggins Bowl	*Not included in LPA*
39th and Main	*Not included in LPA*

The DEIS reported up to 3220 park and ride spaces and up to 3385 trips generated during the AM and PM peak. In the LPA there is a total of 2900 spaces and 3025 trips generated during the AM and PM peak.

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 with the LPA. 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 locations of the park and rides in the LPA are within the range reported in the DEIS. The total number of spaces and trips generated are within the range reported in the DEIS. One of the park and rides (Columbia) would have more displacements than included in the DEIS and traffic impacts would be slightly changed, as described in the *Change in Impacts* Matrix at the end of this document (see the *Transportation* and *Acquisitions, Displacements and Relocations* sections).

Marine Drive Interchange Design

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 selection of the LPA, the CRC project team 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, the Oregon Department of Transportation, 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 CRC project team analyzed the traffic operations, property impacts, and potential environmental effects for a range of interchange designs. The Marine Drive interchange design included in the LPA and analyzed in this FEIS 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 specific changes from the DEIS to the current LPA are: a smaller footprint for the overpass structure; North Vancouver Way is extended to connect to the local bridge to/from Hayden Island; the Marine Drive-I-5 N flyover and MLK to I-5 N direct connection are deferred (these movements can still be made, but the direct connections are deferred, as described in Cost Reduction/Saving Measures below) (See Exhibit A – Marine Drive Interchange)

The design included in the LPA is within the range of impacts of the options analyzed in the DEIS.

The process to develop the current design of the Marine Drive interchange was prior to the process to develop LPA Option A. However, due to the proximity and overlap of the improvements in the Marine

Drive interchange and Option A it is not feasible to separate the environmental impacts, therefore impacts in the Marine Drive, North Portland Harbor, and Hayden Island areas are included with Option A in the *Change in Impacts* matrix at the end of this document.

Number of Lanes on the 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 Project Sponsors Council (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 gases, 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. 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.

The current LPA (10 lanes) is within the range reported in the DEIS (8-12 lanes) and traffic performance on the I-5 mainline is within the range reported in the DEIS.

Number of Bridges over the Columbia River
The DEIS evaluated a two-bridge design 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.

Several advantages of the two-bridge design were identified in the DEIS, 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. However, the nature of this bridge configuration – operating light rail beneath one highway bridge deck and providing a pedestrian and bicycle path under the other deck, both within the bridge's support structures – is an uncommon design, and required further engineering and evaluation of this design to determine its feasibility. Since the publication of the DEIS, the agencies sponsoring the project have worked with the project's federal lead agencies, FTA and FHWA, and determined that the two-bridge design is feasible. Therefore, the two-bridge design is being carried forward for as the LPA.

The LPA uses a two-bridge design which was included as an option in the DEIS, and the impacts are within the range of impacts reported in the DEIS.

Light Rail Alignment across Hayden Island
The DEIS evaluated two transit alignments across 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 (City of Portland 2009), 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 LPA design includes the adjacent transit alignment on Hayden Island.

The LPA uses an alignment from the DEIS, and impacts are within the range of impacts reported in the DEIS.

Light Rail Alignment in 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 CRC project team, 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 voted to recommend that light rail run on the couplet on Washington and Broadway Streets through downtown Vancouver.

The LPA uses an alignment from the DEIS, and the impacts are within the range of impacts reported in the DEIS.

Light Rail Alignment East-west to Clark College
The light rail alignment east-west to Clark College was addressed in a separate re-evaluation in April 2010.

Cost Reduction/Saving Measures
Since the publication of the DEIS, it has become increasingly evident that there will likely not be adequate funding to construct all elements of the LPA in a single phase. This compelled the project sponsors to identify ways to reduce project costs and/or to phase construction. The project team, working with stakeholder groups, identified several elements of the project design that could be modified or postponed to reduce construction costs. These would reduce or delay some of the project benefits but would still allow the project to meet the purpose and need.
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. This shift changes some impacts on the island; these are discussed as part of LPA Options A and B.

- *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 CD would be one lane rather than two lanes. This slightly reduces cost, actually provides for a smoother transition on the CD 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. The acquisitions required for this ROW were included in the DEIS so the LPA is within the range of impacts reported in the DEIS.

- *Defer northern improvements to the SR 500 interchange*: This would defer the northernmost I-5 improvements so that they would not be constructed in the initial project phase but could be constructed at some unknown date in the future. This would retain the existing freeway-to-freeway connection at the I-5/SR 500 interchange (I-5 northbound to SR 500 westbound, and SR 500 westbound to I-5 southbound). No added impacts would result.
- *Defer I-5 to Victory Boulevard braided ramp*: This would retain the existing connections between I-5 southbound and Victory Boulevard. The braided ramp connection could be constructed separately in the future as funding becomes available. No added impacts would result.
- *Defer the flyover connection at the Marine Drive interchange*: This would defer the direct connection provided by a flyover ramp between eastbound Marine Drive and I-5 northbound. The CRC project improvements to the interchange would instead provide connection through a signal-controlled intersection. No added impacts would result.

It is important to note that the final three cost-reduction measures that defer certain elements of the project may or may not be funded with construction of the first phase of the LPA. These elements would be included if funding is available, but this will not be known until closer to the time of construction when financing for the project is secured. The likely effects of the project both with and without these potentially deferred elements are compared in the FEIS. Analysis of the LPA assuming that these three elements would be deferred is referred to in the FEIS as "the LPA with highway phasing." For the purpose of this re-evaluation the impacts that would be deferred are still included in the total impacts from the LPA and are reported herein.

Bridge Type
The DEIS did not specify a bridge type but instead described the bridge in terms of dimensions, vertical clearances, alignment, piers and similar descriptions of the footprint and three dimensional envelope. The LPA has specified that the bridge will be a composite truss. This change is addressed in the Composite Truss Re-evaluation submitted in March 2011.

SR 14 Interchange
The DEIS reported two options for the SR 14 interchange replacement crossing – Left Loop and Dual Loop. The LPA is a slightly modified version of the Dual Loop. The LPA removed the tunnel from southbound I-5 to eastbound SR 14, accommodating that movement at-grade. There would be no change in impacts (transportation, acquisition or other), from the tunnels now proposed as at-grade. Local street improvements in the LPA include roundabouts and a realignment of Columbia Way to the west of the interchange. The current LPA also includes a surface parking lot within the loop ramp on the west side of the interchange for parking mitigation. The loop ramp on the east side of the interchange has been shifted to the west to reduce impacts to the Vancouver National Historic Reserve (VNHR). The SR 14 westbound to I-5 northbound ramp has been reduced from two lanes to one, reducing impacts to the VNHR (See Exhibit D – SR 14 Interchange).

The roundabouts and realignment of Columbia Way have evolved through coordination with the City of Vancouver. As modeled, the roundabouts at the connections to SR14 function more efficiently than conventional intersections and are more supportive of the City's vision for waterfront connectivity and circulation. The roundabouts along Columbia Way complement the operations but are not necessarily critical to the operations of the roundabouts connecting to SR14. Other intersection types along Columbia Way are being considered and continue to be developed in coordination with the City of Vancouver.

The change in design resulting from the roundabouts has increased partial acquisitions on two parcels currently used as a surface parking lot. The realignment of Columbia Way and the surface parking lot

have not changed environmental impacts. Acquisition impacts to the VNHR have been reduced from the realignment of the east loop and the redesign of the SR 14 to I-5 ramp.

Fourth Plain Interchange
The DEIS showed two intersections on the east side of I-5 at the Fourth Plain Interchange, one at Fourth Plain Boulevard and one to the south of Fourth Plain regulating on and off-ramps. The LPA would have one intersection at Fourth Plain Boulevard (See Exhibit F – Fourth Plain Interchange). This design change was made to reduce costs and to improve intersection functionality. This change would result in nominal change in ROW acquisition and would not change displacements or other environmental impacts.

SR 500 Interchange
The SR 500 interchange in the LPA would be similar to the DEIS. The tunnels in the DEIS from southbound I-5 to Fourth Plain would be a three-span bridge structure (overpass) in the LPA. There would be minimal change in aesthetics and net decrease in acquisitions and no change in other impacts (transportation, displacement or other), from the change in design (See Exhibit G SR 500 Interchange).

Community Connector
The community connector was reported as a potential mitigation measure in the DEIS. The general location was described in the DEIS as between Evergreen Boulevard and 5th Street. Since publication of the DEIS, the general shape, position and location have been conceptually developed. Acquisition, Historic/Archeological, and 4(f) impacts have been identified and are included in the *Change in Impacts* matrix. The connector would have a positive effect on Land Use, Neighborhoods and Visual. The community connector results in additional acquisition of property from the VNHR than would be required without the connector. However, overall there is a net decrease in property acquisition from the VNHR from the DEIS to the LPA. The property acquisition from the VNHR, including acquisition around the Barracks Hospital, result in a 4(f) use, but the LPA would result in a 4(f) use even without the community connector.

Multi-Use Path
The refinements to the multi-use path concept since the DEIS are the result of on-going coordination with the two cities and the pedestrian bicycle advisory committee. In the DEIS the path was conceived to connect near 5th Street on the Washington side. The length needed to connect varied based on whether the river crossing was 3-bridge or 2-bridge. The path in the 2-bridge option was at a lower elevation (below the bridge deck) so it needed less length to touch down in Vancouver. The touchdown for the 2-bridge design option for Alternatives 2 and 3 was near the Columbia Park and Ride. The path on the 3-bridge option was at a higher elevation (on the bridge deck) and therefore needed a switch back at the touchdown to provide the additional length needed to reach ground level. Through the coordination work with the stakeholders, the current path has been designed to be under the north bound highway bridge deck. The connection to Vancouver is by way of a loop down to the waterfront connecting at Columbia Street which is the existing designated north-south bike route in downtown Vancouver and it connects near the waterfront trail (See Exhibit D – SR 14 Interchange).

In Oregon a similar coordination process has occurred. The multi-use path was conceived in the DEIS to be west of the LRT alignment with options to connect down to Hayden Island with ramps, loops and stairs. In the LPA, the path is located on the east side of the LRT alignment. It includes a loop down to Hayden Island drive with ramps and stairs connecting at the LRT station. The location of the path as it crosses Hayden Island and the location of the Oregon connections will continue to be refined through coordination with the City of Portland, PBAC and the public (See Exhibits A. B and C)

The LPA would still have some out of direction travel and at least one at-grade crossing, but would result in better connectivity, fewer at-grade crossings, and less out of direction travel than reported in the DEIS. There would be no meaningful change in impacts from the DEIS alternatives.

Construction Buffer in North Portland Harbor
Since publication of the DEIS, the temporary construction buffer for in-water work in North Portland Harbor was increased from 20 feet to 50 feet, in order to ensure safety and allow sufficient space for necessary construction machinery. Expanding the temporary construction buffer will require displacing additional floating homes that are located too close to the proposed structures to maintain safety. This change applies to all of the alternatives in the DEIS as well as the LPA Options A and B. The changes in impacts are addressed in Option A in the *Change in Impacts* matrix.

HAVE ANY NEW OR REVISED LAWS OR REGULATIONS BEEN ISSUED SINCE APPROVAL OF THE LAST ENVIRONMENTAL DOCUMENT THAT AFFECTS THIS PROJECT? If yes, please explain.

☐ **NO**
☒ **YES**

Yes, FHWA published a final rule updating 23 CFR 772 on "PROCEDURES FOR ABATEMENT OF HIGHWAY TRAFFIC NOISE AND CONSTRUCTION NOISE" on July 13, 2010.

IS THE LIST OF THREATENED AND ENDANGERED SPECIES (NMFS AND USFWS) MORE THAN 6 MONTHS OLD?
☒ **NO**
☐ **YES (STOP! Endangered Species lists and analysis MUST be updated.)**

WILL THE NEW INFORMATION HAVE THE POTENTIAL TO CAUSE A CHANGE IN THE DETERMINATION OF IMPACTS FROM WHAT WAS DESCRIBED IN THE ORIGINAL ENVIRONMENTAL DOCUMENT FOR ANY OF THE AREAS LISTED BELOW? For each impact category, please indicate whether there will be a change in impacts. For all categories with a change, continue to the table at the end of this worksheet and provide detailed descriptions of the impacts as initially disclosed, new impacts and a discussion of the changes. The change in impact may be beneficial or adverse.

Transportation	☒ **Yes**	☐ **No**
Land Use and Economics	☒ **Yes**	☐ **No**
Acquisitions, Displacements, & Relocations	☒ **Yes**	☐ **No**
Neighborhoods & Populations (Social)	☒ **Yes**	☐ **No**
Visual Resources & Aesthetics	☒ **Yes**	☐ **No**
Air Quality	☐ **Yes**	☒ **No**
Noise & Vibration	☒ **Yes**	☐ **No**
Ecosystems (Vegetation & Wildlife)	☒ **Yes**	☐ **No**

Water Resources	☒ Yes	☐ No
Energy & Natural Resources	☐ Yes	☒ No
Geology & Soils	☐ Yes	☒ No
Hazardous Materials	☒ Yes	☐ No
Public Services	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Historic, Cultural & Archaeological Resources	☒ Yes	☐ No
Parklands & Recreation	☒ Yes	☐ No
Construction	☒ Yes	☐ No
Secondary and Cumulative	☐ Yes	☒ No

Will the changed conditions or new information result in revised documentation or determination under the following federal regulations?

Endangered Species Act	☐ Yes	☒ No
Magnuson-Stevens Act	☐ Yes	☒ No
Farmland Preservation Act	☐ Yes	☒ No
Section 404-Clean Water Act	☐ Yes	☒ No
Floodplain Management Act	☐ Yes	☒ No
CERCLA (Hazardous Materials)	☐ Yes	☒ No
Section 106 National Historic Preservation Act	☐ Yes	☒ No
Uniform Relocation Act	☐ Yes	☒ No
Section 4(f) Lands	☐ Yes	☒ No
Section 6(f) Lands	☐ Yes	☒ No
Wild & Scenic Rivers	☐ Yes	☒ No
Coastal Barriers	☐ Yes	☒ No
Coastal Zone	☐ Yes	☒ No
Sole Source Aquifer	☐ Yes	☒ No
National Scenic Byways	☐ Yes	☒ No
Other: Marine Mammal Protection Act	☐ Yes	☒ No

If you checked yes to any of these, describe how the changes impact compliance and any actions needed to ensure compliance of the new project: There have been changes (reductions) in impacts to Section 106 resources, Section 4(f) resources and Section 6(f) lands since the DEIS, but these have already been included in the current Section 106 documentation, the current Section 4(f) Evaluation and Section 6(f) documentation. There have also been changes relevant to the Endangered Species Act and the Marine Mammal Protection Act but these are covered by the existing Biological Opinion and the

information submitted for MMPA compliance. Future Section 404, Magnuson-Stevens Act, CERCLA and other regulatory documentation will capture the most current impacts at the time of submitting permit applications or approvals.

Will these changes or new information likely result in substantial public controversy?
☐ **Yes** ☒ **No**

Comments: There is substantial public controversy regarding the project but the changes covered in this re-evaluation do not meaningfully affect the controversial elements or add new controversy. Many of these changes were made specifically to address public concerns and reduce controversy.

COMMENTS:

CONCLUSIONS AND RECOMMENDATIONS: As shown in this re-evaluation, impacts associated with the current LPA are generally within the range of impacts reported in the DEIS. Many of the project changes made since the DEIS are in response to public comments through the NEPA process and are in coordination with local officials and the public. Many impacts have been reduced through the LPA refinements. Some of the project refinements or new information result in slightly higher impacts, but none of these would be new significant impacts. The project refinements do not affect any regulatory approvals already received (namely, the Biological Opinion) and they have already been addressed or are being incorporated into on-going documentation for compliance with other environmental regulations (such as Section 106, Section 4(f) and Section 6(f)). Because of these facts, the CRC recommends that the Final EIS would be the appropriate next step in the NEPA process for the current LPA.

LIST OF ATTACHMENTS:

Footprint of DEIS vs. LPA
Project Area Map
Exhibit A: Marine Drive Interchange
Exhibit B: Hayden Island Interchange
Exhibit C: North Portland Harbor
Exhibit D: SR 14 Interchange
Exhibit E: Vancouver Light Rail
Exhibit F: Fourth Plain Interchange
Exhibit G: SR 500 Interchange
Exhibit H: LPA Option A/Option B Marine Drive
Exhibit I: LPA Option A/Option B Hayden Island

SUBMITTED BY:
By signing this, I certify that to the best of my knowledge this document is complete and accurate.

Name Heather Wills Title Environmental Manager	Date 5/19/11

Submit two paper copies of this form, attachments, and a transmittal letter recommending a NEPA finding to the address below. Submit an electronic version to your area FTA Community Planner and FHWA Project Manager. Contact FTA or FHWA at the number below if you are unsure who this is or if you need the email address. Modifications are typically necessary. When the document is approved, FTA and FHWA may request additional copies.

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Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts

This matrix describes the environmental impacts from the current LPA and as reported in the DEIS. Total impacts from the current LPA are evaluated and compared to the range of impacts reported in the DEIS. The current LPA is similar to DEIS Alternative 3 (replacement bridge with light rail and the Clark College MOS). Where the range of impacts associated with Alternative 3 or the Clark College MOS differ than the total range of impacts reported in the DEIS the range of impacts from Alternative 3 and/or Clark College MOS is reported in parentheses, below. Where applicable, the main project design changes (LPA Option A/Option B) are listed individually and the relevant change in impacts are described.

The matrix below describes the differences in total impacts between the FEIS LPA and the DEIS alternatives, and between LPA Option A specifically and the DEIS alternatives. There is no discussion of the LPA Option B differences because (1) LPA Option B is not the preferred option and (2) LPA Option B would have no additional impacts beyond those described below for the FEIS LPA, LPA Option A and the DEIS alternatives.

Design changes with few or no changes in environmental impacts are described in the narrative above. *Note: the total change in impacts is the sum of all changes in impacts across the whole project, including the main project changes and all other changes not listed below.*

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
Transportation	**Total** ***Vancouver Local Street Performance:*** The DEIS reported a range of local street performance depending on alternative. 76 intersections analyzed in the DEIS. *2030 AM peak* - up to 20 intersections would degrade from No-Build conditions and operate unacceptably *2030 PM peak* - up to 14 intersections would degrade from No-Build conditions and operate unacceptably (The DEIS reported that Alternative 3 would have up to 9 intersections)	**Total** ***Vancouver Local Street Performance:*** 92 intersections analyzed in FEIS. *2030 AM peak* *LPA:* - 1 intersection would degrade from No-Build conditions and would operate unacceptably. *LPA with highway phasing:* - 2 intersections would degrade from No-Build conditions and would operate unacceptably. *2030 PM peak* *LPA:* - 3 intersections would degrade from No-Build conditions and would operate unacceptably. *LPA with highway phasing:* - 6 intersections would degrade from No-Build conditions and would operate unacceptably Overall, both the LPA and LPA with highway phasing would improve local street operations in Vancouver in comparison with 2030 No-Build conditions.	**Total** ***Vancouver Local Street Performance:*** The number of intersections operating unacceptably in the FEIS is within the range reported in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Portland Local Street Performance: 37 intersections analyzed in the DEIS. *2030 AM peak* - up to 2intersections would degrade from No-Build conditions and operate unacceptably (Alternative 3 would have 1 intersection) *2030 PM peak* - up to 8 intersections would degrade from No-Build conditions and operate unacceptably (Alternative 3 would have 1 intersection)	***Portland Local Street Performance:*** 38 intersections analyzed in FEIS. *2030 morning peak* *LPA & LPA with highway phasing:* - 1 intersection would fail to meet standards. *2030 afternoon/evening peak* *LPA & LPA with highway phasing:* - no intersections would fail to meet standards.	***Portland Local Street Performance:*** The number of intersections operating unacceptably in the FEIS is within the range reported in the DEIS for Alternative 3.
	On-Street Parking: The DEIS reported up to 325 on-street parking spaces removed from Vancouver. (The Clark College MOS would have up to 197 parking on-street spaces removed from Vancouver.)	***On-Street Parking:*** The LPA would remove 422 on-street parking spaces from Vancouver.	***On-Street Parking:*** The number of on-street parking spaces removed from the maximum number reported in the DEIS for any transit alignment to the current LPA has increased by 97. The number of on-street parking spaces removed from the maximum number reported in the DEIS for the Clark College MOS to the current LPA has increased by 225.
	Access Impacts: The DEIS reported that up to 31 access points could be lost from Vancouver for the Clark College MOS.	***Access Impacts:*** The LPA would remove 33 access points.	***Access Impacts:*** The LPA would impact 2 more access points than reported in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Park and Rides: The DEIS reported up to 8 park and ride facilities with up to 3220 spaces and up to 3385 trips generated (AM and PM peak). The locations, number of spaces, and total trips generated (AM and PM peak) of the eight park and rides (park and rides in the current LPA are in **bold**): • **Clark College**, bounded by I-5, McLoughlin and Clark College (1100 spaces, 1440 trips) • **Mill Plain**, bounded by Washington, Main, 15th and 16th (460 spaces, 485 trips) • **Columbia**, bounded by Washington, Columbia, 4th, and 5th ***and*** 3 surface lots bounded by 5th, railroad tracks, I-5 and Columbia (1070 trips) • Kiggins Bowl (N/A) • 39th and Main (N/A) (The Clark College MOS would have two park and ride facilities with about 1,300 parking spaces: a surface lot at Kiggins Bowl [160 trips] and a parking structure at Clark College [1440 trips].) *Note that the trips generated of each individual park and ride do not sum to the "total" trips generated because the*	***Park and Rides:*** In the LPA there is a total of 3 park and rides with 2900 spaces and 3025 trips generated (AM and PM peak). The locations, number of spaces, and total trips generated (AM and PM peak) of the three park and rides: • Clark College, bounded by I-5, McLoughlin, and Clark College (1910 spaces, 2005 trips) • Mill Plain, bounded by Washington, Main, 15th and 16th (420 spaces, 430 trips) • Columbia, bounded by Washington, Columbia, 5th, and half the block of between 3rd and 4th (570 spaces, 590 trips)	***Park and Rides:*** The number of park and rides is within the range that was reported in the DEIS. The total number of spaces and trips generated are within the range reported in the DEIS. The LPA would have more spaces at Clark Park and Ride, but fewer at Columbia Park and Ride. The Clark Park and Ride is in essentially the same location as evaluated in the DEIS but the design has been revised to reduce 4(f) resource impacts on the adjacent parcel. Two locations were identified in the DEIS for the Mill Plain Park and Ride. The current location of the park and ride is one of the locations from the DEIS. The chosen location is currently a vacant block and will reduce business impacts as well as enhance accessibility for park and ride users. The location of the Columbia Park and Ride is the same as evaluated in the DEIS, however the footprint of the park and ride has expanded by half a block, adding one additional building displacement (addressed in acquisitions and displacements, below). (The LPA would provide more parking spaces and structures than what was reported in the DEIS for the Clark College MOS)

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	park and rides were designed to different sized in the DEIS depending on alignment and segment options. ***Transit Operation and Maintenance Cost:*** DEIS reported an annual operating and maintenance cost of up to $114.4 million (for combined light rail and bus service). Costs are estimated at $70 million for the No-Build (2007 dollars). ***Pedestrian and Bicycle:*** The DEIS reported a range of bicycle and pedestrian improvements and impacts depending on the alternative. The most substantial changes proposed in the DEIS are described below. From Portland, the existing bike/ped access on the east side of the existing bridge across North Portland Harbor would be removed and users would be required to travel out of direction to access the new pathway along the high-capacity transit alignment. On Hayden Island, the new pathway would require users to exit the path and travel at-grade. Crossing the Columbia River with the	***Transit Operation and Maintenance Cost:*** LPA annual operating and maintenance cost of about $76 million (for combined light rail and bus service). These costs compare with a current annual operating cost of nearly $66 million, and $70 million for the No-Build (2007 dollars). ***Pedestrian and Bicycle:*** The LPA would require out of direction travel to the arterial bridge on the west side of the NPH bridges. The pathway would cross the light rail tracks and arterial bridge roadway at-grade. The multi-use pathway (MUP) across Hayden Island would be entirely grade-separated from vehicle traffic. Access to the multi-use path would be via stairs, a ramp, or potentially an elevator. Over the river, the MUP would be under the deck of the northbound traffic. Access to the MUP from downtown Vancouver would be by a ramp and either stairs or elevator.	***Transit Operation and Maintenance Cost:*** The O & M costs are within the range of those reported in the DEIS. ***Pedestrian and Bicycle:*** The LPA would still have some out of direction travel and at least one at-grade crossing, but would result in better connectivity, fewer at-grade crossings, and less out of direction travel than reported in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	2-bridge option the MUP would be under the deck of southbound traffic and could have the MUP travel through at-grade intersections. Connections consisting of ramps, stairs, or elevators would connect with existing and planned sidewalks and pathways in Vancouver, Hayden Island and near Marine Drive.		

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Option A Area ***Local Street Performance:*** The replacement crossing would include auxiliary lanes directly connecting Hayden Island and Marine Drive, but the supplemental crossing would not. With a supplemental crossing, all vehicle trips between Hayden Island and Marine Drive would need to travel on I-5 to either Vancouver or Victory Boulevard and turn around. The supplemental crossing would degrade intersection operations in the Marine Drive and Hayden Island areas. The replacement crossing would improve intersection operations in the Marine Drive and Hayden Island areas, with only one intersection operating unacceptably.	**Option A** ***Local Street Performance:*** For LPA Option A, all vehicle trips between Hayden Island and Marine Drive would be on the arterial bridge separate from I-5. Portland's local street operations would improve, or perform no worse than the No-Build, for all intersections associated with Option A.	**Option A** ***Local Street Performance:*** LPA Option A would result in local access between Hayden Island and Marine Drive on an arterial bridge separate from the I-5 mainline. All intersections associated with Option A would improve or perform no-worse than the No-Build. The impacts from Option A are within the range of the level of impacts reported in the DEIS for the replacement bridge crossing.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Pedestrian and Bicycle: The supplemental and replacement options would remove the current bike/ped access on the east side of the existing bridge and require users to travel out of direction to access the new pathway along the high-capacity transit alignment. The DEIS reported that with the supplemental option, the new pathway could require users to exit the path and travel at-grade on Hayden Island. On Hayden Island, the replacement option would be entirely grade separated.	***Pedestrian and Bicycle:*** LPA Option A would require out of direction travel to the arterial bridge on the west side of the NPH bridges. The pathway would cross the light rail tracks and arterial bridge roadway at-grade. The multi-use pathway across Hayden Island would be entirely grade-separated from vehicle traffic.	***Pedestrian and Bicycle:*** LPA Option A would still result in out of direction travel and at least one at-grade crossing, the within the range reported in the DEIS.
	Temporary Effects: Local Traffic During construction of the replacement crossing, staging the construction of the North Portland Harbor structure would be the main issue at the Hayden Island interchange. Restricted lane widths, loss of existing auxiliary lanes, and associated loss of capacity would likely expand the hours of congestion and lower the level of service during other heavily traveled times of day.	***Temporary Effects: Local Traffic*** For Option A construction staging would cause increased congestion on traffic between Hayden Island and Marine Drive, until the arterial bridge is opened for traffic.	***Temporary Effects: Local Traffic*** LPA Option A would result in increased congestion during construction, the same as reported in the DEIS. Option A has the potential to reduce temporary traffic impacts if the arterial bridge opens for traffic while construction on the I-5 mainline is still being completed.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Temporary Effects: Bike/Ped On Hayden Island, once construction of the North Portland Harbor Bridge begins, it would be necessary to eliminate the current bike path. The transit crossing of the harbor to accommodate non-motorized travel would ideally be finished before this closure. Construction of the interchange and crossing could be delayed approximately 13 months and not delay the overall completion of the interchange, which would allow for this sequencing. If this is not feasible then a shuttle or construction of a temporary structure may be possible, but could present access issues.	***Temporary Effects: Bike/Ped*** Bike/ped detour routes would require temporary out-of direction travel.	***Temporary Effects: Bike/Ped*** LPA Option A would result in bike/ped detours but would keep the NPH crossing open. This is less impact than the greatest impact reported in the DEIS, which was a temporary structure or shuttle across NPH.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
Land Use and Economics	**Total** Direct land use impacts ranged from minor to moderate depending on DEIS Build Alternative; commercial impacts ranged from moderate to high; impacts to regional economy ranged from moderately to highly beneficial (Alternative 3 was reported as highly beneficial); consistency with local plans ranged from low to high consistency (Alternative 3 was reported as high consistency); and increased TOD potential ranged from low to high (Alternative 3 was reported as moderate to high TOD potential). Total number of employees impacted by commercial displacements reported for Alternative 3 ranged, with a maximum reported of 565. Total annual sales impact for Alternative 3 ranged, with a maximum of $112 million. Property tax impacts ranged, with a maximum of $240,000.	**Total** Direct land use impacts would be minor; commercial impacts would be moderate; impacts to regional economy would be highly beneficial; LPA would be consistent with local plans; and increased TOD potential would be moderate. The total number of employees impacted by commercial displacements would be 916; total annual sales impact would be $103.6 million, and property tax impacts would be $267,600.	**Total** Direct land use impacts, commercial impacts, impacts to the regional economy, plan consistency, and increased TOD potential are all within the reported DEIS ranges. The LPA would have more employees impacted by commercial displacements than the DEIS alternatives (including Alternative 3). The increase in business displacements and consequently, number of employees impacted by displacements and property tax impacts, is due to design refinements, new information about existing uses, and an increase in area assumed for construction safety and staging activities. Total annual sales impact is within the range of the DIES.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Option A Area [The Hayden Island Plan had not been created at publication of the DEIS] The DEIS reported that in the Marine Drive interchange area the project would displace up to 5 businesses with up to 85 employees and up to $14.8 million in annual sales. On Hayden Island, 29 businesses with 430 employees and $56 million in annual sales would be displaced (DEIS Economics Tech Report).	**Option A** The Hayden Island Plan states that *"the CRC project must provide the capability to access local street systems south of North Portland Harbor without using the freeway."* Option A would meet this aspect of the Plan. Option A would provide vehicular access between Marine Drive and Hayden Island on an arterial bridge. In the Marine Drive interchange area, 5 businesses with 25 employees and $10.6 million in annual sales would be displaced with Option A. On Hayden Island, 39 businesses with a total of 643 employees and $62.7 million in annual sales would be displaced.	**Option A** Option A is consistent with the Hayden Island Plan by providing local access to and from Hayden Island separate from the I-5 mainline. The increase in business displacements from the DEIS to the current design (with either Option A or Option B) is not due to the addition of Option A to the LPA. The increase in business displacements is due to other design refinements, new information about existing uses, and an increase in area assumed for temporary construction activities. Either LPA Option A or B (and the DEIS alternatives) would require more business displacements than assumed in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
Acquisitions, Displacements, & Relocations	**Total** The DEIS identified 301 parcels totaling over 73 acres that could be impacted by full or partial acquisitions (From DEIS Appendix D). The DEIS identified 57 residences that could be displaced and up to 68 businesses that could be displaced (From DEIS Appendix D). (The DEIS reported that Alternative 3 would require acquiring up to 46 acres of land; would displace 36 residences--including up to 20 floating homes; and up to 41 businesses.	**Total** The LPA would have 202-214 parcel acquisitions (73 full and 129-141 partial). Total area acquired would be 89-91 acres. The LPA would have 57 residential displacements and 69-70 business displacements.	**Total** The number of parcels acquired and residences and businesses displaced is within the range described in the DEIS. The LPA would result in a greater number of residential and business displacements than reported for Alternative 3 in the DEIS. Changes in specific acquisitions and displacements are due to design refinements, new information about existing uses, and an increase in short-term acquisitions assumed necessary for construction safety, staging and other activities. A large number of the displacements are on Hayden Island. The public process used to develop the current interchange design option on Hayden Island considered environmental impacts, including acquisitions and displacements, and provided many opportunities for the public to comment on these changes. The option preferred by the public (LPA Option A) was unanimously approved by the CRC Project Sponsors Council, made up of local officials, and is now included in the FEIS as the preferred option. In addition, the project increased the assumed safety buffer for constructing the North Portland Harbor bridges, which results in temporarily displacing additional floating homes from

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
			North Portland Harbor. *Additional displacements:* Through discussions with a business owner since publication of the DEIS it was determined that the side-running couplet would restrict access and displace one business (a funeral home) and two residential apartments above the business.
	Option A Area The DEIS reported a range of impacts depending on the alternative. Around the Marine Drive Interchange, up to 5 businesses would be displaced. On Hayden Island, up to 29 businesses would be displaced. In North Portland Harbor, up to 27 floating homes were identified as potentially displaced. (Alternative 3 was reported as having up to 20 floating homes impacted)	**Option A** Option A would displace 5 businesses around the Marine Drive Interchange and displace 39 businesses on Hayden Island. LPA Option A (or Option B) would require displacement of 32 floating homes on Hayden Island and 3 floating homes and two on-land residences around the Marine Drive Interchange.	**Option A** The LPA would displace 10 more businesses and 10 more residences (8 floating homes and 2 on-land residences) in the Marine Drive/Hayden Island area than the most identified as displaced in the DEIS. (The LPA would displace 15 more residences than reported in the DEIS for Alternative 3). The increase in acquisitions and displacements from the DEIS to the current design (with either Option A or Option B) is not due to the addition of Option A to the LPA. The increase in acquisitions and displacements is due to design refinements, new information about existing uses, and an increase in area assumed for construction activities. Either LPA Option A or B (or the DEIS alternatives) would require more commercial and residential displacements than assumed in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Park and Ride Columbia: The DEIS reported that one city block would be acquired in downtown Vancouver for the Columbia Park and Ride: the block bounded by 4th, 5th, Columbia and Washington. ***Community Connector*** The DEIS reported up to 2.7 acres of property acquisition from the VNHR.	***Park and Ride*** Columbia: The current footprint includes the block bounded by 4th, 5th, Columbia and Washington, which now includes an auto sales business. The footprint has expanded to include the half-block south of 4th, which would displace one office building with 11 small businesses. ***Community Connector*** The LPA would acquire 1.8 acres from the VNHR. The community connector would increase acquisitions from the VNHR compared to if it was not included in the LPA.	***Park and Ride*** Columbia: The auto sales business is located on a property that the DEIS indicated would be a full acquisition. The expanded footprint of the park and ride results in 11 additional business displacements. Most of the businesses that are displaced are very small and located in one building. ***Community Connector*** The LPA is within the range of impacts reported in the DEIS for property acquisitions to the VNHR.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
Neighborhoods & Populations (Social)	**Total** The DEIS reported the displacement of Safeway on Hayden Island. The DEIS reported that the offset transit alignment on Hayden Island could divide the JBMI floating home community. Tolls require higher share of income for low-income populations and could impact these populations without mitigation. The DEIS identified potentially disproportionately high and adverse impacts to EJ populations, but did not make a final determination.	**Total** The LPA would displace the Safeway on Hayden Island. The LPA would not divide the JBMI floating home community but it would displace floating homes at the east end of the facility. The LPA would improve community cohesion in neighborhoods with light rail stations and transit oriented development, but would negatively impact some neighborhoods with displacement of households and commercial resources. Tolling would not be a disproportionately high and adverse impact on Environmental Justice populations. Overall, the project would not have disproportionately high and adverse impacts to EJ populations.	**Total** Impacts to community cohesion and displacement of community resources from the LPA are within the range reported in the DEIS. The FEIS states that tolling would not be a disproportionately high and adverse impact on EJ populations, and, overall, the project would not have disproportionately high and adverse impacts to EJ populations. The DEIS did not make an assertion on whether there would be a disproportionately high and adverse impact on EJ populations. The FEIS refines the information in the DEIS and reports that EJ impacts are not disproportionately high and adverse. Impacts from the LPA to neighborhoods and populations are addressed in the other impact categories of this document (e.g. displacements, air quality, plan consistency, traffic, and noise impacts).

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
Visual Resources & Aesthetics	**Total** Visual effects from either replacement or supplemental river crossing would result in some views improving and some degrading. The DEIS reported a range of impacts, with the maximum associated with the replacement bridge reported below: *- Burnt Bridge Creek: No or minor impact* *- Vancouver Downtown: New bridge and interchange facilities could degrade view.* *- Columbia River: High-level visual change. Impacts ranged from positive (removal of lift towers to open up views of river) to negative (wider, less uniform bridges).* *- North Portland Harbor: Minor impacts.* *Greater Central Park (except VNHR): Minor impacts* *- VNHR: SR 14 and Mill Plain interchanges would encroach on HBC Village area and degrade views from VNHR.*	**Total** LPA results in some views improving and some degrading. Impacts to the landscape units are reported below: *- Burnt Bridge Creek: No or minor impact* *- Vancouver Downtown: Generally positive impact with removal of lift towers and removal of existing substructure from shoreline* *- Columbia River: Mostly positive impacts with removal of lift tower, truss structures, and visual obstructive piers.* *- North Portland Harbor: Minor impacts. The bridges over NPH would clutter views along the slough and reduce views of open water.* *- Greater Central Park (except VNHR): Moderate impact from SR 14 structures. Other views improve with Community Connector. Overall minor.* *- VNHR: Moderate impacts. Certain views would experience high degree of change. Change in visual context contributes to determination of adverse effect to historic resources.*	**Total** Impacts to visual character and quality from the LPA are within the range reported in the DEIS.
	Option A Area Visual effects would be high from widening and reconfiguring the I-5 bridges over North Portland Harbor, adding a new transit bridge and elevated guideway. The Marine Drive	**Option A** North Portland Harbor would experience moderately negative visual impacts from the addition of piers for the light rail transit bridge and collector/distributor ramps; these	**Option A** Visual effects from LPA Option A would be within the range reported in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	interchange ramp would be slightly taller, but the overall impact is likely to be low. The Marine Drive Interchange Designs could change the visual character of the Expo Center parking area and the adjacent light rail station. Expanding the Expo Center transit station would not change its existing character. However, the Southern or Diagonal Marine Drive Interchange designs would.	would clutter views along the slough and reduce views of open water.	
Air Quality			Air pollutant emissions are expected to be substantially lower in the future than under existing conditions. On a regional basis, future differences between build and No-build alternatives are small enough not to be meaningful within the accuracy of estimation methods. Based on the hotspot analysis, no violations of NAAQS were shown. There would be no meaningful difference in impacts between the DEIS alternatives and the LPA.
Noise & Vibration	**Total** The DEIS reported, before mitigation, up to 334 highway noise impacts, up to 70 moderate transit noise impacts, up to 51 severe transit noise impacts, and up to 47 transit vibration impacts.	**Total** Before mitigation, the LPA would have up to 332 highway noise impacts, 24 moderate transit noise impacts, 0 severe transit noise impacts, and 15 transit vibration impacts.	**Total** Before mitigation, the LPA would have fewer noise and vibration impacts than reported in the DEIS. After mitigation, the LPA would have the

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Option A Area	**Option A**	**Option A** Impacts reported from the LPA in the FEIS to neighborhoods and populations are not specific to LPA Option A (e.g. displacement of Safeway, impact to community cohesion). Impacts from Option A to neighborhoods and populations are addressed in the other impact categories of this document (e.g. displacements, air quality, plan consistency, traffic, and noise impacts).

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	The DEIS reported, after mitigation, that mitigation could potentially reduce traffic noise impacts to 52, but stated that the "number of residual impacts could be higher than 52, depending on final decisions regarding sound walls." The DEIS reported that residential sound insulation could mitigate the noise impacts for all receivers impacted by transit. The DEIS reported that most vibration impacts could be mitigated. The highest vibration impact reported in the DEIS Noise and Vibration Technical Report was that there could possibly be residual vibration impacts between E 19th and E 25th Streets (These vibration impacts are not associated with the Clark College MOS).	After mitigation, the LPA would have 91 highway noise impacts, 0 moderate transit noise impacts, 0 severe transit noise impacts, and 0 transit vibration impacts.	same transit noise and vibration impacts as reported in the DEIS. The LPA would have 91 residual highway noise impacts. The DEIS reported 52, but stated that the number could be higher depending on final decisions (which will occur during Final Design) regarding sound walls. ODOT and WSDOT evaluate the suitability of noise walls based on the criteria of feasibility and reasonableness. 16 potential noise walls were evaluated to determine if they meet these criteria. 11 met the criteria and are included as proposed mitigation. The higher number reported for residual noise impacts is due to refinement in design of the LPA, and the evaluation (based on the criteria above) of potential noise walls to include for mitigation.
	Option A Area Up to 44 residences in NPH would be impacted by bus rapid transit and/or light rail.	**Option A** Option A would have 9 moderate light rail noise impacts on floating homes. There would be no vibration impacts.	**Option A** Option A would have fewer noise impacts than reported in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
Ecosystems (Vegetation & Wildlife)	**Total** *Long-term Effects* The DEIS reported a range of impacts depending on the alternative. With the supplemental bridge option there would be some improvement to the water quality of aquatic habitat but not as much as the replacement option. The supplemental bridge would cause an adverse impact by increasing the number of piers in the water that would provide shade for predatory species. The replacement bridge would have fewer piers in the water and would benefit fish. *Temporary Effects* Cofferdams would displace aquatic habitat. In-water work would increase turbidity. Underwater noise from pile driving and heavy machinery could injure or kill fish.	**Total** *Long-term Effects* The LPA would cause a net loss of shallow water habitat in North Portland Harbor with the construction of new piers in the water. The LPA would provide benefit to water quality of aquatic habitat by greatly decreasing the amount of untreated storm water (as described in *Water Resources* below). The impacts to aquatic habitat from in-water structures would be about the same under the LPA and No-Build—piers in the water would continue to provide shade for predatory species. *Temporary Effects* Cofferdams would temporarily displace aquatic habitat. In-water work has potential to increase turbidity. Construction activities and underwater noise from impact pile driving would injure or kill nearby fish and disturb sea lions. For all construction scenarios, the maximum impact on any of the ESA-listed salmon runs in any given year would be less than one percent of the annual run.	**Total** *Long-term Effects* The LPA would cause a loss of shallow water habitat in North Portland Harbor. Off-site restoration in Oregon and Washington is proposed to mitigate for impacts. The LPA would be within the range of benefits to water quality of aquatic habitat as described in the DEIS. The LPA would have less impacts to aquatic habitat from in-water structures than the supplemental bridge and about the same as the replacement bridge. *Temporary Effects* The LPA is within the range of impacts reported in the DEIS from in-water work.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Option A Area The DEIS reported impacts based on replacing the North Portland Harbor bridge, resulting in considerable in-water work.	**Option A** The current LPA is based on retaining the North Portland Harbor bridge, resulting in some in-water work.	**Option A** The current LPA would result in less in-water work in North Portland Harbor than reported in the DEIS.
Water Resources	**Total** The DEIS alternatives would result in up to 249 acres of total impervious surface area. The DEIS alternatives would result in up to 38 acres of untreated impervious surface area.	**Total** The LPA would result in 267 acres of Pollution Generating Impervious Surfaces (PGIS), but would have no acres of untreated PGIS.	**Total** The increase in PGIS for the LPA is a result of a more precise understanding of the project footprint and storm water basins developed since publication of the DEIS. Although the LPA would result in more acres of PGIS than reported in the DEIS, the amount of untreated PGIS is below the amount reported in the DEIS.
	Option A Area	**Option A**	**Option A** The increase in PGIS for the LPA is not a result of Option A, but rather a more precise understanding of the project footprint and storm water basins has been developed since publication of the DEIS. Although the LPA as a whole would result in more acres of PGIS than reported in the DEIS, the amount of untreated PGIS is below the amount reported in the DEIS.
Energy & Natural Resources			No change

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
Geology & Soils	**Total** The DEIS reported a range of benefits from the alternatives. All alternatives would improve the bridges' ability to withstand earthquakes and volcanic eruptions. The highest impacts reported in the DEIS were impacts to soils (steep slopes) near Burnt Bridge Creek and the Columbia River and potential impacts to groundwater for park and ride facilities and other excavation. The Troutdale sole source aquifer was identified in the DEIS, and the range of impacts to groundwater would apply to the sole source aquifer. The DEIS reported that continued coordination with EPA will occur to address the review approval process for impacts to the sole source aquifer.	**Total** The LPA would improve the bridges' ability to withstand earthquakes and volcanic eruptions and would have positive benefits on soils (steep slopes, soil erosions, landslides) mineral resources and groundwater resources. The LPA would provide long-term management and treatment of storm water from new and existing surfaces, resulting in improved local groundwater quality, including the groundwater in the sole source aquifer. LPA construction would include best management practices, including obtaining all necessary permits and ongoing monitoring of groundwater by the City of Vancouver, to avoid adverse impacts to the sole source aquifer.	**Total** The LPA is within the range of impacts reported in the DEIS for impacts to geology and soils.
	Option A Area	**Option A**	**Option A** No change in impacts due to Option A
Hazardous Materials	**Total** The DEIS alternatives are associated with up to 200 known hazardous materials sites, including up to 29 high-risk sites. (The Clark College MOS is associated with up to 165 total	**Total** The LPA would result in the acquisition of, or entail easements onto, up to 55 properties identified as hazardous materials sites with recognized environmental conditions,	**Total** The LPA would result in fewer acquisitions/easements of sites with recognized environmental conditions than reported in the DEIS. (The LPA would result in fewer

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	sites and up to 26 high risk sites)	including up to 27 high risk sites.	acquisitions/easements of sites with recognized environmental conditions and slightly higher acquisitions of high risk sites than reported in the DEIS as associated with the Clark College MOS)
	Option A Area	**Option A**	**Option A** No change in impacts due to Option A
Public Services & Utilities	**Total** The DEIS reported a range of impacts depending on alternative. The potential effect of traffic congestion on mobile public services in Vancouver would range from moderate to high; on I-5 it would range from improve to substantially improve traffic congestion (Alternative 3 was reported as "substantially improve"). The potential need to relocate utilities as a result of the transit component would range from low-moderate to high (Alternative 3 ranged from "moderate to high"). The DEIS reported the potential displacement of the ODOT Permit Station and Field Office, FHWA Western Federal Lands Building, WSDOT maintenance facility and Clark Public Utilities building.	**Total** The potential effect of traffic congestion on mobile public services in Vancouver local streets would be moderate; on I-5 the LPA would substantially improve traffic congestion. The potential need to relocate utilities as a result of the transit component is moderate. The LPA would potentially displace the ODOT Permit Station and Field Office and Clark Public Utilities building.	**Total** The LPA would be within the range of impacts reported in the DEIS for public services and utilities.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Option A Area	**Option A**	**Option A** No change in impacts from Option A
Historic, Cultural & Archaeological Resources	**Total** The DEIS reported a range of impacts depending on the alternative. The DEIS identified 33 resources that could be impacted by the different alternatives and transit alignments. The DEIS reported a potential impact to up to 14 NRHP-listed or eligible historic properties with any one alternative (up to 13 with the Clark College MOS). The DEIS reported preliminary adverse impacts on up to 8 historic properties (up to 7 with the Clark College MOS). The eight sites with adverse impacts included the three sites described as adversely affected in the FEIS: the 1917 bridge (removed), the Pier 99 building (displaced) and the VNHR. The DEIS reported up to 2.7 acres of acquisitions from the VNHR. The DEIS also reported the following impacts to the VNHR: *Effects to the historic built environment within the VNHR include the construction vibration and visual setting of the Barracks Hospital (both river crossings), small acquisitions*	**Total** The LPA would potentially impact 18 NRHP-listed or eligible historic properties and have adverse impacts to 3. The three sites with adverse impacts are the 1917 bridge (demolished), Pier 99 building (displaced), and the VNHR (partial acquisition, parking/access impact, noise impact, visual impact) The LPA would permanently acquire 1.67 acres and place a permanent easement on 0.16 acre from the VNHR. There would be loss of access to the west side of the Barracks Hospital. The setting associated with the Hospital, and accompanying cultural landscape, would be adversely affected by placing highway facilities and sound walls close to the building. The western and southwestern perimeter portions of the VNHR along I-5 and SR 14 would experience a noise impact negatively affecting the setting and use, though mitigation with sound walls is recommended. There would be a visual impact from the ramp structures adjacent to the HBC Village.	**Total** The LPA would impact fewer historic properties than the number of potential impacts identified in the DEIS. (The LPA would impact 5 more NRHP-listed or eligible historic properties than reported in the DEIS for Alternative 3 with the Clark College MOS). The LPA would have a preliminary adverse impact to 3 sites, fewer than the 8 reported in the DEIS (or 7 for the Clark College MOS). The impacts to the 1917 bridge and Pier 99 building would be the same by the LPA as reported in the DEIS. The impact to the VNHR would be adverse with the LPA and as reported in the DEIS. The amount of property acquired from the VNHR would be less than reported in the DEIS. The impacts to significant archaeological sites were not quantified in the DEIS, but were reported as "high." The 32 sites impacted by the LPA would fall within the range of impacts in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	from the most western parking lot of Officer's Row (replacement river crossing), minor acquisitions or potential shading of the Old Apple Tree Park (replacement river crossing), and minor obstructions to Pearson Field's airspace (supplemental river crossing). *The impact to the Barracks Hospital would likely be considered an adverse impact because without mitigation the vibration impacts during construction may damage the unreinforced masonry structure. The proximity of the proposed freeway would negatively impact the visual setting.* *The acquisition impacts to Officers Row and the Old Apple Tree Park, and potential obstructions of Pearson Field's airspace, would be very minor and would not change the characteristics for which these resources are considered contributing to the VNHR Historic District but these resources are included in the District and are therefore included in the adverse effect to the District.* *Noise levels at the VNHR Historic District could decrease with highway sound walls potentially constructed with the highway improvements. This*	The LPA would impact up to 32 significant archaeological sites. The acquisitions associated with the community connector, as with most acquisitions on the VNHR, could impact archaeological resources.	

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	would likely result in a benefit to the two non-commissioned officers duplexes closest to I-5 south of the Barracks Post Hospital, as well as the Hospital itself. Noise levels at these contributing residential units currently exceed impact criteria, and would worsen with the No-Build Alternative. In addition to these benefits, these sound walls could potentially alter the historic setting of the buildings adjacent to the wall. The DEIS reported a High potential to impact archaeological historic properties.		

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Option A Area	**Option A**	**Option A** The only historic or archaeological resource in the area impacted by Option A is Pier 99. It would be displaced by Option A and it was reported as displaced in the DEIS. No change in impacts.
Parklands & Recreation	**Total** The DEIS reported a range of impacts depending on the alternative. Up to 6.47 acres of park and recreation resources would be acquired (up to 6.11 for Alternative 3), including up to 2.7 acres from the VNHR. Up to 230 linear feet of trails potentially realigned.	**Total** The LPA would acquire 4.4 total acres of park and recreation resources, including 1.8 acres from the VNHR. 580 linear feet of trails would need to be permanently realigned.	**Total** The LPA would acquire less total acreage of park and recreation resources than reported in the DEIS, and less acreage from the VNHR. The LPA would realign more linear feet of trails than reported in the DEIS. However, a large portion of the trail to be realigned is Waterfront Trail. The location and realignment of that trail has been developed in coordination with the City of Vancouver through its waterfront redevelopment planning process.
	Option A Area	**Option A**	**Option A** Option A would not cause a change in impacts to parks and recreation resources.
Construction			Construction-related impacts are discussed separately for each element of the

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
			environment. See the other sections of this matrix.
Secondary and Cumulative	The DEIS reported a range of impacts depending on the alternative. The replacement bridge options reduced CO_2 emissions while the supplemental bridge options increased CO_2 emissions, compared to No-Build.	The LPA is estimated to reduce CO_2e emissions compared to the No-Build.	The LPA is within the range of impacts reported in the DEIS.
Other			
4(f) Resources	The DEIS reported a Section 4(f) use on the following historic resources: *- Pier 99 building (full displacement)* *- 1917 bridge (full displacement)* *- VNHR NRHP District/Cultural Landscape (partial permanent acquisition).* *-Heritage Apple Tree (adverse/Use)* *- Kiggins House (adverse/Use)* *- Providence Academy (adverse/Use)* *- 401 E McLoughlin (adverse/Use)* *- 611 E McLoughlin (adverse/Use)* *- 903 E 31st St (adverse/Use)* *- 3000 K St (adverse/Use) (No Adverse Effect with Alternative 3)* *- 3110 K St (adverse/Use) (No Adverse Effect with Alternative 3)* *- 2901 Main St (adverse/Use) (No impact with Clark College MOS)*	The LPA would have no adverse effect/4(f) use on: *-Heritage Apple Tree* The LPA would use the following Section 4(f) historic resources: *- Pier 99 building (full displacement)* *- 1917 bridge (full displacement)* *- VNHR NRHP District/Cultural Landscape (partial permanent acquisition)*	The LPA would have less impact on the Heritage Apple Tree than reported in the DEIS. The LPA would have the same impact on the existing 1917 I-5 bridge. The LPA would have fewer Section 4(f) uses of historic resources than reported in the DEIS. (The LPA would have fewer Section 4(f) uses of historic resources than reported in the DEIS for Alternative 3 or the Clark College MOS).

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	- 3212 Main St (adverse/Use) (No impact with Clark College MOS) *- 300 E 37th St (adverse/Use) (No impact with Clark College MOS)* The DEIS reported a potential use of 4(f) park and recreation resources: *- Waterfront Renaissance Trail: new bridge crosses over 180 feet of trail and likely relocation of path, possible de minimis impact.* *- Waterfront Park: bridge spans up to 0.23 acre of park shoreline and waterfront plaza/views, potential bridge piers in park, possible de minimis impact.*	The LPA would use the following Section 4(f) park and recreation resources: *- Waterfront Renaissance Trail: Permanently realigns approximately 450 linear feet of trail under the existing and future proposed I-5 bridges. A Section 4(f) use.* *- Waterfront Park: Acquires 0.4 acre (18,730 sq. ft.) of park land; displaces plantings, Waves Plaza and Boat of Discovery monument. A Section 4(f) use.*	The LPA would have a Section 4(f) use of the Waterfront trail, which was reported as a potential use in the DEIS. The LPA would have a Section 4(f) use of the Waterfront park, which was reported as a potential use in the DEIS. LPA would have greater area of use than reported in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	- Vancouver National Historic Reserve (VNHR): Acquires up to 2.7 acres of park land, possible impacts to Federal Lands Building and a storage garage owned by the Army. Potential for use of up to 0.54 acres of temporary construction easement.	*- Vancouver National Historic Reserve (VNHR): Acquires 1.8 acres (72,787 sq. ft.) of park land and additional 0.2 acre (7,176 sq. ft.) for permanent airspace easement. Impacts to Federal Lands Building parking lot. No historic structures would be displaced. Temporary occupancy of 0.2 acre (7,407 sq. ft.). Includes impacts to Fort Vancouver National Historic Site and Old Apple Tree Park described below. A Section 4(f) use.*	The LPA would have a Section 4(f) use of the VNHR, which was reported as a potential use in the DEIS. LPA would have less area of acquisition than reported in the DEIS. The Section 4(f) use of the VNHR would not change based on the impact from the community connector.
	- Fort Vancouver National Historic Site (FVNHS): Up to 1.5 acres of park land near I-5/SR 14. Land is vacant but contains archaeological resources. Potential for up to 0.23 acre of temporary construction easements.	*- Fort Vancouver National Historic Site (FVNHS): Acquires 1.0 acre of park land (41,589 sq. ft.) and additional 0.1 acre (4,253 sq. ft.) for airspace easement. Included in the VNHR impacts described above. No historic structures would be displaced. A Section 4(f) use.*	The LPA would have a Section 4(f) use of the FVNHS, which was reported as a potential use in the DEIS. LPA would have less area of acquisition than reported in the DEIS.
	- Old Apple Tree Park: Up to 0.27 acre of viewing courtyard and passive recreation space.	*- Old Apple Tree Park: Acquires less than 0.1 acres (209 sq. ft.) for airspace easement over northwest corner of parcel. Included in the VNHR impacts described above. A Section 4(f) use.*	The LPA would have a Section 4(f) use of the Old Apple Tree Park, which was reported as a potential use in the DEIS. LPA would have less area of acquisition than reported in the DEIS.
	- Marshall Community Park: 1.2-acre strip of landscaped passive recreation area adjacent to parking and fields.	*Marshall Community Center, Luepke Senior Center, and Marshall Park: Acquires 0.6 acre (24,803 sq. ft.) strip*	The LPA would have a Section 4(f) use of Marshall Park, which was reported as a potential use in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Could displace up to 3 horseshoe courts.	*of landscaped passive recreation area adjacent to parking. Displaces 4 horseshoe pits, 8 parking spaces permanently, and 30-40 spaces temporarily. Temporary occupancy of 0.5 acre (24,061 sq. ft.). A Section 4(f) use.* The LPA would have a de minimis impact on the following Section 4(f) park and recreation resources:	
	- Clark College Recreation Fields: 1.24-acre strip with portions of ball field, batting cage, park path, grass field.	*- Clark College Recreation Fields: Acquires a 1.0-acre (42,662 sq. ft.) strip of landscaped area adjacent to recreation fields. Temporary occupancy of 0.2 acre (8,919 sq. ft.). A de minimis impact.*	The LPA would have a de minimis impact on the recreation fields, which was reported as a potential use in the DEIS. LPA would have less area of acquisition than reported in the DEIS.
	- Leverich Park: 0.33 acre of park border, berms and landscaping. Airspace over park entrance road. Possible de minimis impact.	*- Leverich Park: Acquires 0.3 acre (13,739 sq. ft. of park border, berms and landscaping. Temporary occupancy of 1.3 acres (54,777 sq. ft.) of parkland for construction access, staging, and utility relocation. A de minimis impact.*	The LPA would have a de minimis impact on Leverich park, which was reported as a potential use in the DEIS.
	- Kiggins Bowl: Relocate 50 linear ft of trail; up to 0.35 acre landscaped area. Possible de minimis impact.	*- Kiggins Bowl: Acquires less than 0.1 acres (1,675 sq. ft.) portion of parcel used to access fields and additional 0.3 acre (11,814 sq. ft.) of subsurface easement in same area. Temporary occupancy of less than 0.1 acre (2,982 sq. ft.). A de minimis impact.*	The LPA would have a de minimis impact on Kiggins Bowl, which was reported as a potential use in the DEIS.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
	Option A Area	**Option A**	**Option A** Pier 99, a historic 4(f) resource would be displaced with Option A and was reported as displaced in the DEIS. No change in impacts.

Impact Category	Impacts as Initially Disclosed	New Impacts	Change in Impacts
Aviation and Navigation	**Total** The DEIS reported a range of impacts for aviation and navigation. The highest impact reported to aviation was that with the Supplemental alternatives the lift spans on the existing bridge would be retained and would remain a hazard to aviation at Pearson Field. (Alternative 3 would remove the lift spans of the existing bridges, reducing the intrusion into Pearson Field airspace) The highest impact reported to river navigation was an adverse impact due to the addition of the supplemental bridge making the S-curve maneuver more difficult. There would be more piers in the water and narrower channels. (Alternative 3 would eliminate the S-curve maneuver and reduce the number of piers in the water)	**Total** The LPA would remove the lift spans of the existing bridges, reducing the intrusion into Pearson Field airspace. For river navigation, the LPA would eliminate the S-curve maneuver and reduce the number of piers in the water.	**Total** The LPA would be within the range of aviation and navigation impacts as reported in the DEIS.
	Option A Area	**Option A**	**Option A** There is no change in impacts from Option A.

Exhibit A
Marine Drive Interchange
Exhibit B
Hayden Island Interchange
Exhibit C
North Portland Harbor
Exhibit D
SR 14 Interchange
Exhibit E
Vancouver Light Rail
Exhibit F
Fourth Plain Interchange
Exhibit G
SR 500 Interchange
Columbia River
CROSSING
LPA PHASE I
DRAFT
8/31/2011
LEGEND:

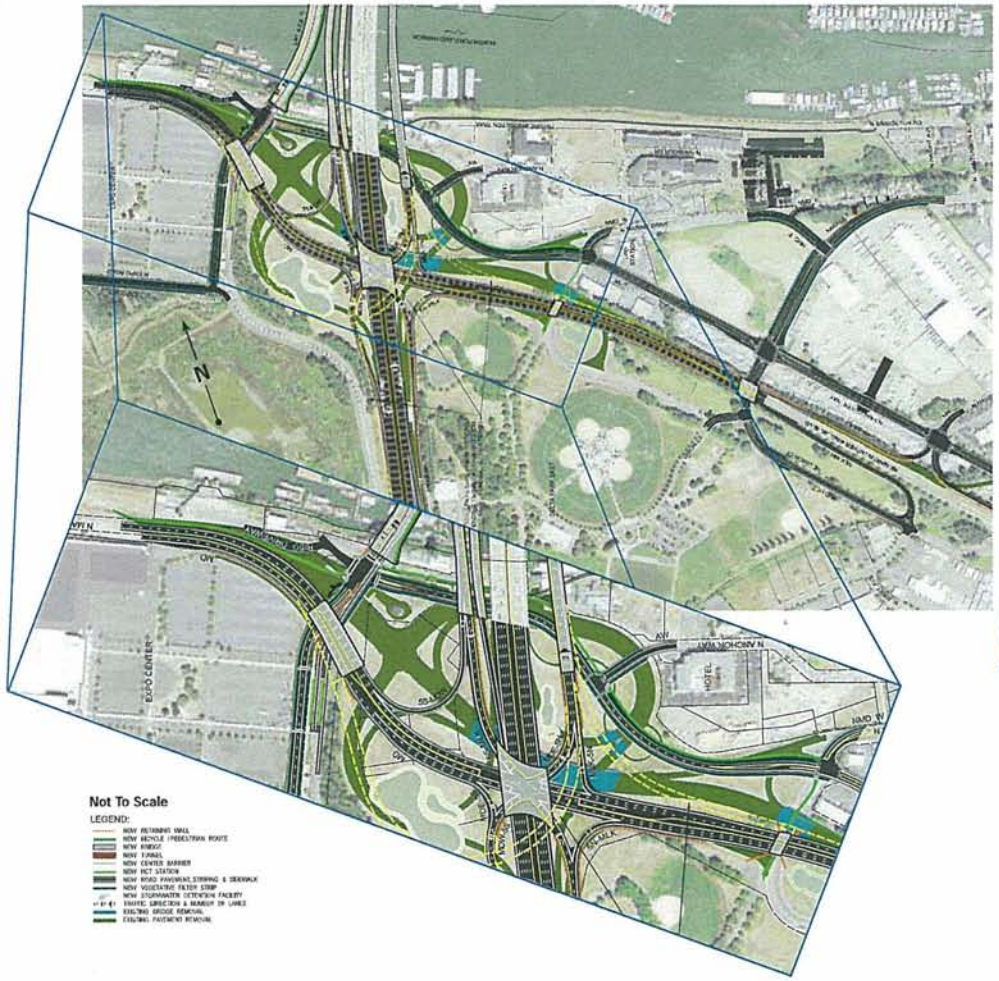
2696-A

Columbia River CROSSING

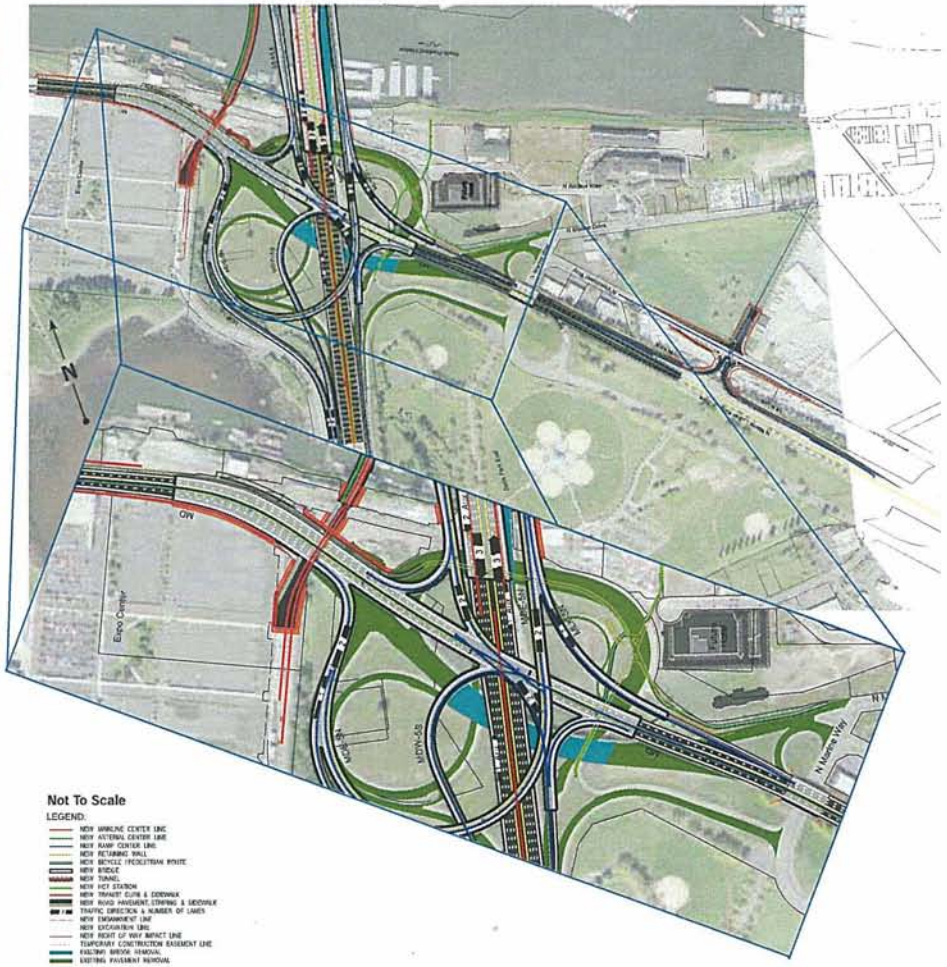
FEIS Project Area compared to DEIS Project Area

Exhibit A - Marine Drive Interchange

Current Plan



DEIS Plan

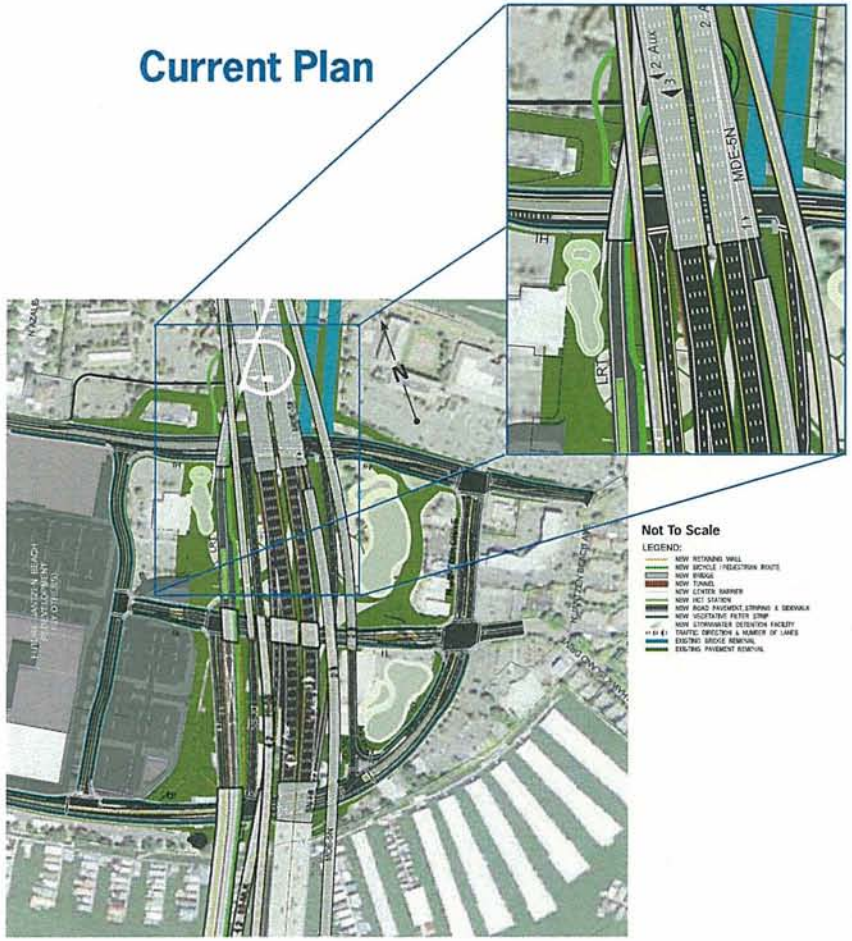


Columbia River CROSSING

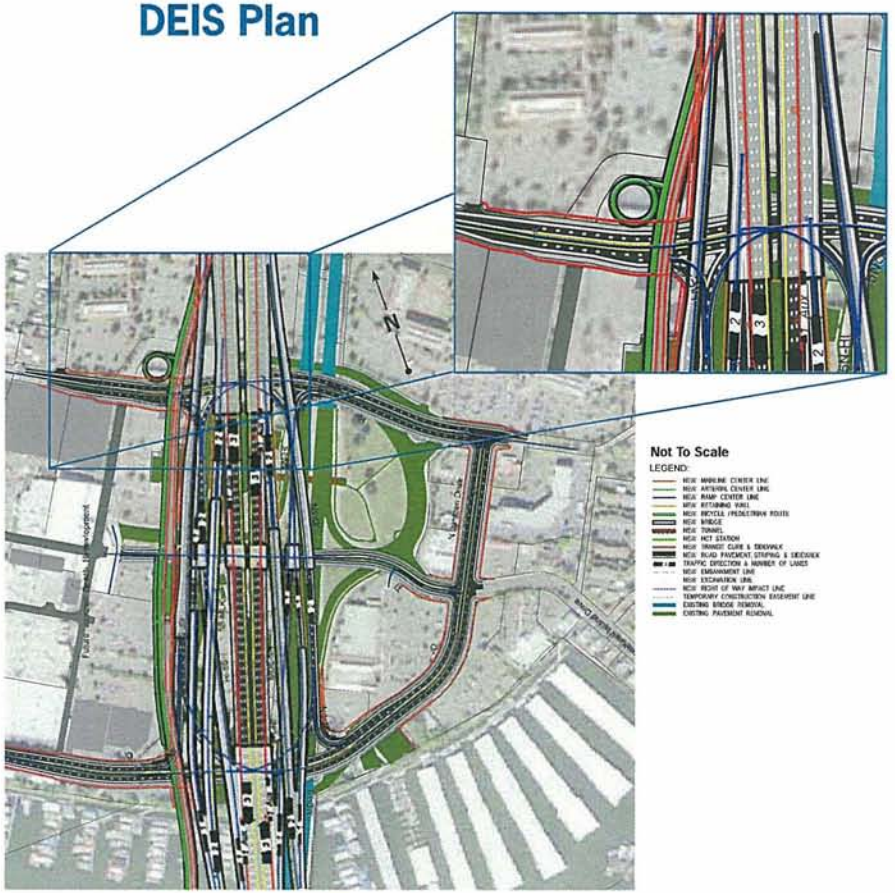
FEIS Project Area compared to DEIS Project Area

Exhibit B - Hayden Island Interchange

Current Plan



DEIS Plan



Columbia River CROSSING

FEIS Project Area compared to DEIS Project Area

Exhibit C - North Portland Harbor

Current Plan

Not To Scale

LEGEND:

NEW RETAINING WALL
NEW BICYCLE / PEDESTRIAN ROUTE
NEW BRIDGE
NEW TUNNEL
NEW CENTER BARRIER
NEW HCT STATION
NEW ROAD PAVEMENT, STRIPING & SIDEWALK
NEW VEGETATIVE FILTER STRIP
NEW STORMWATER DETENTION FACILITY
TRAFFIC DIRECTION & NUMBER OF LANES
EXISTING BRIDGE REMOVAL
EXISTING PAVEMENT REMOVAL

DEIS Plan

Not To Scale

LEGEND:

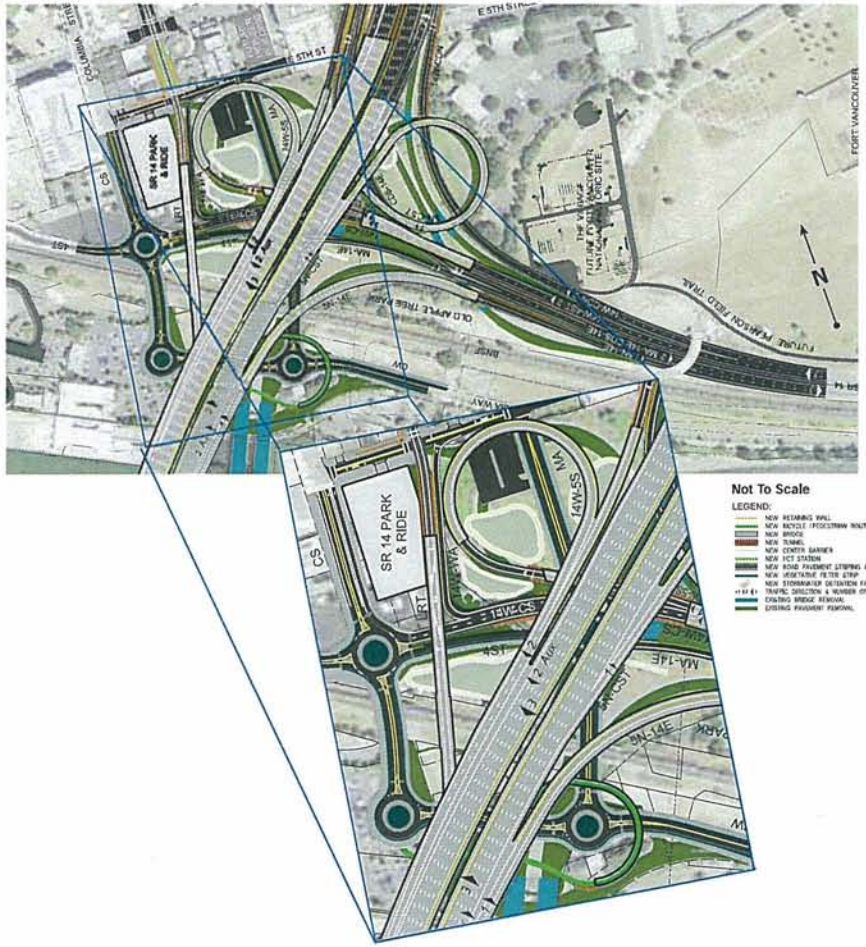
NEW MAINLINE CENTER LINE
NEW ARTERIAL CENTER LINE
NEW RAMP CENTER LINE
NEW RETAINING WALL
NEW BICYCLE / PEDESTRIAN ROUTE
NEW BRIDGE
NEW TUNNEL
NEW HCT STATION
NEW TRANSIT CURB & SIDEWALK
NEW ROAD PAVEMENT STRIPING & SIDEWALK
TRAFFIC DIRECTION & NUMBER OF LANES
NEW EMBANKMENT LINE
NEW EXCAVATION LINE
NEW RIGHT OF WAY IMPACT LINE
TEMPORARY CONSTRUCTION EASEMENT LINE
EXISTING BRIDGE REMOVAL
EXISTING PAVEMENT REMOVAL

Columbia River CROSSING

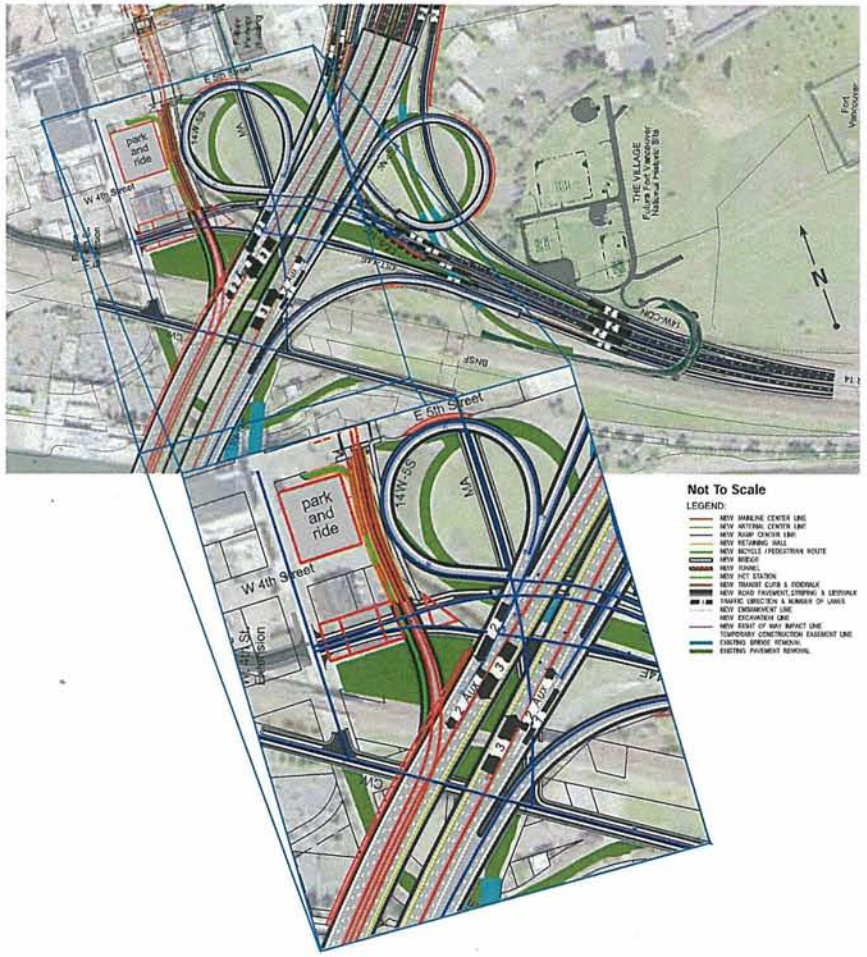
FEIS Project Area compared to DEIS Project Area

Exhibit D - SR 14 Interchange

Current Plan



DEIS Plan

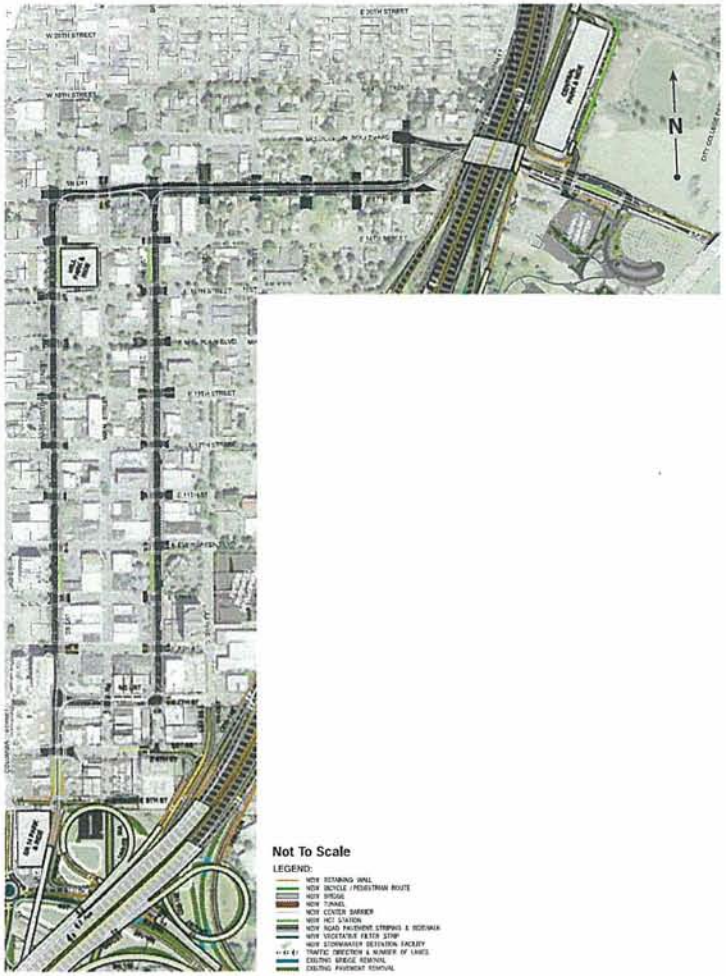


Columbia River CROSSING

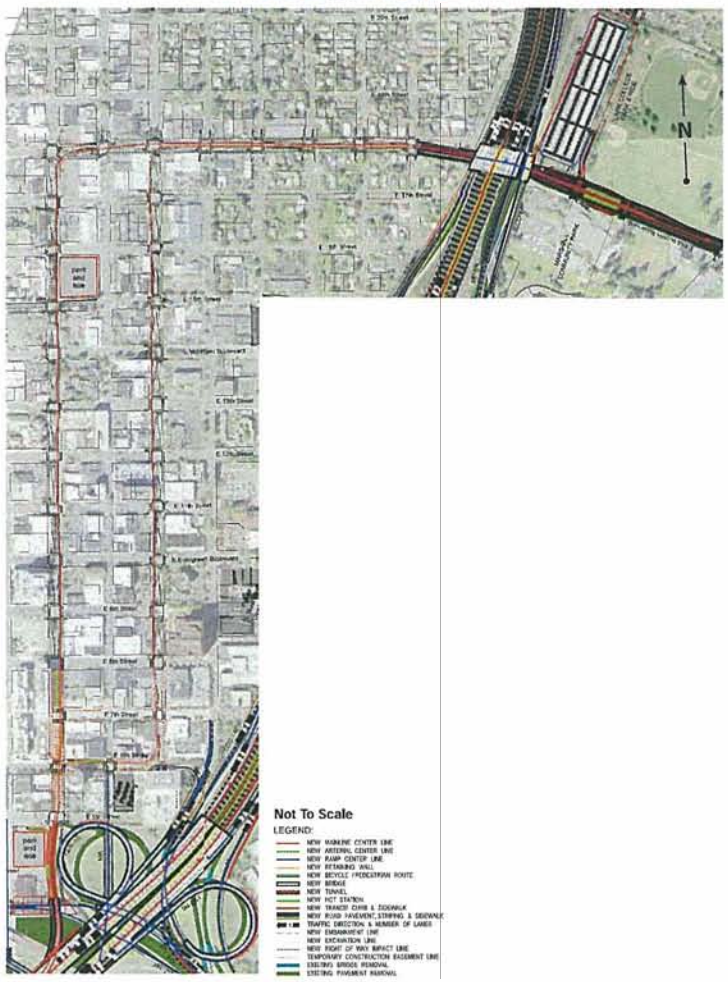
FEIS Project Area compared to DEIS Project Area

Exhibit E - Vancouver Light Rail

Current Plan



DEIS Plan



Columbia River CROSSING

FEIS Project Area compared to DEIS Project Area

Exhibit F - Fourth Plain Interchange

Current Plan

DEIS Plan

Columbia River CROSSING

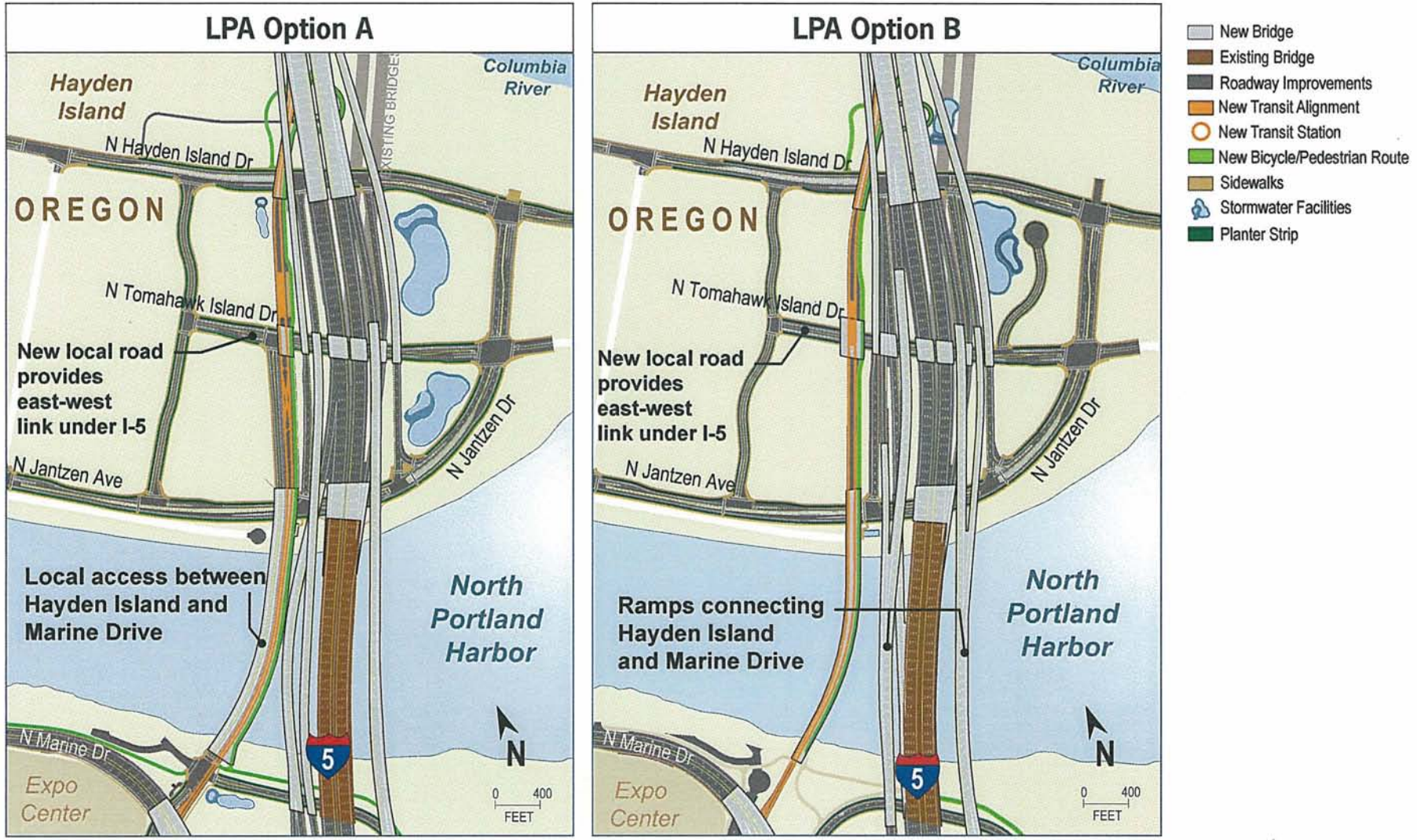
FEIS Project Area compared to DEIS Project Area

Exhibit G - SR 500 Interchange

Current Plan

DEIS Plan

LPA OPTIONS: Hayden Island Interchange



DIMENSIONS ARE APPROXIMATE.

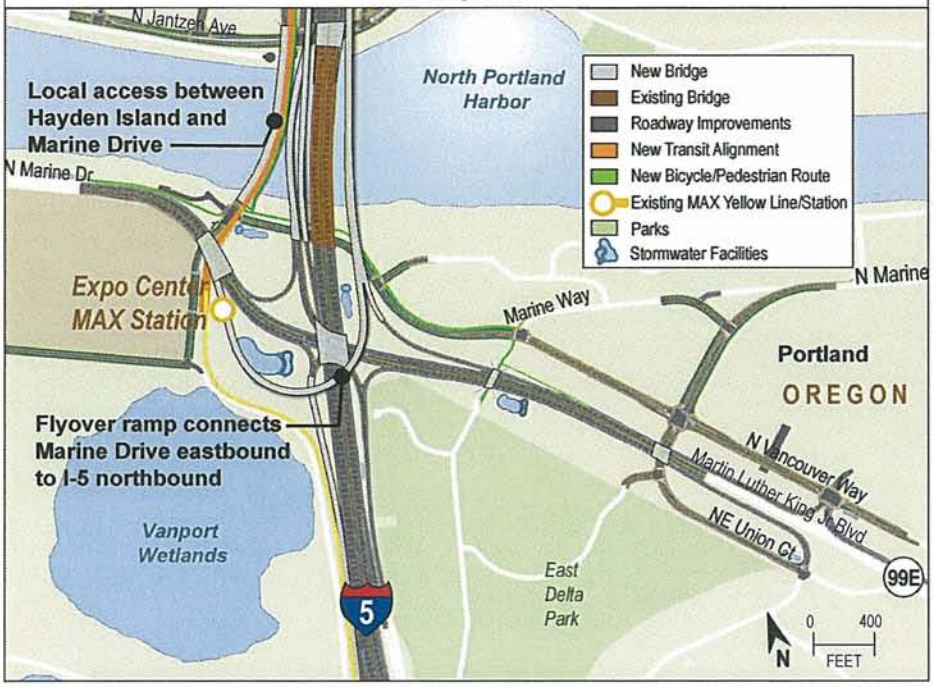
Graphic by K. Martinek, Date: April 2011

Exhibit I
Highway and Interchange Improvements
Hayden Island

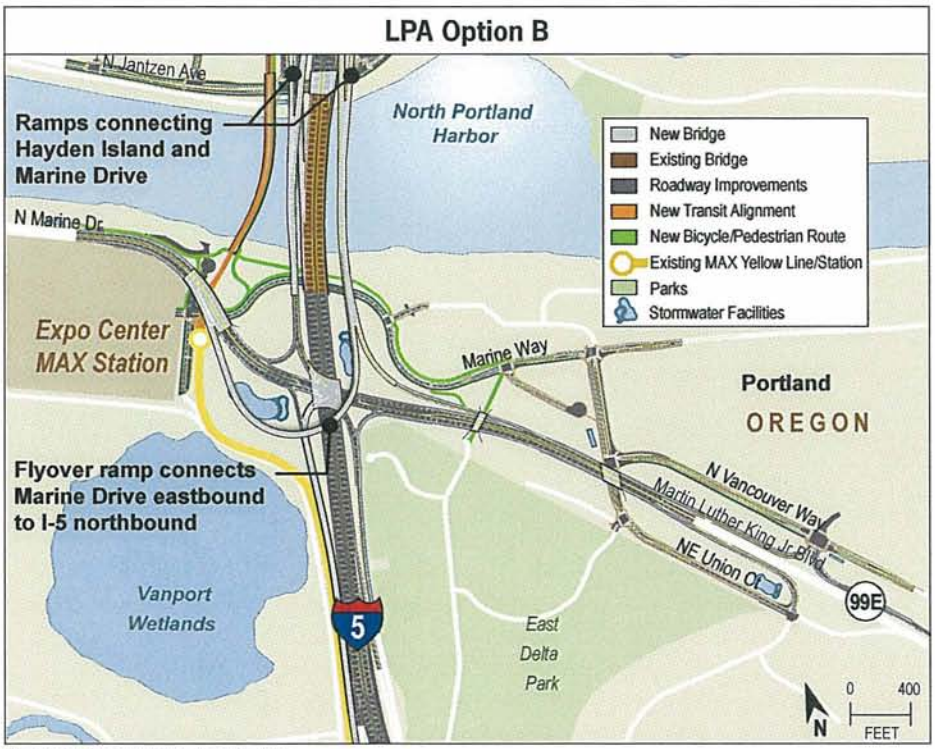
Columbia River CROSSING

LPA OPTIONS: Marine Drive Interchange

LPA Option A



LPA Option B



DIMENSIONS ARE APPROXIMATE.

Graphic by K. Martinek. Date: April 2011

Exhibit H
Highway and Interchange Improvements
Marine Drive

Columbia River CROSSING

Laura Dawson-Bodner

From: Shirley Craddick
Sent: Monday, June 06, 2011 11:47 AM
To: Laura Dawson-Bodner
Subject: FW: Concerns on CRC / Metro Res 11-4264
Attachments: CRC Metro Concerns CLF 5-11.docx; CRC community enhancements Metro CLF 5-11.doc

---

From: Mara Gross [mara@clfuture.org]
Sent: Tuesday, May 31, 2011 9:16 AM
To: Tom Hughes; Shirley Craddick; Carlotta Collette; Rex Burkholder; Barbara Roberts; Kathryn Harrington
Cc: Kim Brown; Kathryn Sofich; Ina Zucker; Carl Hosticka; Nikolai Ursin; Sheena VanLeuven
Subject: Concerns on CRC / Metro Res 11-4264

Metro Resolution No. 11-4264 on the Columbia River Crossing Dear Metro Council:
The Coalition for a Livable Future is a partnership of over 100 diverse organizations and thousands of individuals working together to create a more equitable and sustainable Portland metropolitan region. We have been engaged on the Columbia River Crossing I-5 highway expansion for several years, and have followed the project closely.
When Metro approved the Locally Preferred Alternative in 2008, it simultaneously found numerous issues that "will need to be satisfactorily addressed" and included these concerns in Exhibit A to Resolution No 08-3960. Many of these issues have not yet been addressed, making Resolution No. 11-4264 premature, and the CRC project has refused to address several of Metro's issues, including Community Enhancements and tolling I-205.
Because the concerns of Metro Council as stated in Resolution No 08-3960 have not been addressed, the current resolution should be rejected. A summary of the issues is below and attached. Thank you for your consideration. I look forward to speaking with you about these issues.
Sincerely,
Mara Gross
Policy Director, Coalition for a Livable Future

Area Of Concern Listed in Exhibit A to Resolution No 08-3960

How the CRC Fails to Address Metro's Concern

A. Tolling

The CRC Project has not demonstrated that it has considered tolling I-205 subsequent to Res. 08-3960 or has requested federal permission to toll I-205. The tolling structure for I-5 and timing for implementation of tolls has not yet been determined.

C. Impact Mitigation and Community Enhancement

Community enhancements are local community improvements included in a larger infrastructure project, created in addition to required mitigation. Both Metro and the CRC Task Force stated the need for community enhancement projects as part of their approving the Locally Preferred Alternative in 2008.

The CRC project has rejected community enhancements, stating that an "enhancement fund is not currently being considered."

Community enhancements are intended to not only address the negative impacts that construction and infrastructure changes would have on a community, but also the long term, pervasive negative impacts of I-5 on the surrounding environmental justice communities.

In addition, both the Environmental Protection Agency and the Multnomah County Health Department<http://web.multco.us/sites/default/files/health/documents/columbia_river_crossing.pdf> have expressed concerns about the health impacts of the CRC, including on environmental justice communities.
For more information on community enhancements, see Attachment A.

E. Financing Plan

Premature. No detailed financing plan has been presented.
Furthermore, Joe Cortright with Impresa Consulting conducted a financial analysis that found several major issues with the CRC financial plan:
1. Traffic levels in the I-5 corridor have been declining since 2005, raising serious doubts about the reliability of the project's future traffic projections and ability to repay loans against toll bonds.
2. The total cost of building and operating the Columbia River Crossing over the next thirty years has will be billions higher than official estimates, and includes highly risky toll bonds with a back-loaded amortization schedule.
3. The proposed financing plan for the project poses major risks for the state and the region, and there is a high probability of cost overruns and revenue shortfalls.
Impresa's full report can be found at:
http://www.plaidpantry.com/CRC_Financial_Analysis_by_Impresa_Inc.pdf

F. Capacity Considerations, Induced Demand, and Greenhouse Gases

Premature. Metro requested inclusion of information in the Final EIS, which has not yet been published.
In addition, the CRC's analysis found that the project creates 32% more greenhouse gas pollution than today's levels (see Draft EIS). Oregon's legislatively adopted policy is to cut climate pollution by 80% by 2050.
Metroscope was also run using ODOT traffic assumptions that are outdated and overstate current traffic by 17,000 vehicles per day, as discussed in Impresa's analysis.

G. Preservation of Freight Access

Premature. Metro asked for physical design and tolling methods "to ensure trucks are granted priority." The tolling structure has yet not been determined, and it is unclear whether or how freight priority is being considered.

H. Light Rail

Premature. Metro stated that "light rail must be included in any phasing package." The CRC has publicly acknowledged the likelihood of phasing but has not released a phasing plan. In addition, Clark County voters are unlikely to vote on light rail operations funding until fall 2012.

I. Design of Bicycle and Pedestrian Facilities

A "world class" facility is no longer being considered. See letter from the Bicycle Transportation Alliance dated March 7, 2011, available at http://www.bta4bikes.org/btablog/wp-content/uploads/2011/03/BTA-Letter-on-CRC-3.7.11.pdf.

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Metro Resolution No. 11-4264
on the Columbia River Crossing

Dear Metro Council:

The Coalition for a Livable Future is a partnership of over 100 diverse organizations and thousands of individuals working together to create a more equitable and sustainable Portland metropolitan region. We have been engaged on the Columbia River Crossing I-5 highway expansion for several years, and have followed the project closely.

When Metro approved the Locally Preferred Alternative in 2008, it simultaneously found numerous issues that "will need to be satisfactorily addressed" and included these concerns in Exhibit A to Resolution No 08-3960. Many of these concerns have not yet been addressed, making Resolution No. 11-4264 premature, and the CRC project has refused to address several of Metro's issues, including Community Enhancements and tolling I-205.

The concerns of Metro Council as stated in Resolution No 08-3960 have not been addressed, and the current resolution should be rejected. A summary of the issues is below and attached. Thank you for your consideration. I look forward to speaking with you about these issues.

Sincerely,

Mara Gross
Policy Director, Coalition for a Livable Future

Area Of Concern Listed in Exhibit A to Resolution No 08-3960	**How the CRC Fails to Address Metro's Concern**
A. Tolling	The CRC Project has not demonstrated that it has considered tolling I-205 subsequent to Res. 08-3960 or has requested federal permission to toll I-205. The tolling structure for I-5 and timing for implementation of tolls has not yet been determined.
C. Impact Mitigation and Community Enhancement	Community enhancements are local community improvements included in a larger infrastructure project, created in addition to required mitigation. Both Metro and the CRC Task Force stated the need for community enhancement projects as part of their approving the Locally Preferred Alternative in 2008. The CRC project has rejected community enhancements, stating that an

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	"enhancement fund is not currently being considered." Community enhancements are intended to not only address the negative impacts that construction and infrastructure changes would have on a community, but also the long term, pervasive negative impacts of I-5 on the surrounding Environmental Justice communities. In addition, both the Environmental Protection Agency and the Multnomah County Health Department have expressed concerns about the health impacts of the CRC, including on environmental justice communities. For more information on community enhancements, see Attachment A.
E. Financing Plan	Premature. No detailed financing plan has been presented. Furthermore, Joe Cortright with Impresa Consulting conducted a financial analysis that found several major issues with the CRC financial plan: 1. Traffic levels in the I-5 corridor have been declining since 2005, raising serious doubts about the reliability of the project's future traffic projections and ability to repay loans against toll bonds. 2. The total cost of building and operating the Columbia River Crossing over the next thirty years has will be billions higher than official estimates, and includes highly risky toll bonds with a back-loaded amortization schedule. 3. The proposed financing plan for the project poses major risks for the state and the region, and there is a high probability of cost overruns and revenue shortfalls. Impresa's full report can be found at: http://www.plaidpantry.com/CRC_Financial_Analysis_by_Impresa_Inc.pdf
F. Capacity Considerations, Induced Demand, and Greenhouse Gases	Premature. Metro requested inclusion of information in the Final EIS, which has not yet been published. In addition, the CRC's analysis found that the project creates 32% more greenhouse gas pollution than today's levels (see Draft EIS). Oregon's legislatively adopted policy is to cut climate pollution by 80% by 2050. Metroscope was also run using ODOT traffic assumptions that are

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	outdated and overstate current traffic by 17,000 vehicles per day, as discussed in Impresa's analysis.
G. Preservation of Freight Access	Premature. Metro asked for physical design and tolling methods "to ensure trucks are granted priority." The tolling structure has yet not been determined, and it is unclear whether or how freight priority is being considered.
H. Light Rail	Premature. Metro stated that "light rail must be included in any phasing package." The CRC has publicly acknowledged the likelihood of phasing but has not released a phasing plan. In addition, Clark County voters are unlikely to vote on light rail operations funding until fall 2012.
I. Design of Bicycle and Pedestrian Facilities	A "world class" facility is no longer being considered. See letter from the Bicycle Transportation Alliance dated March 7, 2011, available at http://www.bta4bikes.org/btablog/wp-content/uploads/2011/03/BTA-Letter-on-CRC-3.7.11.pdf.

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CRC's FAILURE TO ADDRESS COMMUNITY ENHANCEMENTS

Community enhancements are a special pot of funds for local community improvements included in a larger infrastructure project, created in addition to required mitigation.

A Community Enhancement Fund was recommended by the I-5 Transportation and Trade Partnership in 2002, and both Metro and the CRC Task Force requested community enhancement projects as part of their approving the Locally Preferred Alternative in 2008.

The CRC has refused to establish funding for community enhancement projects, stating that they will not "provide a funding source for enhancement elements separate… from the rest of the project."

Background: The I-5 Transportation and Trade Partnership was the predecessor to the CRC. One of the partnership's recommendations was the creation of a Community Enhancement Fund. The Fund was intended to not only address the negative impacts that construction and the changes could have on a community, but also the long term, pervasive negative impacts of I-5 on the surrounding Environmental Justice communities.

The I-5 Partnership Strategic Plan reads:

> "Environmental Justice. (a) A community enhancement fund for use in the impacted areas in the I-5 Corridor in Oregon and Washington should be established. Such a fund would be in addition to any impact mitigation costs identified through an environmental impact statement and would be modeled conceptually after the "1% for Arts" program, the I-405 Mitigation Fund and the St John's Landfill Mitigation Fund."

Committee members included representatives from both Oregon and Washington, appointed in 2002 by Governor Kitzhaber and the then-governor of Washington. Oregon representatives included Portland Mayor Vera Katz, the directors of ODOT, Port of Portland, and TriMet, and Henry Hewitt, who is now the co-chair of the CRC Project Sponsors Council.

Community Enhancements and the Delta Park Project: The Delta Park Project, implemented by ODOT in 2006, is a good example of a Community Enhancement Fund having a positive impact on the community. The Fund was $1 million of the $66 million project, 1.5% of total project dollars. The projects included pedestrian overpass improvements, extending the Columbia Slough Trail, traffic calming in Downtown Kenton, cross walk improvements near Peninsula Park, tree planting, and bicycle lanes.

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CRC's Response to Community Enhancements:

The CRC has acknowledged that it has not created a Community Enhancement Fund, and has no plans to do so. In response to the CRC Task Force condition that the CRC include a Community Enhancement Fund, CRC indicated in yellow that the condition has not been met ("Local Preferred Alternative Conditions," page 21):

	5	Enhancement Fund - establish an enhancement fund, in addition to mitigation, for use in the impacted areas.	The philosophy of the project is to leave the area better off and to provide enhancements within the community as part of the overall project design rather than providing a funding source for enhancement elements separate and disjointed from the rest of the project. Significant enhancements are part of the project (see Issue 4, above). Washington DOT can use its funds only for mitigation with a nexus to the project. An enhancement fund is not currently being considered.

Like the CRC Task Force condition, Metro's resolution requests "community enhancement projects," not just in mitigation for the current project, but also to address "existing human health impacts in the project area." Metro's resolution also calls out the need for "projects to address environmental justice."

Both the Environmental Protection Agency and the Multnomah County Health Department have expressed concerns about the health impacts of the CRC, including on environmental justice communities. Multnomah County's Health Impact Assessment discusses a wide range of health impacts, citing issues related to physical activity and obesity, safety, air quality, and noise.

600 NE Grand Ave.
Portland, OR 97232-2736

Metro | *Agenda*

Meeting:	Metro Council Work Session
Date:	Tuesday, May 31, 2011
Time:	2 p.m.
Place:	Council Chambers

CALL TO ORDER AND ROLL CALL

2 PM	**1.**	**ADMINISTRATIVE/ CHIEF OPERATING OFFICER COMMUNICATIONS**	
2:15 PM	**2.**	**COLUMBIA RIVER CROSSING DISCUSSION ON RESOLUTION NO. 11-4264 – INFORMATION/DISCUSSION**	**Cotugno CRC Staff Henry Hewitt, Project Sponsors Council Chair**
4:15 PM	**3.**	**COUNCIL BRIEFINGS/COMMUNICATION**	

ADJOURN

Agenda Item Number 2.0

COLUMBIA RIVER CROSSING
DISCUSSION ON
RESOLUTION NO. 11-4264

Metro Council Work Session
Tuesday, May 31, 2011
Metro Council Chamber

Agenda Item Number 2.0

COLUMBIA RIVER CROSSING
DISCUSSION ON
RESOLUTION NO. 11-4264

Metro Council Work Session
Tuesday, May 31, 2011
Metro Council Chamber

METRO COUNCIL

Work Session Worksheet

Presentation Date: May 31, 2011 **Time:** 2:15 pm **Length:** 2 hours

Presentation Title: Review of Resolution No. 11-4264 FOR THE PURPOSE OF CONCLUDING THAT THE CONCERNS AND CONSIDERATIONS RAISED ABOUT THE COLUMBIA RIVER CROSSING PROJECT IN EXHIBIT A TO RESOLUTION NO. 08-3960B HAVE BEEN ADDRESSD SATISFACTORILY in preparation for a public hearing and consideration of approval on June 9, 2011.

Service, Office, or Center:
Office of the Chief Operating Officer

Presenters:
Andy Cotugno (xt. 1763), Henry Hewitt, Project Sponsors Council Chair, Columbia River Crossing staff

ISSUE & BACKGROUND
By Resolution No. 08-3960B the Metro Council approved the Locally Preferred Alternative (LPA) for the Columbia River Crossing Project. However, the resolution also raised a number of concerns and considerations that needed to be addressed prior to the Council's consideration of adoption of the Land Use Final Order for the project. Some of the concerns and considerations were such that they could impact aspects of the final design for the project (such as the number of lanes or the Hayden Island interchange design) while others identified the need for further information prior to consideration of final approval (such as related to traffic diversion effects of tolls or the impact on greenhouse gases). Exhibit A to the Resolution provides the full list of concerns and considerations. Exhibit B provides documentation about how they have been addressed, including a brief synopsis and links to more detailed documentation. The staff report provides background about the process carried out to address the conditions.

Adoption of this resolution would complete the LPA approval allowing the project to seek approval of the Land Use Final Order, publish the Final Environmental Impact statement describing the scope of the proposed project and how impacts will be mitigated and enabling the Federal Highway Administration and Federal Transit Administration to issue their Record of Decision approving the project. Once these steps are completed, the project can seek funding, initiate final design, solicit contractors and proceed to construction.

OPTIONS AVAILABLE
The Council could:

- adopt Resolution No. 11-4264 indicating satisfaction with how the concerns and considerations are addressed; or
- adopt Resolution No. 11-4264 but identify the need for further information prior to the action to approve the Land Use Final Order; or
- defer action pending the need to address any issue that has not been satisfactorily addressed.

IMPLICATIONS AND SUGGESTIONS

Adoption of Resolution No. 11-4264 is recommended. The CRC project has been quite responsive in their approach to addressing these issues. They have taken on additional studies of these conditions (and others adopted by other jurisdictions) in a collaborative manner and Metro staff and the Metro Council's delegate to the Project Sponsors Council have made significant contributions to resolving the issues. They have also sought independent advice from outside experts through two independent review panels. While there remain issues to be addressed (such as the exact tolling rates), there will be ample opportunity for involvement by Metro in the future. Further delaying the project increases costs and delays implementing the finance plan through state and federal action.

QUESTION(S) PRESENTED FOR CONSIDERATION

- Have the concerns and considerations been adequately addressed?
- Is there additional information required?
-

LEGISLATION WOULD BE REQUIRED FOR COUNCIL ACTION _X_ Yes __No
DRAFT IS ATTACHED _X_ Yes ___No

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF CONCLUDING THAT THE CONCERNS AND CONSIDERATIONS RAISED ABOUT THE COLUMBIA RIVER CROSSING PROJECT IN EXHIBIT A TO RESOLUTION NO. 08-3960B HAVE BEEN ADDRESSED SATISFACTORILY	))))))	RESOLUTION NO. 11-4264 Introduced by Councilor Rex Burkholder

WHEREAS, the Joint Policy Advisory Committee on Transportation (JPACT) recommended and the Metro Council endorsed the Locally Preferred Alternative (LPA) for the Columbia River Crossing Project by Resolution No. 08-3960B (For the Purposes of Endorsing the Locally Preferred Alternative for the Columbia River Crossing Project and Amending the Metro 2035 Regional Transportation Plan with Conditions); and

WHEREAS, Resolution No. 08-3960B supported a Columbia River Crossing Project that includes a replacement bridge with three northbound and three southbound through lanes plus auxiliary lanes for merging and weaving using tolls for both finance and for demand management and selecting light rail transit to Vancouver as the preferred transit mode; and

WHEREAS, among the conditions of Council endorsement of the LPA was a list of concerns and considerations, contained in Exhibit A to Resolution No. 08-3960B as reflected in Exhibit A to this resolution, to be addressed before the Council would approve a land use final order (LUFO) for the project; and

WHEREAS, Resolution No. 08-3960B indicated that the Metro Council will invite public review and discussion on the issues raised in Exhibit A; and

WHEREAS, the Columbia River Crossing Project Team in cooperation with the Integrated Project Staff and Project Sponsors Council responded to the concerns and considerations adopted by the Metro Council as well as by the governing bodies of the other partner jurisdictions and agencies; and

WHEREAS, the Governors of Oregon and Washington commissioned an Independent Review Panel and a Bridge Review Panel to provide independent expert evaluation and recommendation; and

WHEREAS, the Project Team presented its assessment to JPACT on June 9, 2011, and JPACT voted to recommend that the Metro Council accept the responses as satisfactory; now, therefore,

BE IT RESOLVED THAT the Metro Council:

1. Accepts the responses to the concerns and considerations set forth in Exhibit A to Resolution No. 08-3960B and attached to this resolution as Exhibit A, also, as satisfactory, based upon the assessment contained in the documentation attached to this Resolution as Exhibit B.

2. Directs the Chief Operating Officer to send a copy of this resolution to the Columbia River Crossing Project.

ADOPTED by the Metro Council this 9th day of June, 2011

Tom Hughes, Council President

Approved as to form:

Alison Kean Campbell, Acting Metro Attorney

RESOLUTION O8-3960B
Exhibit A

Metro Council Concerns and Considerations
Columbia River Crossing "Locally Preferred Alternative"

The Metro Council recognizes that endorsement of a "Locally Preferred Alternative" is one important narrowing step that enables the project management team to proceed with further analysis of a reduced range of alternatives. The Council is cognizant that many important issues are generally still unresolved at the time of endorsement of an LPA, but that clear articulation of concerns is required to make sure that such unresolved issues are appropriately resolved during the next phase of design, engineering, and financial planning, with proper participation by the local community and its elected representatives. If those sorts of outstanding issues are not satisfactorily resolved during that post-LPA selection phase, then the project risks failing to win the approval of necessary governing bodies at subsequent steps of the process.

While the Metro Council endorses the LPA, Replacement Bridge with Light Rail and Tolls, as described in Resolution 08-3960A, the Metro Council simultaneously finds that the following issues will need to be satisfactorily addressed in the upcoming refinement of design, engineering and financial planning:

FORMATION OF A LOCAL OVERSIGHT COMMITTEE TO SUCCEED THE TASK FORCE

The Metro Council concluded on June 5, 2008 through Resolution 08-3938B that further oversight of the project is needed once the Task Force's work is concluded. The Council suggested that the Governors of Oregon and Washington convene such a local oversight group. On June 19, 2008, the Governors issued a joint letter that concluded there is a need to reconvene the CRC Project Sponsor's Council as the oversight committee to succeed the Task Force, including representatives from Washington State Department of Transportation, the Oregon Department of Transportation, cities of Portland and Vancouver, Metro, the Southwest Washington RTC, TriMet and CTRAN. The Governors charged the committee with advising the two departments of transportation and two transit agencies on a consensus basis to the greatest extent possible regarding the major issues requiring further oversight and resolution.

PROJECT ISSUES REQUIRING LOCAL OVERSIGHT DURING PLANNING, DESIGN, ENGINEERING, FINANCE AND CONSTRUCTION

The Governors have charged the Project Sponsors Council with project oversight on the following issues, milestones and decision points:

1) Completion of the Environmental Impact Statement (EIS),
2) Project design, including, but not limited to: examining ways to provide an efficient solution that meets safety, transportation and environmental goals,
3) Timelines associated with project development,
4) Development and use of sustainable construction methods,
5) Ensuring the project is consistent with Oregon and Washington's statutory reduction goals for green house gas emissions, and
6) A finance plan that balances revenue generation and demand management, including the project capital and operating costs, the sources of revenue, impact to the funds required for other potential expenditures in the region.

The Metro Council has identified additional areas of concern that need to be addressed by the Project Sponsors Council as the project moves forward:

A. TOLLING
Implementation of tolls on the existing I-5 Bridge should be undertaken as soon as legally and practically permissible. Consideration should be given to potential diversion of traffic to I-205 and potential tolling I-5 and I-205 with those revenues potentially used for projects on these two facilities in the Portland-Vancouver metropolitan area.

B. NUMBER OF AUXILIARY LANES
Determine the number of auxiliary lanes in addition to the three through lanes in each direction on the replacement bridge across the Columbia River and throughout the bridge influence area.

C. IMPACT MITIGATION AND COMMUNITY ENHANCEMENT
Identify proposed mitigation for any potential adverse human health impacts related to the project and existing human health impacts in the project area, including community enhancement projects that address environmental justice.

D. DEMAND MANAGEMENT
Develop of state-of-the-art demand management techniques in addition to tolls that would influence travel behavior and reduce greenhouse gas emissions.

E. FINANCING PLAN
A detailed financing plan showing costs and sources of revenue must be proposed and presented to the partner agencies and to the public. The proposed financing plan should indicate how the federal, state and local (if any) sources of revenue proposed to be dedicated to this project would impact, or could be compared to, the funds required for other potential expenditures in the region.

F. CAPACITY CONSIDERATIONS, INDUCED DEMAND AND GREENHOUSE GASES
Further analysis is required of the greenhouse gas and induced automobile demand forecasts for this project. The results of the analysis must be prominently displayed in the Final Environmental Impact Statement. The analysis should include comparisons related to the purpose and function of the so-called "'auxiliary" lanes. A reduction in vehicle miles traveled should be pursued to support stated greenhouse gas reduction targets as expressed by legislation in Oregon and Washington and by the Governors.

G. PRESERVATION OF FREIGHT ACCESS
The design and finance phase of the CRC project will need to describe specifically what physical and fiscal (tolling) methods will be employed to ensure that trucks are granted a priority which is commensurate with their contributions to the project and their important role in the economy relative to single-occupancy automobile commuting. Ensure that freight capacity at interchanges is not diminished by industrial land use conversion.

H. LIGHT RAIL
As indicated in the Item 2 "resolved" in the body of the resolution, the Metro Council's endorsement of the LPA categorically stipulates that light rail must be included in any phasing package that may move forward for construction.

I. DESIGN OF BICYCLE AND PEDESTRIAN FACILITIES

More detailed design of bicycle and pedestrian facilities is required to inform the decisions of the local oversight panel described above. The project should design "world class" bicycle and pedestrian facilities on the replacement bridge, bridge approaches and throughout the bridge influence area that meet or exceed standards and are adequate to meet the demand generated by tolls or other demand management techniques.

J. URBAN DEVELOPMENT IMPACTS AT RE-DESIGNED INTERCHANGES

More design of the interchanges related to the CRC is required to fully evaluate their community impact. The design of interchanges within the bridge influence area must take into account their impact on urban development potential. The Metro Council is also concerned that the Marine Drive access points preserve and improve the functionality of the Expo Center.

K. BRIDGE DESIGN

The bridge type and aesthetics of the final design should be an important consideration in the phase of study that follows approval of the LPA and precedes consideration of the final decision.

- Resolution No. 08-3960B "For the Purpose of Endorsing the Locally Preferred Alternative for the Columbia River Crossing Project and Amending the Metro 2035 Regional Transportation Plan with Conditions." adopted July 17, 2008.
- Ordinance 10-1241B "For the Purpose of Amending the 2035 Regional Transportation Plan (Federal Component) and the 2004 Regional Transportation Plan to Comply With Federal and State Law; to Add the Regional Transportation Systems Management and Operations Action Plan, the Regional Freight Plan and the High Capacity Transit System Plan; to Amend the Regional Transportation Functional Plan and Add it to the Metro Code; to Amend the Regional Framework Plan; and to Amend the Urban Growth Management Functional Plan." Adopted on June 10, 2010.

3. **Anticipated Effects**

The approval of this resolution would be to "perfect" the endorsement of the Locally Preferred Alternative and remove the conditions imposed by Resolution No. 08-3960B. This would allow the project scope to be finalized through the Final Environmental Impact Statement, would allow Metro to consider approval of the Land Use Final Order and allow the Federal Highway Administration and Federal Transit Administration to issue a Record of Decision. With these actions in place, the project can proceed from the current development stage into final design.

4. **Budget Impacts**

If there is a role for Metro to play, the CRC project would reimburse Metro for any costs incurred for such work (this could be additional updated travel forecasting and updated rating information for the New Starts submission, for example).

RECOMMENDED ACTION

Adopt Resolution No. 11-4264 For the Purpose of Concluding that the Concerns and Considerations Raised About the Columbia River Crossing Project in Exhibit A to Resolution No. 08-3960B have been Addressed Satisfactorily.

ANALYSIS/INFORMATION

1. **Known Opposition**

The CRC is a very large and complex transportation project. There are strong feelings – pro and con – associated with the project. Opposition to the project includes concerns raised regarding the need for the project, greenhouse gas emissions that could be generated by the project, costs, tolls, the light rail extension to Vancouver, Washington and the aesthetic qualities of the bridge type. Opposition to tolls and light rail in Clark County has been well organized and aggressive. Opposition on the Oregon side has included concern that the project will simply worsen the bottleneck on I-5 in the vicinity of the Fremont Bridge and I-84 interchange. While it does not worsen that bottleneck, there remains criticism that the project shouldn't be built if it doesn't address an equally severe bottleneck just downstream.

Support for the project includes addressing the severe bottleneck and safety issues, the impact on freight movement and the opportunity to significantly improve transit service to Vancouver.

2. **Legal Antecedents**

Federal
- National Environmental Policy Act
- Clean Air Act
- SAFETEA-LU
- FTA New Starts Process

State
- Statewide Planning Goals
- State Transportation Planning Rule
- Oregon Transportation Plan
- Oregon Highway Plan
- Oregon Public Transportation Plan
- Oregon Bicycle and Pedestrian Plan

Metro
- Resolution No. 02-3237A, "For the Purpose of Endorsing the I-5 Transportation and Trade Study Recommendations," adopted on November 14, 2002.
- Resolution No. 07-3782B, "For the Purpose of Establishing Metro Council Recommendations Concerning the Range of Alternatives to Be Advanced to a Draft Environmental Impact Statement For the Columbia River Crossing Project," adopted on February 22, 2007.
- Resolution No. 07-3831B, "For the Purpose of Approving the Federal Component of the 2035 Regional Transportation Plan (RTP) Update, Pending Air Quality Conformity Analysis," adopted on December 13, 2007.
- Resolution No. 08-3911, "For the Purpose of Approving the Air Quality Conformity Determination for the Federal Component of the 2035 Regional Transportation Plan and Reconforming the 2008-2011 Metropolitan Transportation Improvement Program," adopted on February 28, 2008.
- Resolution No. 08-3938B, "For the Purpose of Providing Metro Council Direction to its Delegate Concerning Key Preliminary Decisions Leading to a Future Locally Preferred Alternative Decision for the Proposed Columbia River Crossing Project," adopted on June 5, 2008.

h. Post-construction governance and the role of a Mobility Council;
i. Phasing strategies.

4. The Governors of Oregon and Washington commissioned an Independent Review Panel which met from April to July of 2010. It was comprised of eight nationally recognized experts in developing, financing and implementing large complex multi-modal projects to do a thorough independent review of the project. They made recommendations for changes, and actions to be taken to reduce risk. The full recommendation report can be accessed at: http://crcreview.columbiarivercrossing.org/documents/IRP_report.pdf
5. In response to one of the recommendations of the Independent Review Panel, the Governors of Oregon and Washington commissioned a Bridge Review Panel which met from September 2010 to February 2011. It was comprised of 11 internationally recognized bridge experts plus the state bridge engineers for the states of Oregon and Washington and representatives from TriMet and C-TRAN. They were charged with evaluating the viability of the bridge type being pursued and recommend whether to proceed with the current bridge type proposal or an alternate bridge type, including consideration of whether some of the constraints that have controlled key aspects of the bridge design could be altered. The full report from the Bridge Panel can be accessed at: http://www.columbiarivercrossing.com/FileLibrary/GeneralProjectDocs/BRP_Report.pdf The decision of the Governors on the recommendation of the bridge panel can be accessed at: http://www.columbiarivercrossing.com/FileLibrary/GeneralProjectDocs/DeliverCRC_GovPR.pdf
6. The City of Portland contracted with the engineering consulting firm URS to provide independent expertise in examining design options to remove or revise the Hayden Island Interchange and traffic operations and engineering analysis of 8, 10 and 12 lane bridge options.

Satisfaction of Concerns and Considerations

Exhibit B to this resolution provides documentation on how each condition has been satisfied. Presented in the table is a brief restatement of the condition being addressed and a synopsis of the conclusions and recommendations about each condition. In addition, in most cases there is an electronic link to the CRC web-site providing direct access to the full report on that subject. In this manner, the reader can review the overall conclusion but also access greater detail if desired. Also presented as part of Exhibit B is an assessment by the Project Sponsors Council and the Independent Project Staff of whether the concern is fully and finally decided and will be reflected as such in the Final Environmental Impact Statement or whether there is agreement in principle with further decisions still pending later in the process. For example, there is agreement in principle about the parameters for tolling although the specific toll rates will not be made until much closer to opening day. In each case where a future decision will be necessary, the character of that future process is provided.

The conditions and conclusions presented in Exhibit B are as follows:

A. Tolling
B. Number of Auxiliary lanes
C. Impact Mitigation and Community Enhancement
D. Demand Management
E. Financing Plan
F. Greenhouse Gases and Induced Demand
G. Preservation of Freight Access
H. Light Rail Transit
I. Bike/Pedestrian Facilities
J. Interchange redesign and urban development impacts
K. Bridge Design

The underlying policy direction calling for the project in the first place is laid out in the Regional Transportation Plan adopted and periodically updated by Metro. In addition the staff report for Resolution No. 08-3960B approving the Locally Preferred Alternative provides considerable background on the alternatives considered, impacts evaluated and process followed to arrive at that decision, much of which is also published in the Draft Environmental impact Statement for the project.

Adoption of concerns and considerations to be addressed further

While the Metro Council expressed their support for this LPA, they also expressed concern about a number of issues they felt needed to be addressed before the project development is completed. As such the resolution also identified those concerns and considerations, calling for them to be addressed by the CRC project. Of particular concern were the following:

1. Assessment of tolling including timing of implementation and whether to extend tolls to I-205 and the traffic impacts if tolls are not extended to I-205;
2. Evaluation of the number of auxiliary lanes in addition to the three through lanes each direction;
3. Consideration of mitigation for any potential adverse human health impacts including community enhancements that address environmental justice;
4. Development of state of the art demand management techniques in addition to tolls;
5. Development of a financing plan with particular attention to how the revenue sources impact other projects in the region;
6. Assessment of greenhouse gases and the potential for induced growth and travel demand;
7. Preservation of the priority for freight access including ensuring that interchange capacity is not diminished by industrial land conversion;
8. Inclusion of light rail as part of any phasing plan that is developed;
9. Development of the bike/pedestrian facilities throughout the bridge influence area as "world-class" facilities;
10. Re-examination of interchange designs to minimize community impacts and maximize LRT station-area development opportunities. Particular attention should be paid to revisiting the Hayden Island Interchange and ensuring adequate access to the Expo Center;
11. Consideration of the bridge type and design to ensure aesthetic considerations are reflected in the final design.

CRC Response to concerns and conditions

In response to the conditions adopted by the Metro Council, as well as numerous other concerns raised by the other participating jurisdictions, the CRC Project responded through a multi-pronged approach:

1. The Project Sponsors Council (PSC) met on a much more frequent basis to review analyses and develop agreements on changes to incorporate into the project or reasons with better support documentation if changes were not warranted.
2. An Integrated Project Staff (IPS) working group was created co-chaired by the PSC co-chairs to carry-out the analyses commissioned to respond to the conditions.
3. Subcommittees of the IPS with participation by multiple partners were convened to focus on the following topics:
    a. Hayden Island Interchange re-design or removal;
    b. Vancouver City Center Interchange removal;
    c. Number of auxiliary lanes;
    d. Induced growth;
    e. Application of performance measures to the project scope decisions;
    f. Definition of construction mitigation travel demand management program;
    g. Definition of post-construction travel demand management program;

STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. 11-4264, for the purpose of CONCLUDING THAT THE CONCERNS AND CONSIDERATIONS RAISED ABOUT THE COLUMBIA RIVER CROSSING PROJECT IN EXHIBIT A TO RESOLUTION NO. 08-3960b HAVE BEEN ADDRESSED SATISFACTORILY

Date: May 23, 2011

Prepared by: Andy Cotugno
503-797-1763

BACKGROUND

Overview

The Columbia River Crossing (CRC) is a proposed multimodal bridge, transit, highway, bicycle and pedestrian improvement project sponsored by the Oregon and Washington transportation departments in coordination with Metro, TriMet and the City of Portland as well as the Regional Transportation Council of Southwest Washington, CTRAN and the City of Vancouver, Washington. (More detailed project information may be found at: http://www.columbiarivercrossing.org/).

The CRC project is designed to improve mobility and address safety problems along a five-mile corridor between State Route 500 in Vancouver, Washington, to approximately Columbia Boulevard in Portland, Oregon, including the Interstate Bridge across the Columbia River.

The project would be funded by a combination of Federal Transit Administration (FTA) New Starts funding for the transit component, Federal Highway Administration (FHWA) funding for highway, freight, bicycle and pedestrian improvements, with local match being provided by the states of Oregon and Washington through toll credits and other funding. Tolls are also proposed for a new I-5 bridge to pay for a portion of the capital project and manage transportation demand.

Locally Preferred Alternative Approval

In July, 2008 the Metro Council adopted Resolution No. 09-3960B endorsing the Locally Preferred Alternative (LPA) consisting of replacement of the I-5 Interstate Bridge with three through lanes each direction plus auxiliary merging and weaving lanes, extension of light rail transit to Vancouver, Washington, provision of bike and pedestrian facilities on the bridge and connecting to the regional network and implementation of congestion pricing as both a demand management and revenue tool.

However, that resolution also raised a number of concerns and considerations needing to be addressed prior to finalizing the project through publication of a Final Environmental Impact Statement. Some of the concerns and considerations dealt with issues that could potentially change specific aspects of the project design (such as the number of lanes or the design of the Hayden Island Interchange) while other concerns dealt with development of further information about the potential impacts of the project (such as the impact on traffic on I-205).

This staff report and Exhibit B to this resolution provide information relating to those concerns and considerations and analyses and conclusions reached since that action. The overall purpose of this resolution is to provide sufficient information to demonstrate that all of the concerns and considerations have been adequately addressed, thereby allowing the project development to be completed.

			three options less expensive and more suitable for the crossing over the Columbia River than the open web box bridge type that had been advanced. At the direction of the governors of Oregon and Washington, the two state DOTs reviewed the Panel's recommendation and reported back to the governors with project findings on February 25, 2011. On April 25, 2011, the governors of Oregon and Washington announced the selection of the deck truss bridge type for the replacement bridge. The governors cited several reasons for the selection including reducing and eliminating risks to schedule and budget; affordability; and the ability to secure funding. The Bridge Panel's final report can be found at: http://www.columbiarivercrossing.com/FileLibrary/GeneralProjectDocs/BRP_Report.pdf The Washington and Oregon DOT's findings can be found at: http://www.columbiarivercrossing.org/FileLibrary/GeneralProjectDocs/DOTs_Draft%20Recommendation.pdf The Governors' announcement can be found at: http://www.columbiarivercrossing.com/FileLibrary/GeneralProjectDocs/DeliverCRC_GovPR.pdf The governors recognized the importance of design and aesthetic considerations and committed to specific actions. They committed to engaging the design community and stakeholders in the design process. They directed the project to add an architect to the project team and establish architectural specifications for the contractor to follow. Details of these actions are being developed and will be announced and advertised by the project. The Governors' April 25, 2011 announcement of the "Next Steps" can be found at: http://www.columbiarivercrossing.org/FileLibrary/GeneralProjectDocs/Gov_BridgeRecommend.pdf

		approaches and throughout the bridge influence area; meet or exceed standards; be adequate to meet the demand considering tolls and other transportation demand measures.	Connections for bicyclists and pedestrians to the local network in downtown Vancouver, Hayden Island, and streets and multi-use paths in the vicinity of Marine Drive and Delta Park are still undergoing refinement. The project is committed to providing good connections that meet or exceed all applicable standards, such as width and grade, that avoid or minimize conflicts among modes of travel, and that seeks to improve the existing circuitous routing patterns in the area. Many features needed to implement this vision for a world class facility in the corridor, such as the precise locations, widths, grades, etc will be determined in the final design phase including consultation with local agencies and stakeholders.
	J	Urban Development Impacts at Re-designed Interchanges – Undertake additional evaluation of the impact of redesigned interchanges and urban development potential; preserve and improve access to the Expo Center.	Several of the interchanges, especially the Marine Drive and Hayden Island interchanges, have undergone considerable additional analyses. Key participants in these evaluations have been the Marine Drive Stakeholder Group and the Portland Working Group. Several options for the Marine Drive interchange were explored. Key issues considered in the designs for the Marine Drive interchange included the impact on freight movements, access to existing industrial uses in the area, access to the Expo Center, and the creation of parcels that could be put to beneficial uses. The Hayden Island interchange also underwent additional study designed to further the Hayden Island Plan and implement features that are supportive of transit, seek to implement a "main street" for Tomahawk Island Drive, and minimize the footprint of the project on Hayden Island. Additional analyses led to a new concept (known as Concept D) utilizing an arterial bridge to provide access between Hayden Island and N. Expo Road with a corresponding elimination of direct freeway ramps within the project design between Hayden Island and the Marine Drive interchange. Efforts are currently underway to incorporate this into a design that will be included as the preferred option in the Final EIS. Additional refinement work addressing urban design characteristics will continue as the project advances toward construction. The Portland Working Group and other stakeholders will be consulted as the project seeks to advance the design. Overall, the combination of improvements at and around the Marine Drive and Hayden Island interchanges substantially improves local connectivity and access apart from the freeway improvements and the resulting removal of the congestion bottleneck. Access to/from Expo is substantially improved and representatives from Expo have been involved in the process.
	K	Bridge Design – Consider bridge type and aesthetics before the final design.	In seeking to achieve a quality design meeting aesthetic values, the project has made extensive use of advisory groups including the Urban Design Advisory Committee (UDAG), a Sustainability Working Group, the Independent Review Panel (IRP), the Hayden Island Design Group, and a constructability working group. The Urban Design Advisory Committee (UDAG) developed design guidelines and recommended a two-level, two-bridge concept that is being advanced. Overall guidance has been provided by the IPS and PSC to meet these objectives. UDAG's recommended guidelines are currently being developed into "architectural standards" by WSDOT and CRC staff to use as the project moves into final design. These standards will be shared with UDAG, the cities of Portland and Vancouver, and other stakeholders and will be used for the bridge and other elements of the project. Beginning on November 3, 2010, the Bridge Expert Review Panel began reassessing bridge types, and constraints. In its final report on February 3, 2011, the Panel offered three more feasible bridge type alternatives for consideration, a tied arch, cable-stayed and deck truss. The panel found all

			Results of the Metroscope analysis were summarized by Metro in its news release that can be found at: http://news.oregonmetro.gov/1/post.cfm/metro-finds-columbia-river-crossing-toll-bridge-with-light-rail-would-have-negligible-impact-on-growth
	G	Preservation of Freight Access – Describe the physical improvements and tolling methods that will be used to ensure trucks are granted priority due to their importance relative to single-occupant autos; ensure that freight capacity at interchanges is not diminished by industrial land use conversion.	The importance of freight has been recognized throughout the project. The Freight Working Group provided key input to the design process, including the design of key interchanges such as the Marine Drive interchange. The design standards used for the project seek to accommodate trucks used in commerce. The ramp terminals, ramps, and interchanges have been sized to provide needed capacity for trucks. Freight-only lanes and ramps were considered, but were not recommended by the Freight Working Group. The project's plan for the Marine Drive interchange includes a flyover ramp from eastbound Marine Drive to northbound I-5 and braided ramps on southbound I-5 between the Marine Drive and Interstate/Victory Boulevard interchanges. Analyses conducted for the project indicate that neither of these is required short-term and can be delayed until after year 2030. Both projects, however, are considered part of a long-term solution because of the importance of accommodating freight movements, particularly those associated with the Port of Portland and other industrial uses along Marine Drive. The revised plan for the Hayden Island Interchange includes provision of an arterial bridge across the Portland Harbor, connecting Hayden Island to North Interstate Avenue and Martin Luther King Blvd in lieu of ramp connections through the I-5/Hayden Island interchange complex to the Marine Drive interchange. This has a beneficial impact for freight by removing this auto traffic from the key freight access interchange, the Marine Drive interchange. Electronic tolling is planned for the project. It is currently assumed that trucks will pay more based on number of axles or weight. Both DOTs share the concern about capacity being used up by unplanned non-industrial development, but must rely upon the partners with land use authority to prevent industrial lands from being converted to other uses with unacceptable transportation impacts. One of the relatively new methods of protecting the capacity of interchanges being used in Oregon is an Interchange Area Management Plan (IAMP). An IAMP identifies long-range improvements, access management strategies, and land use tools that are used to protect the interchange. IAMPs are adopted by the local jurisdiction and by the Oregon Department of Transportation. Development of IAMPs is underway for both the Hayden Island and Marine Drive interchanges. Adoption by the City of Portland and the Oregon Transportation Commission are expected sometime during 2011.
	H	Light Rail Transit – Implement light rail transit as a required element in any plan that moves forward.	Light rail transit was selected as the high capacity transit mode and is being advanced as a key element of the project. Confirmation of the selection of light rail transit as a project element will be with the publication of the Final EIS and the issuance of the Record of Decision. Both actions are expected in 2011. The project will pursue FTA authorization to proceed to final design in 2012 contingent on the FTA's approval of a capital and operating financing plan. In addition, C-TRAN is considering referral of a measure to the voters for operating support for LRT.
	I	Design of Bicycle and Pedestrian Facilities – Undertake additional design to include "world class" bicycle and pedestrian facilities on the bridge,	A "world class" facility for pedestrians and bicyclists is being advanced. It will feature a facility for bicyclists and pedestrians on the main span with more width than other facilities in the Portland-Vancouver region and far exceeds minimum standards. The capacity of the facility is calculated to be more than adequate for the predicted use. The Pedestrian and Bicycle Advisory Committee (PBAC) spent considerable effort helping develop a complete system that features a river crossing using one of the lower-level sections of the bridge for the main river crossing. PBAC helped develop appropriate connections at both ends of the project and for Hayden Island. PBAC also recommended development of a future maintenance and security plan that has been endorsed by PSC and committed to by the Oregon and Washington DOTs.

			The Tolling Study can be found at: http://www.columbiarivercrossing.org/FileLibrary/Tolling/CRC_TollingStudyCommitteeReport.pdf Information presented to the PSC about funding from federal sources can be found at: http://www.columbiarivercrossing.org/FileLibrary/MeetingMaterials/PSC/PSC_WorkshopMaterials_051410_1of2.pdf
	F	Capacity Considerations, Induced Demand and Greenhouse Gases – Conduct additional analysis of GHG and induced automobile demand; prominently display the results in the FEIS; include comparisons of the auxiliary lanes; pursue reductions in VMT in support of targets established by the states.	In November 2008, the Greenhouse Gas Emissions Expert Review Panel was convened to review the GHG and climate change methodology used in the project's Draft EIS. In its report issued on January 8, 2009, the panel validated the methodology and confirmed the findings in the Draft EIS - that the CRC project would be expected to reduce GHG emissions relative to the No-Build. They made suggestions for future analyses that will be incorporated into the FEIS. This updated analysis has been completed including use of the latest EPA MOVES model, taking into account mode shift to transit, bike and pedestrian, the effect of speeds on emission rates and the reduction of emissions due to crashes and bridge lifts. This analysis shows similar results to the DEIS analysis but with even greater GHG reductions than previously estimated. Additionally, the GHG and Climate Change analysis in the CRC Draft EIS received the 2009 NEPA Excellence Award from the National Association of Environmental Professionals. The Greenhouse Gas Expert Review Panel's report can be found at: http://www.columbiarivercrossing.org/FileLibrary/TechnicalReports/GHG_PanelReport_010809.pdf Since release of the DEIS, several groups, including the Transportation Demand Working Group, the Performance Measures Advisory Group, and the IPS, have worked on strategies designed to enhance mobility, especially through promotion of alternative modes of travel that reduce both GHG emissions and VMT. The strategies and plans of each of these groups have been endorsed by PSC. Additional work relating to implementation of these strategies and plans will be needed as the project advances. Further discussion relating to the recommendations and implementation of transportation demand management strategies can be found in Issue D, above. A qualitative analysis of the potential for induced travel demand was conducted by the Travel Demand Expert Review Panel. In its report dated November 25, 2008, the panel concluded that "the CRC project finding that the project would have a low impact to induce growth is reasonable for this corridor because the project is located in a mature urban area." The report can be found at: http://www.columbiarivercrossing.org/FileLibrary/TechnicalReports/TravelDemandModelReview_PanelReport.pdf An additional study of induced growth was conducted by Metro during summer 2010 using its Metroscope model. This quantitative study also concluded "that the proposal would have negligible impact on population and employment growth in Clark County, when comparing the projected growth that would occur with the project with the projected growth that would occur even with no change to the existing bridge." According to Metro, the three main conclusions from its summer 2010 analysis using Metroscope were: • The CRC project produces a minor difference in regional growth relative to the no-build alternative and almost no change compared to the No-Build if tolls are imposed on I-5. • The results using Metroscope reinforce the previous qualitative analysis with its quantitative approach. • The no-build and build scenarios result in basically the same growth patterns for population and employment and confirm the validity of the approach used for forecasting traffic volumes in the Draft and Final EIS involving holding population and employment forecasts constant between the Build and No-Build scenarios.

	D	Demand Management – Develop state-of-the-art demand management techniques in addition to tolls to influence travel behavior and reduce greenhouse gas emissions.	The TDM Working Group developed both a Construction Phase and a Post-Construction Phase TDM program. The recommended Construction Phase program is a bi-state, multi-pronged approach that seeks to maximize use of alternative modes of travel through targeted marketing and additional services. The IPS has also endorsed a Post-Construction TDM Program with the goal of shifting as much as an additional 11 percent of peak person trips to non-SOV modes above the level assumed in the travel forecasts generated for the project, resulting in a non-SOV mode share that could exceed 50 percent. The Construction Phase TDM Plan was endorsed by the PSC. Additional follow-on work has been recommended to move toward implementation. To facilitate the active management of the corridor, the PSC adopted the concept of a Mobility Council on March 6, 2009. The Mobility Council would regularly assess all aspects of the corridor and the direct and indirect impacts. The PSC vision of the Mobility Council would include active management in four areas: the toll rate structure, the use of through and auxiliary lanes; transit policies; and transportation demand management strategies. During 2009 and 2010, the PSC oversaw the development and endorsed the TDM plans. TDM Plans were presented to and endorsed by the PSC on January 22, 2010 and on August 9, 2010. The PSC also established a Performance Measures Advisory Group to help establish performance measures, targets and strategies to help inform the design of the CRC project and to manage the system after construction. Key performance measures focused on the following goal areas: 1) System Access, Mobility and Reliability, 2) Financial Responsibility and Asset Management, 3) Climate, Energy Security and Health, 4)Safety and Security, 5) Economic Vitality, and 6) Land Use. The Performance Measures Advisory Group recommendations were presented to and endorsed by the PSC on January 22, 2010 and August 9, 2010. The Governance Committee of the IPS is developing recommendations for consideration by the PSC on governance structures to implement the Mobility Council and establish its charge and authority.
	E	Financing Plan – Develop a financing plan for presentation to the project partners and the public that indicates federal, state and local funding and how the project could impact other expenditures in the region.	A Conceptual Finance Plan was developed and shared with the PSC on January 22, 2010. The plan illustrates how the project could be funded using a combination of federal and state funds and toll revenues. On May 14, 2010, the PSC received additional presentations related to tolling and federal funding priorities. The funding plan in the FEIS is based on these concepts and will be updated as appropriate. At the direction of the governors of Oregon and Washington, the project is working with the treasurers and legislators of both states to review and refine the financing plan and toll assumptions to minimize financial risk and provide accountability and oversight as the project moves toward construction. The funding plan will be continually reviewed with the PSC as it evolves and will be finalized prior to the Federal Transit Administration (FTA) approval of entry into final design, which is anticipated in 2012. The federal funding sources being sought for the project are principally those for which no other projects in the region are eligible. Financing issues will continue to evolve with consultation among the project partners. Additional work remains on the financing plan with each additional step requiring more detailed analyses in accordance with requirements of the Federal Transit Administration and Federal Highway Administration. After the approval of the Final EIS, additional financial analysis and commitment will be required before federal agencies authorize entering into final design. An even more detailed financial analysis and a higher level of commitment will be required before federal agencies enter into a full funding grant agreement. Since issuance of bonds for the construction of the project is envisioned, a formal investment grade bond revenue analysis and a determination of bonding capacity will be required in the future.

			where appropriate on the following topics related to human health: · Air Quality · Noise and Vibration · Land Use and Economics · Neighborhoods · Pedestrians and bicycles · Traffic and Transit · Visual and Aesthetics · Parks and recreation · Public services · Environmental justice · Hazardous materials · Water Quality The major steps to the impact analysis that followed or occurred simultaneously with data collection were: neighborhood resource mapping, the completion of displacement surveys, review of potential impacts and benefits from other disciplines (such as air quality), evaluation of potential impacts to low-income housing developments, and a robust outreach and communication program. In response to questions raised by various parties commenting on the DEIS, including the Multnomah County Health Department, the project team did undertake additional analyses including assessing greenhouse gases, additional air quality and noise studies. The Final EIS will include substantially more documentation than the DEIS related to health impacts. The CRC website will provide access to the FEIS and technical reports upon their publication.

	C	Impact Mitigation and Community Enhancement – Mitigate for adverse human health impact of the project or existing health impacts in the project area; implement community enhancement projects that address environmental justice.	The project is committed to providing users and the surrounding neighborhoods with a safe and reliable transportation facility. The project is working with and within the surrounding communities to help build upon and support their community goals. The CRC project has been working with and will continue to work with the community to blend the transportation system enhancements and improvements into the fabric of the community. The project's goals include designing and constructing the project with as little disruption to the community as possible and developing the project such that it enhances the transportation and livability of the community and preserves the environmental, scenic, aesthetic, historic, natural and social resources of the area. The philosophy of the project is to leave the area better off and to provide enhancements within the community as part of the overall project design rather than providing a funding source for enhancement elements separate and disjointed from the rest of the project. Many enhancements are included in the project, such as improved local street connections in downtown Vancouver and Hayden Island, the provision of light rail transit in the corridor, replacement of substandard facilities for bicyclists and pedestrians with new "world class" facilities, local auto access from North Portland to Hayden Island on a separate arterial bridge and a safer highway network for all users. Human health issues are embedded in the National Environmental Policy Act's intent and in its implementation. The analyses conducted for the Columbia River Crossing DEIS, and further updates for the FEIS, address all potentially significant human health impacts that could reasonably result from the proposed action. The project, with planned mitigation, would not have adverse health impacts. Key findings leading to the conclusion that the project would not have adverse health impacts include analyses related to air quality, noise and vibration, climate change and greenhouse gases, and water quality. These four areas are highlighted below: • All criteria air pollutants and mobile source air toxins will be lower, in some cases significantly lower, in 2030 than they are today. Some pollutants will be slightly higher in some areas with the project than with the no-build, but emissions will be substantially below today's levels and will be well within relevant standards established to promote public health and welfare. Long-term mitigation for air quality impacts is not proposed. The FEIS will describe measures to reduce impacts from construction emissions. • Noise impacts from highway traffic will be lower with the project than without due to proposed mitigation, primarily sound walls. All light rail noise can be mitigated. • The project will reduce greenhouse gas (GHG) emissions compared to the no-build. The project will implement recommendations from the Governor's Climate Change Integration Group regarding how transportation in Oregon can reduce GHG emissions. • Currently, all runoff from the river crossing and most runoff from I-5 in the project area discharges untreated into the Columbia River and other surface waters. The project will provide water quality treatment for 115 percent of the new impervious surface, including the entire river crossing and most of I-5 in the project area that is currently untreated. These changes are beneficial to the health of aquatic species and people. The Draft EIS included and the Final EIS will include more detailed information, including analysis, applicable standards, conclusions, and mitigation

			ten other scenarios with varying toll structures and some with tolling of the I-205 and I-5 bridges. Key findings from the analysis undertaken for the CRC project included: • The regional travel forecasting models project that under the base tolling scenario, the CRC project will reduce auto travel on I-5 across the Columbia River, as compared to the No Build. The CRC project will also reduce overall person trips on I-5, as compared to the No Build due to the effect tolls have on shifting some cross river trip origins and destinations. • When looking at the tolled vs. no toll scenarios, tolling and transit improvements reduce auto travel across the river on I-5 by approximately 40,000 trips per day for the base tolling scenario (the numbers of trips vary by tolling scenario). • At the Columbia River, there is an approximate 4.5% shift of auto trips on an all day basis from I-5 to I-205 as compared to the Build No-Toll scenario. More diversion to I-205 is predicted in the off-peak hours when capacity is available than during peak hours. On I-205 south of I-84, the models estimate that diversion will be approximately 1% on an all day basis as compared to the no build. The Tolling Study Report had three principal conclusions about diversion: • For most of the I-5 only toll scenarios, the majority of drivers would not change their travel patterns. Some would choose a new destination or a non-tolled route. Additional diversion to transit is minimal due to the already significantly increased ridership associated with project improvements. • Higher tolls on I-5 would cause more route diversion; however, the percentage of diversion tends to be lower during peak periods when travelers' willingness to pay tolls may be higher and/or alternative routes are congested, and thus, time-consuming and diversion during off-peak periods occurs when available capacity can accommodate the diversion. • For scenarios that toll both the I-5 and I-205 bridges, traffic levels would be higher on I-5 and lower on I-205 compared to tolling only the I-5 bridge. However, compared to the No Toll "No Build" project scenario, total cross-river traffic demand would be less on both the I-5 and I-205 bridges as many trips would divert to transit or not be made across the Columbia River. The No Toll "No Build" scenario would result in the most significant congestion in the I-205 corridor due to diversion from the I-5 corridor due to the severe congestion bottleneck in that corridor. Additional information about the impact of tolling and diversion to I-205 can be found in The Tolling Study report at: http://www.columbiarivercrossing.org/FileLibrary/Tolling/CRC_TollingStudyCommitteeReport.pdf
	B	Number of Auxiliary Lanes – Determine the number of auxiliary lanes across the Columbia River.	During summer 2010, additional study was undertaken through the Integrated Project Staff (IPS) and the Project Sponsors Council (PSC). Developing performance measures and a more robust Transportation Demand Management Plan were among the actions considered to reduce the need for auxiliary lanes. The IPS recommendation forwarded to the PSC on August 5, 2010 was for a configuration with three through lanes and two auxiliary lanes in each direction and with standard 12-foot shoulders. The new recommendation results in narrower bridges as a result of reducing the project from 12 to 10 lanes. PSC concurred and forwarded its recommendation to the Governors on August 13, 2010. The decision on the number of lanes will be confirmed and finalized with the publication of the Final EIS and the issuance of the Record of Decision. Both are expected in 2011.

Metro Conditions from Exhibit A to Resolution No. 08-3960B

Overall Status Classification:

- Issue is settled or on track to be settled with the conclusion of the FEIS and ROD
- Issue is settled or on track to be settled with the conclusion of the FEIS and ROD but further refinement and decision-making after the FEIS/ROD will be required
- Conflict or inconsistency between jurisdictions; or issue is unresolved; or issue needs additional work

OVERALL STATUS CATEGORY	NUMBER	ISSUE	EXPLANATION OF STATUS
	A	Tolling – Implement tolling on I-5 as soon as legally and practically permissible; consider diversion to I-205 and tolling of that facility with revenues used for projects in the region.	The project has undertaken various analyses of tolls and the impact of tolling, though additional studies and analysis will need to be undertaken as the project advances. At the direction of the governors of Oregon and Washington, the project is working with the treasurers and legislators of both states to review and refine the financing plan and toll assumptions to minimize financial risk and provide accountability and oversight as the project moves toward construction. At this point, tolling of I-5 is an essential element of the project, both to manage congestion and as part of the funding package for the CRC project along with federal and state funding. Tolling of interstate facilities must be consistent with the provisions of Title 23 U.S.C. Section 129, the federal law that specifies the circumstances under which interstate facilities may be tolled. The CRC project qualifies, though tolling of I-205 does not because federal regulations allow tolling of existing facilities only if a project involves reconstruction or replacement of that facility. Reconstruction or replacement of I-205 is not being proposed as part of the CRC project nor is tolling being proposed for I-205 in connection with the CRC project. At this time, tolling is not being considered to fund other projects in the region. Further information on federal requirements can be found at: http://www.ops.fhwa.dot.gov/tolling_pricing/toll_agreements.htm Tolling of I-5 during construction of a new facility is permissible under federal statutes, but no recommendations or decisions about tolling during construction have been made. Tolling during construction could serve as a demand reduction measure to reduce traffic during the construction phase. An aggressive construction phase Transportation Demand Management (TDM) program has been developed and tolling during construction is still a possibility. Specific decisions on tolling, including the possibility of advance tolling as well as toll rates and toll structure, will be made by the appropriate bodies after consultation with the project's local partners and a public outreach and education process. Under current statutory authority, the Washington Transportation Commission and the Oregon Transportation Commission have tolling authority in their respective states. In Washington, the legislature reserves the authority to impose tolls on any state route or facility. The issues of tolling and tolling authority may also be explored in the forthcoming discussions on governance related to the project. Analyses conducted for the CRC project included using the regional traffic forecasting model to assess the impact of various tolls on total traffic and diversion to I-205. The Tolling Study Report, released in January 2010, included analyses of a no-build scenario, a no-toll build scenario, and

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A long-term, comprehensive solution

Metro Council Workshop: Status of LPA Conditions

Metro Council
May 31, 2011

Oregon Department of Transportation | Washington State Department of Transportation

Federal Transit Administration • Federal Highway Administration
City of Vancouver • City of Portland • SW Washington Regional Transportation Council • Metro • C-TRAN • TriMet

Today's presentation

- Project history and background
  - NEPA Process
- Status report on Metro's LPA conditions
- Next Steps

Materials following this page were distributed at the meeting.

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Project history and background

Oregon Department of Transportation | Washington State Department of Transportation

Federal Transit Administration • Federal Highway Administration
City of Vancouver • City of Portland • SW Washington Regional Transportation Council • Metro • C-TRAN • TriMet

Timeline

- **Regional planning**
- **CRC Begins: Identify problems and solutions**
  - Purpose and Need
  - Evaluation criteria
- **Preliminary alternatives**
- **Draft EIS**
  - Select alternatives; analyze effects
  - Publish results and receive public comment

4

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Regional Planning	Problems & Solutions	Preliminary Alternatives	Draft EIS	Preferred Alternative	Final EIS & R.O.D.	Engineering & Construction
1999-02	2005	2006	2007-08	2008-11	2011	2012 →

Timeline (continued)

- **Preferred alternative**
  - Local partners select preferred alternative
  - Refine designs with partners and public
- **Final EIS and Record of Decision**
  - Analyze effects and publish results
  - Receive federal approval to proceed into next phase
- **Final engineering and construction**

5

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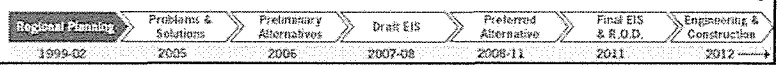
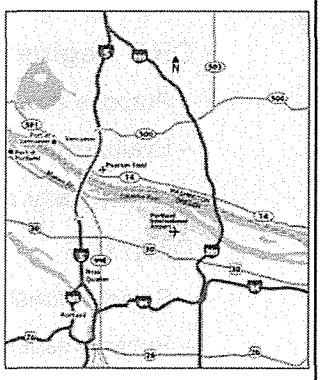


Portland/Vancouver I-5 Transportation and Trade Partnership

- **26 Member Bi-state Governors' Task Force**
  - Metro, Tri-Met, Portland, ODOT, Ports, WTC, C-Tran, Vancouver, Clark and Multnomah counties, neighborhoods, businesses, industry, citizen groups
- **Address growing congestion on I-5 from I-205 to I-84**
- **Determine investments needed for highway, transit and heavy rail, and how to manage transportation and land use systems to protect investments**



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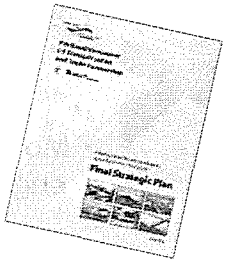
6

I-5 Transportation/Trade Partnership Recommendations for BIA

- **Fix three I-5 bottlenecks:**
  - I-5 Salmon Creek in Clark County - **Completed 2006**
  - Delta Park in Portland - **Completed 2010**
  - Interstate Bridge and nearby interchanges - **FEIS to be submitted 2011**



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Regional Planning 1999-02 | Problems & Solutions 2005 | Preliminary Alternatives 2006 | Draft EIS 2007-08 | Preferred Alternative 2008-11 | Final EIS & R.O.D. 2011 | Engineering & Construction 2012 →

I-5 Transportation/Trade Partnership Recommendations for BIA (CRC project area)

- **Construct new transit and vehicle capacity**
  - 3 through-lanes and up to 2 aux or arterial lanes in each direction across the river
  - Add LRT service across the river in I-5 Trade Corridor
  - Redesign freeway to balance ons and offs
  - Include safety considerations
- **Undertake an EIS**
  - 8- or 10-lane freeway concepts
  - Replacement or supplemental bridges
  - Joint use or non-joint use freeway/LRT bridge
  - HOV throughout corridor

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Public process to develop solutions

- 2001 – 2002
  I-5 Transportation and Trade Partnership
- 2005 – 2008
  39-member CRC Task Force
- 2008 – today
  Project Sponsors Council and citizen advisory groups
- More than 27,000 people engaged at over 900 events

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Early Steps in the NEPA Process

- **Form project partner team beginning early 2005**
- **CRC Task Force formed early 2005**
  - Representing local agencies, businesses, civic organizations, neighborhoods, freight, commuter, environmental groups
  - Finalized Problem Definition in Dec. 2005
  - Finalized Vision and Values in Oct. 2005
- **Notice of Intent – Sept 27, 2005**
- **Open Houses start new phase of involvement – fall 2005**
- **Purpose and Need – Jan. 2006**
  - Built on past studies and new analysis
  - New stakeholder input
- **Evaluation Framework – April 2006**

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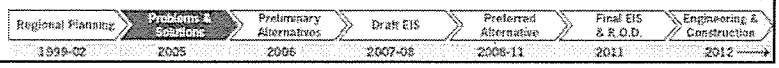
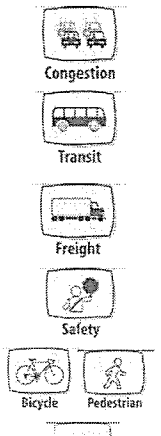


Purpose and Need: Address Six Problems

- **Congestion**
  Growing travel demand exceeds capacity
- **Public transit**
  Service and reliability are limited by congestion
- **Freight**
  Mobility through the area is impaired
- **Safety**
  Crash rates are too high
- **Bicyclists and pedestrians**
  Paths and connections are inadequate
- **Earthquake safety**
  Bridges don't meet current seismic standards



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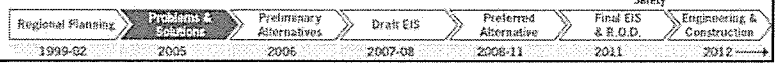

Major Steps in Screening:

1. Gather ideas (transit, river crossing, interchanges, bike/ped) – Fall 2005
2. Develop Evaluation Framework – Early 2006
3. Apply Steps A and B to ideas (70 components) - 2006
   - Pass/Fail criteria (Step A) - purpose and need
   - Detailed Screening Criteria (Step B)
4. Package remaining ideas into a "reasonable range" of alternatives (12) – Summer 2006
5. Evaluate alternatives against the screening criteria – Summer - Fall 2006
6. Carry forward promising alternatives into the DEIS – Fall 2006

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Task Force Screening and Evaluation Criteria

1. Community Livability and Human Resources
2. Mobility, Reliability, Accessibility, Congestion Reduction, and Efficiency
3. Modal Choice
4. Safety
5. Regional Economy/Freight Mobility
6. Stewardship of Natural Resources
7. Distribution of Benefits and Impacts
8. Cost Effectiveness and Financial Resources
9. Growth Management and Land Use
10. Constructability

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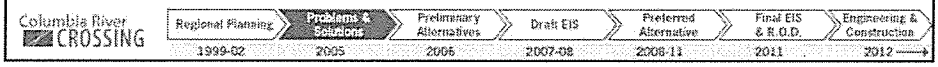

70 Ideas to Solve Transportation Problems

- **Six categories:**
  - River Crossing – 23 ideas
  - Transit – 14 ideas
  - Bicycle and Pedestrian – 6 ideas
  - Freight – 5 ideas
  - Transportation Demand/System Management – 18 ideas
  - Roadways North and South – 2 ideas

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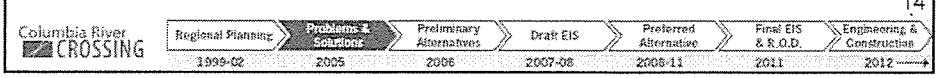
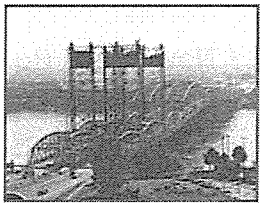


River Crossing – 23 ideas

- Replacement Bridge – Downstream
  - Low-level/Movable
  - Mid-level
  - High-level
- Replacement Bridge – Upstream
  - Low-level/Movable
  - Mid-level
  - High-level
- Supplemental Bridge – Downstream
  - Low-level/Movable
  - Mid-level
  - High-level
- Supplemental Bridge – Upstream
  - Low-level/Movable
  - Mid-level
  - High-level
- Tunnel to Supplement I-5
- New Corridor Crossing
- New Corridor Crossing plus widen existing I-5 Bridges
- New Western Highway (I605)
- New Eastern Columbia River Crossing
- I-205 Improvements
- Arterial Crossing to Supplement I-5
- Replacement Tunnel
- 33rd Avenue Crossing
- Non-Freeway multi-modal Columbia River Crossing
- Arterial Crossing with I-5 Improvements



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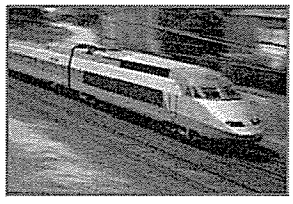
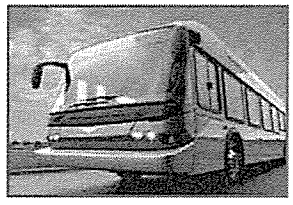
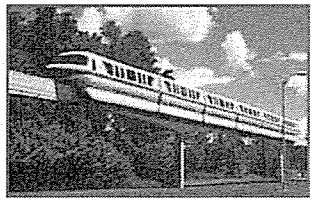
Transit – 14 ideas

- Express Bus in General Purpose Lanes
- Express Bus in Managed Lanes
- Bus Rapid Transit (BRT) – Lite
- Bus Rapid Transit (BRT) – Full
- Light Rail Transit (LRT)
- Streetcar
- High Speed Rail
- Ferry Service
- Monorail System
- Magnetic Levitation Railway
- Commuter Rail in BNSF Trackage
- Heavy Rail
- Personal Rapid Transit
- People Mover/Automated Guideway Transit (AGT)







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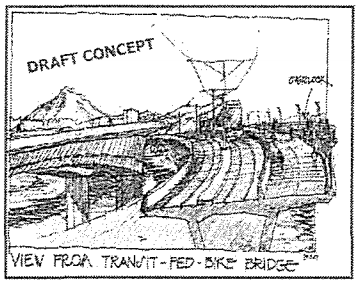
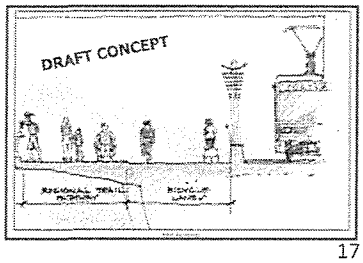
Bicycle and Pedestrian Components – 6 ideas

- Enhance Existing Pathway
- New I-5 Bridge and Pathway
- New I-5 Pathway-Only Bridge
- Enhanced Vancouver Connectivity
- Enhanced Hayden Island Connectivity
- New North Portland Pathway (Hayden Island to Marine Dr)





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Freight Components – 5 ideas

- I-5 Mainline Freight-Only Lanes
- Interchange Ramp Freight Bypass Lanes
- Peak Period Truck Freight Restrictions
- Allow Increased Freight Truck Size and Weight
- Freight Direct Access Ramps at Select Interchanges

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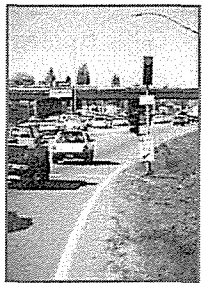
Transportation Demand/System Management –18 ideas

- Northern I-5 Managed Lane Through Re-striping
- Northern I-5 Transit-Only Lane Through Re-striping
- I-5 Managed Lane within the Bridge Influence Area
- I-5 Transit-Only Lane within the Bridge Influence Area
- Reversible Express Managed Lane
- Direct Access Ramps to Managed Lanes
- Preferential Managed Lane Merge(s)
- Ramp Queue Bypass Lanes
- Increased Bus Service
- Enhanced Park and Ride Capacity
- Enhanced Intelligent Transportation System Technology
- Improve Employer and Government Demand Management Policies
- Reduce Passenger Travel Time on Interstate MAX
- Transit Priority Signal System
- Congestion Pricing on I-5
- Highway On-Ramp Metering
- Arterial Managed Lanes
- Ramp Terminal Improvements



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Roadways North and South Components – 2 ideas

- Further definition and refinement of river crossing and transit components
- Ongoing analysis of I-5 Partnership concepts

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Step A Overview

- **Six Pass/Fail questions derived from the P&N/Problem Definition**
- **A "fail" answer to any of the six questions removes the component from further consideration**
- **Step A screening process applied only to components within the Transit and River Crossing categories**
  - Other 6 categories don't lend themselves to Step A/B screening
  - Evaluation within these categories depends on pairing transit and river crossing components
  - Components in other 6 categories will be available for alternative packaging

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Columbia River CROSSING

Regional Planning 1999-02 | Problems & Solutions 2005 | Preliminary Alternatives 2006 | Draft EIS 2007-08 | Preferred Alternative 2008-11 | Final EIS & R.O.D. 2011 | Engineering & Construction 2012 →

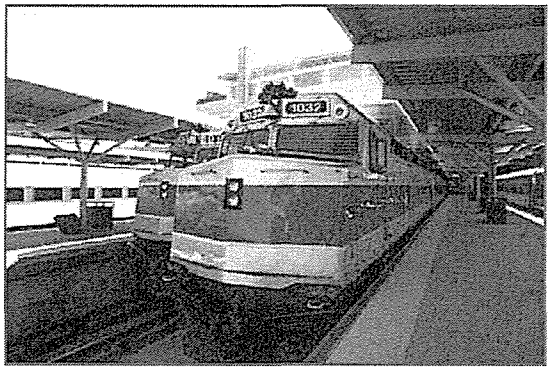
TR-11 Commuter Rail Transit

TRANSIT

Advance:

Yes ☐

No ☑



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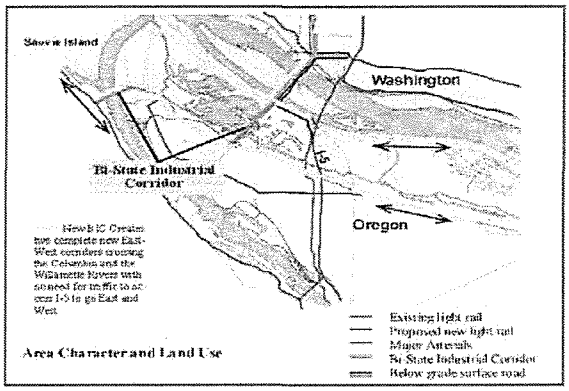
RC-14 New Corridor Crossing Near BNSF Rail Crossing

Advance:

Yes ☐

No ☑



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Packaging the most promising components into multi-modal alternatives

- **July 2006 – 12 alternative packages created**
- **Combined different river crossing types and transit modes**
  - No action
  - TSM/TDM focus
  - Supplemental bridge for arterial traffic with light rail
  - Supplemental bridge for I-5; light rail on existing bridge
  - Supplemental bridge for I-5; BRT on existing bridge
  - Supplemental bridge for I-5; BRT-lite on existing bridge
  - Supplemental bridge for I-5 and express bus
  - Replacement bridge for I-5 with light rail and express bus
  - Replacement bridge for I-5 with light rail
  - Replacement bridge for I-5 with BRT
  - Replacement bridge for I-5 with BRT-lite
  - Replacement bridge for I-5 with express bus

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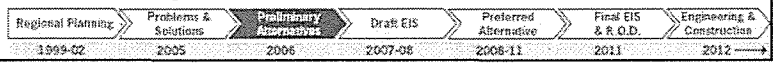

Alternative packaging

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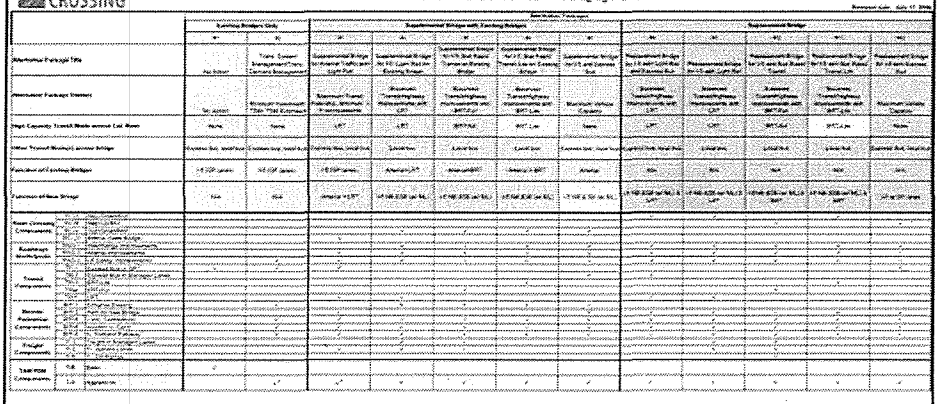
Table 2-1. Draft Alternative Packaging Matrix



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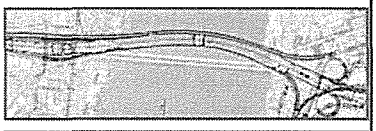
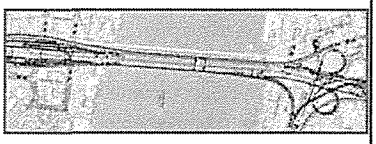
River Crossing Concepts Evaluated

RIVER CROSSING

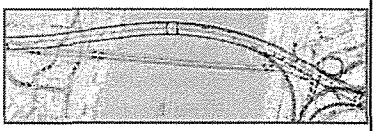
- RC-3: Replacement Bridge Downstream/Midlevel



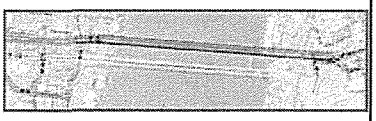
- RC-4: Replacement Bridge Upstream/Midlevel



- RC-9: Supplemental Bridge Downstream/Midlevel



- RC-23: Arterial Crossing with I-5 Improvements



Key Findings from Preliminary Alternatives

- Delays associated with lift spans degrade transit reliability
- HCT modes in exclusive guideways increase reliability and decrease delay
- Replacement bridge options performed better in most of the criterion
- Supplemental bridge options created more displacements on Hayden Island and the Vancouver National Historic Reserve
- Marine and aviation navigation are important constraints

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Supplemental Bridge Alternative Added

- Staff recommended 3 alternatives for DEIS
  - No Build
  - 2 alternatives with a replacement bridge
- Task Force requested a supplemental bridge that could meet the Purpose & Need be added
  - A subcommittee of task force members was established
  - CRC technical staff assisted the subcommittee
  - A revised supplemental bridge alternative was added into the DEIS analysis

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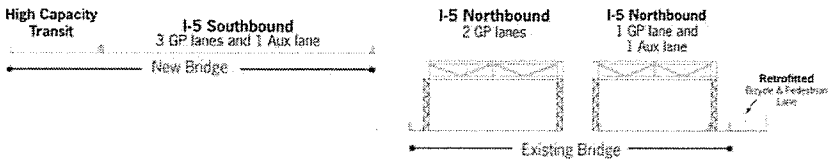
Mid-River Cross Section of "Fourth Alternative" – Supplemental Bridge



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Regional Planning 1999-02 | Problems & Solutions 2005 | Preliminary Alternatives 2006 | Draft EIS 2007-08 | Preferred Alternative 2008-11 | Final EIS & R.O.D. 2011 | Engineering & Construction 2012

Alternatives for Analysis in Draft Environmental Impact Statement

1. No build
2. Replacement bridge with bus rapid transit
3. Replacement bridge with light rail
4. Supplemental bridge with bus rapid transit
5. Supplemental bridge with light rail

All "build" alternatives include interchange, freight, and pedestrian/bicycle improvements between SR-500 and Delta Park.

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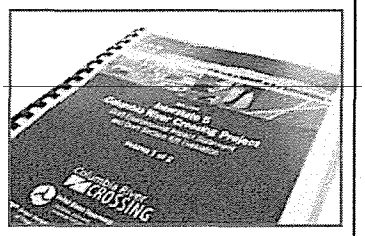
Regional Planning 1999-02 | Problems & Solutions 2005 | Preliminary Alternatives 2006 | Draft EIS 2007-08 | Preferred Alternative 2008-11 | Final EIS & R.O.D. 2011 | Engineering & Construction 2012

Draft EIS issued May 2, 2008

- **60 day public comment period:**
  - Extensive outreach and notification
  - Open houses and public hearings
  - 1,600 public comments received
- **CRC Task Force**
  - Members learned early DEIS findings and discussed LPA preferences in January 2008
  - Public and written testimony provided; summary of 700 DEIS comments also provided
  - Task Force voted 37-2 to adopt LPA resolution June 24, 2008



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Regional Planning 1999-02 | Problems & Solutions 2005 | Preliminary Alternatives 2006 | Draft EIS 2007-08 | Preferred Alternative 2008-11 | Final EIS & R.O.D. 2011 | Engineering & Construction 2012 →

LPA Endorsement and Adoption

- **July 2008 - All 6 local sponsor agencies vote in favor of LPA resolutions**
  - Some held public hearings in advance of vote
- **Represents regional agreement**
- **Some sponsor agency leaders had questions for the FEIS process, including:**
  - Need independent review of travel demand analysis
  - Need independent review of GHG analysis
  - Can tolling or other TDM strategies further reduce demand?
  - Can increasing transit service further reduce demand?
  - Raised concern over induced growth and costs
- **Adopted into MTP and RTP in July 2008**

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Regional Planning 1999-02 | Problems & Solutions 2005 | Preliminary Alternatives 2006 | Draft EIS 2007-08 | Preferred Alternative 2008-11 | Final EIS & R.O.D. 2011 | Engineering & Construction 2012 →

Locally Preferred Alternative

- **Replacement I-5 bridge**
  - 3 through lanes with up to 3 auxiliary lanes
  - 2 or 3 bridge structures
- **Improvements to closely-spaced highway interchanges**
- **Light rail extension to Clark College**
- **Pedestrian and bicycle facility improvements**

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Regional Planning 1999-02 | Problems & Solutions 2005 | Preliminary Alternatives 2006 | Draft EIS 2007-08 | Preferred Alternative 2008-11 | Final EIS & R.O.D. 2011 | Engineering & Construction 2012 →

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Status report on Metro's LPA conditions

Oregon Department of Transportation | Washington State Department of Transportation

Federal Transit Administration • Federal Highway Administration
City of Vancouver • City of Portland • SW Washington Regional Transportation Council • Metro • C-TRAN • TriMet

Metro Resolution 08-3960B Endorsing the Locally Preferred Alternative – July 17, 2008

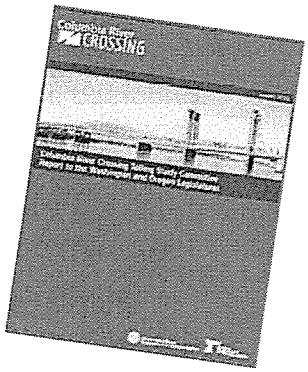
- Endorsed a multi-modal solution with highway, high capacity transit, freight, transportation demand management, and bicycle/pedestrian solutions
- Endorsed a replacement bridge with three northbound and three southbound through lanes
- Endorsed tolls for finance and demand management
- Endorsed light rail as the high capacity transit alternative
- Endorsed a light rail terminus in Vancouver
- Identified eleven areas of concern to be addressed as the project moves forward

Metro's Conditions (from Resolution 08-3960B)

A. Tolling
B. Number of Auxiliary Lanes
C. Impact Mitigation and Community Enhancement
D. Demand Management
E. Financing Plan
F. Capacity Considerations, Induced Demand and Greenhouse Gases
G. Preservation of Freight Access
H. Light Rail
I. Design of Bicycle and Pedestrian Facilities
J. Urban Development Impacts at Redesigned Interchanges
K. Bridge Design

A. Tolling

- **Analyses of Tolling**
  - Tolling analysis for DEIS/FEIS (2008 – 2011)
  - Tolling Study Report to the Legislatures (2009 – 2010)
  - Oregon Treasurer's Analysis (Underway)
  - Investment Grade Analysis (Future)



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Regional Planning 1999-02 | Problems & Solutions 2005 | Preliminary Alternatives 2006 | Draft EIS 2007-08 | Preferred Alternative 2008-11 | Final EIS & R.O.D. 2011 | Engineering & Construction 2012 →

Tolling Study Scenarios

	Scenarios Analyzed	Min/Max Toll Rate (2006$)	Min/Max Toll Rate (2018$)	Tolls Collected	Toll Schedule Type	Tolling Start Date
Tolling I-5 Only	**Scenario 1A** *DEIS Toll Rate*	$1.00 / $2.00	$1.34 / $2.69	Each Way	Symmetric Variable Toll Schedule	July 1, 2018 (FY 2019)
	Scenario 1B *Lower than DEIS Toll Rate*	$1.00 / $1.50	$1.34 / $2.02			
	Scenario 1C *Flat Toll Rate*	$1.65	$2.22		Symmetric Fixed Toll Schedule	
	Scenario 1D *Additional Price Points*	$1.00 / $2.50	$1.34 / $3.36		Symmetric Variable Toll Schedule	
	Scenario 1E *1.5x DEIS Toll Rate*	$1.50 / $3.00	$2.02 / $4.03			
	Scenario 1F *2x DEIS Toll Rate*	$2.00 / $4.00	$2.69 / $5.38			
	Scenario 1G *3x DEIS Toll Rate*	$3.00 / $6.00	$4.03 / $8.07			
	Pre-Completion Tolling[1] *DEIS Toll Rate*	$1.00 / $2.00	$1.34 / $2.69	Each Way	Symmetric Variable Toll Schedule	July 1, 2018 (FY 2019)
Tolling I-5 and I-205	**Scenario 2A** *DEIS Toll Rate*	$2.00 / $4.00	$2.69 / $5.38	Southbound Only[2]	Symmetric Variable Toll Schedule	July 1, 2018 (FY 2019)
	Scenario 2B *Lower than DEIS Toll Rate*	$2.00 / $3.00	$2.69 / $4.03			
	Scenario 2C *Lower I-205 Toll*	I-5: $2.00 / $4.00 I-205: $2.00 / $3.00	I-5: $2.69 / $5.38 I-205: $2.69 / $4.03			

[1] Pre-Completion Tolling to be added to any other scenario

[2] A round-trip toll is collected on scenarios tolling Southbound only

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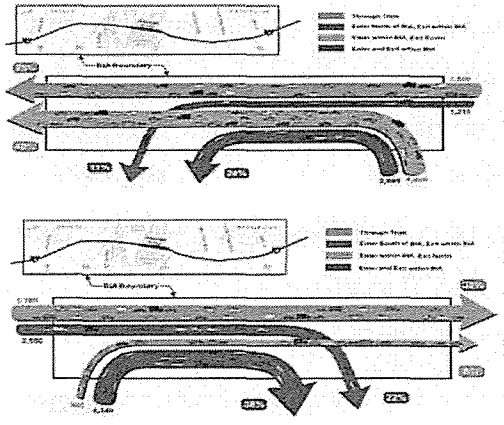
Regional Planning 1999-02 | Problems & Solutions 2005 | Preliminary Alternatives 2006 | Draft EIS 2007-08 | Preferred Alternative 2008-11 | Final EIS & R.O.D. 2011 | Engineering & Construction 2012 →

Tolling Study Report Traffic Conclusions

- For most I-5 only toll scenarios, majority of drivers would not change travel patterns though some would choose new destination or diversion.
- Tolling and transit improvements reduce auto travel across the river on I-5 by about 40,000 trips per day relative to No-Build. (Varies by toll scenario.)
- Higher tolls cause more diversion. Diversion tends to be lower during peak periods than during off-peak.
- Tolling of both I-5 and I-205 causes higher volumes on I-5 and lower on I-205 relative to tolling only I-5. The no-toll, no-build scenario results in highest congestion on I-205 due to the severe congestion on I-5.

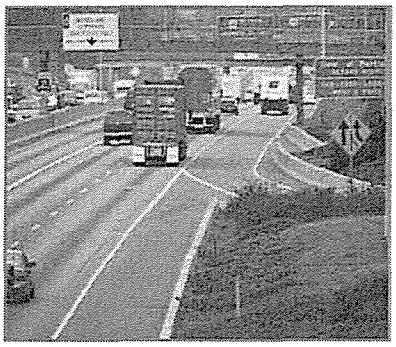
B. Number of Auxiliary Lanes

- Closely spaced interchanges and high volumes of traffic entering and exiting the corridor complicate operations and design.



Number of auxiliary lanes recommendation and decision

- Additional study during summer 2010 through Integrated Project Staff (IPS) and Project Sponsors Council (PSC) and included 8, 10, and 12 lane scenarios.
- Recommendation for three through lanes and two auxiliary lanes across the bridge.
- Results in a narrower bridge section and two fewer lanes than studied in DEIS.



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C. Impact mitigation and community enhancement

DEIS and FEIS include information in the following topic areas related to human health

- Air Quality
- Noise and Vibration
- Land Use and Economics
- Neighborhoods
- Pedestrians and Bicycles
- Traffic and Transit
- Visual and Aesthetics
- Parks and Recreation
- Public Services
- Environmental Justice
- Hazardous Materials
- Water Quality

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Conclusions related to health impacts

- **Project increases opportunities for physical activity:**
  - Improved pedestrian and bicycle facilities
  - Transit Oriented Development
- **Noise impact from highway traffic will be lower than no-build due to mitigation, including sound walls. All light rail transit noise can be mitigated.**
- **Currently, all runoff from river crossing and much of I-5 is untreated. Project will treat all runoff from river crossing plus much of I-5.**
- **All criteria air pollutants and mobile source air toxins will be lower in 2030 than today. Long-term mitigation for air quality is not proposed.**

Community enhancements

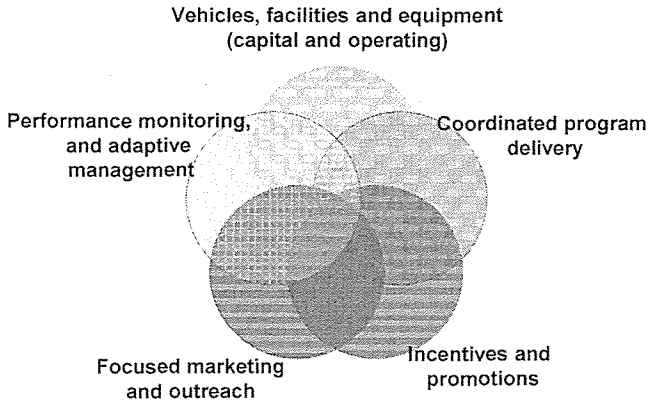
- **Project will provide multi-modal transportation improvements and enhancements for the community within the project area**
- **Example community benefits include:**
  - Light rail transit in the corridor
  - A safer system for all users
  - Local street system improvements, including Tomahawk Island Dr.
  - Separate arterial bridge from north Portland to Hayden Island
  - Public art component of transit element
  - Significantly improved bicycle and pedestrian pathways and connections

D. Transportation Demand Management

TDM Working Group developed a comprehensive program with:

- Pre-construction activities – to have it ready when needed
- Construction phase – focused on "saving vehicle trips" in the corridor to reduce possible capacity losses resulting from construction
- Post-construction phase – to be implemented by the Mobility Council

Elements of the TDM program



Implementation of construction phase TDM

- **Actual targets for "vehicle trips saved" for:**
  - Telecommuting and flexible schedules
  - Vanpooling, carpooling, and transit
  - Bicycles and pedestrians
- **One-Time Capital Programs**
  - Buses for additional service and minor transit facility improvements
  - Additional vans beyond the WVIP funding level

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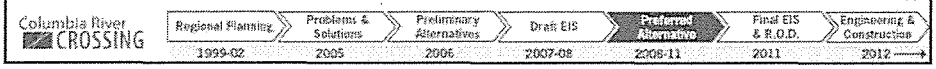

Implementation of construction phase TDM

- **Operating Expenses**
  - Expanded employer outreach and focused marketing
  - Expanded area-wide and corridor marketing and promotions (e.g. Drive Less / Save More, Southbound Solutions)
  - Short-term incentives for vanpool start-ups
  - Operating costs for higher frequency local bus service connecting to MAX
  - Monitoring and adaptive management costs

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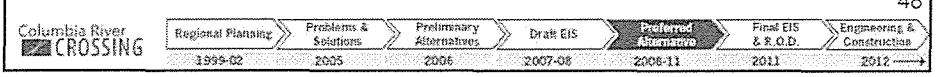

Post-construction TDM programs

- A post-construction TDM program can adapt to the new transportation environment (LRT and other facilities) to help extend the life of the entire transportation system.
- The Integrated Project Staff developed scenarios with high targets of non-single occupant vehicle modal use.

2030 LPA PM Peak 4-Hours I-5 NB without Enhanced TDM Program					
	Vehicles	% of Vehicles	Occupancy	Persons	% of Persons
Drive Alone	23,815	77%	1.0	23,815	54.3%
Carpool	5,025	16%	2.2	10,925	24.9%
Carpool >4 / Vanpools	90	0%	5.0	450	1.0%
Trucks	1,900	6%	1.0	1,900	4.3%
Vehicles(subtotal)	**30,830**	**99.9%**	**1.20**	**37,090**	**84.5%**
Buses	25	0%	51.0	1,275	2.9%
LRT				4,750	10.8%
Transit (subtotal)	**25**	**0.1%**		**6,025**	**13.7%**
Pedestrians				80	0.2%
Bicyclists				700	1.6%
Ped/Bike (subtotal)				**780**	**1.8%**
Total River Crossings	**30,855**	**100.0%**		**43,895**	**100.0%**

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Post-construction TDM programs

- The Mobility Council could direct the post-construction TDM program to achieve desired results based on the framework developed by the Performance Measures Advisory Group (PMAG).
- PMAG's goal areas covered:
  - System access, mobility, and reliability
  - Financial responsibility and asset management
  - Climate, energy security, and health
  - Safety and security
  - Economic vitality
  - Land use

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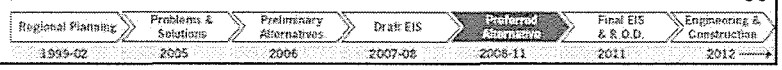

Post-construction TDM programs

- **PMAG's identified a need to coordinate:**
  - Traditional transportation actions under state DOT jurisdiction (tolls, freeway operations)
  - Other agencies' transportation actions (arterial operations, transit fares)
  - Other agencies' indirect policies and actions (land use, parking policies)

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E. Finance plan

Conceptual Financing Plan presented to PSC in January 2010

New Starts Assumes full FTA New Starts request granted. CRC may fulfill FTA local match requirements using local highway expenditures, per Congressional action.	$850 million
Projects of National Significance Additional funding above and beyond existing allocations. Assumed likely based on scope of CRC project and historical success in securing Federal discretionary funding.	$400 million
Additional WSDOT/ODOT Funding Assumes additional funding generated from both DOTs.	$900 million
Toll Bond Proceeds	$1.1 - $1.4 billion

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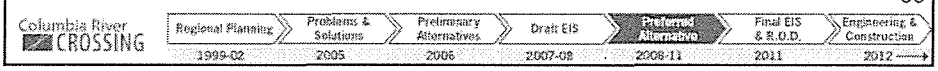
Status of finance plan activities

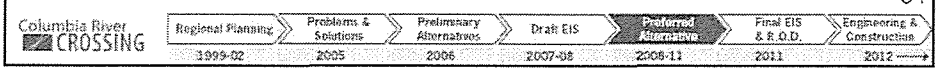
- Revised project cost estimates are being prepared.
- Updated financial element for Final EIS is being prepared.
- At the direction of the Oregon governor, the state treasurer is currently conducting an independent review.
- An investment grade study will be conducted prior to bonding.



F. Capacity considerations, induced demand and greenhouse gases

Capacity Considerations and Induced Demand

- Strategies to enhance mobility and reduce traffic volumes were developed by the Transportation Demand Management Working Group, the Performance Measures Advisory Group and Integrated Project Staff (IPS).
- The Travel Demand Expert Review Panel concluded the project would have a low impact to induce growth.
- Metro conducted a quantitative study using Metroscope and concluded the project would have negligible impact on population and employment growth in Clark County.



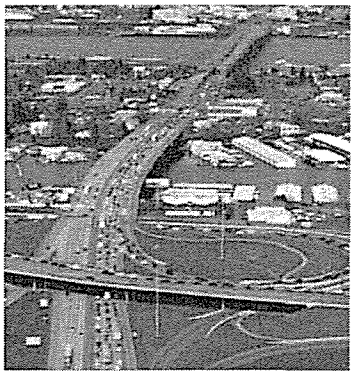
Capacity considerations, induced demand and greenhouse gases

Greenhouse Gases

- DEIS analysis showed that the project would reduce GHG emissions relative to no-build.
  - Used Metro's model results
- Greenhouse Gas Emissions Analysis Expert Review Panel, convened in 2008, validated methodology and findings in DEIS and recommended refinements.
- Updated analysis using latest EPA model showed even greater emission reductions than previously estimated.
- The GHG and Climate Change analysis for the DEIS was recognized with a 2009 NEPA Excellence Award from National Association of Environmental Professionals.

G. Preservation of freight access

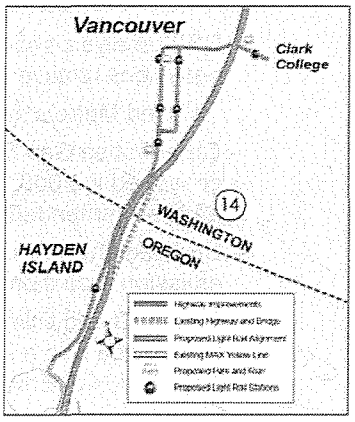
- The Freight Working Group has been a key participant, especially with regard to the Marine Drive interchange.
- A flyover ramp to further improve freight access could be constructed later at the Marine Drive interchange.



- An arterial bridge connect to Hayden Island, instead of additional ramp connections to I-5, frees capacity for freight movements at the Marine Drive and Hayden Island interchanges.
- Interchange Area Management Plans for Marine Drive and Hayden Island interchanges use access management strategies and land use tools to help protect the interchanges.

H. Light rail transit

- Light rail transit is being advanced as a key element of the project.
- The terminus selected is near Clark College.
- The route through Vancouver and station locations have been identified and are included in the project.
- Three park-and-ride facilities have been identified for Vancouver and are included in the project.



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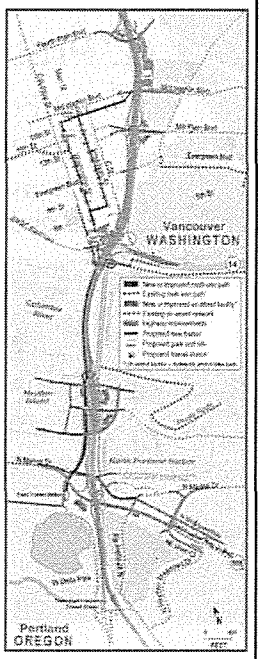
I. Bicycle and pedestrian facilities

- The project is seeking to implement a "world class" facility.
- The Pedestrian and Bicycle Advisory Committee helped with all aspects and recommended developing a safety and security plan.
- The width on the main span will be greater than other crossings in the region and far exceed minimum standards.



I. Bicycle and pedestrian facilities

- Capacity is calculated to be more than adequate for predicted use.
- Width, grade and other features will meet or exceed design standards.
- Connections will be provided to north Portland, Hayden Island and Vancouver.
- Special efforts are being made to minimize at-grade conflicts with arterial streets and improve upon the existing, circuitous routing.

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PBAC Recommendations: Maintenance and Security Program Summary

- Reliable funding for maintenance and security
- Programming of activity space for "eyes on the pathway"
- Visible and regular monitoring by security personnel with cameras, and call boxes
- Appropriate lighting
- Posting of laws and ordinances

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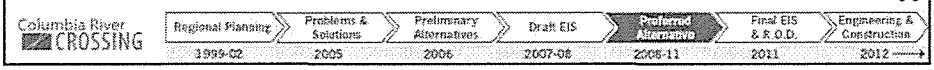

PBAC Recommendations: Maintenance and Security Program Summary

- Advance notification of maintenance closures and detours
- Citizen and volunteer participation for maintenance, operations and programming

PBAC's recommendation was endorsed by PSC with commitment by the DOTs.

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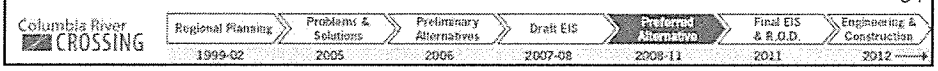

J. Urban development impacts at redesigned interchanges

- The Marine Drive Stakeholder Group and Portland Working Group have been key participants in redesign efforts.
- Several options were explored for the Marine Drive interchange with emphasis on access to and preservation of Expo Center and creation of parcels for beneficial uses.
- The Hayden Island interchange was redesigned to further the Hayden Island Plan, to support transit, and implement a "main street" concept for Tomahawk Island Drive.

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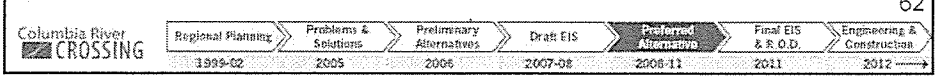
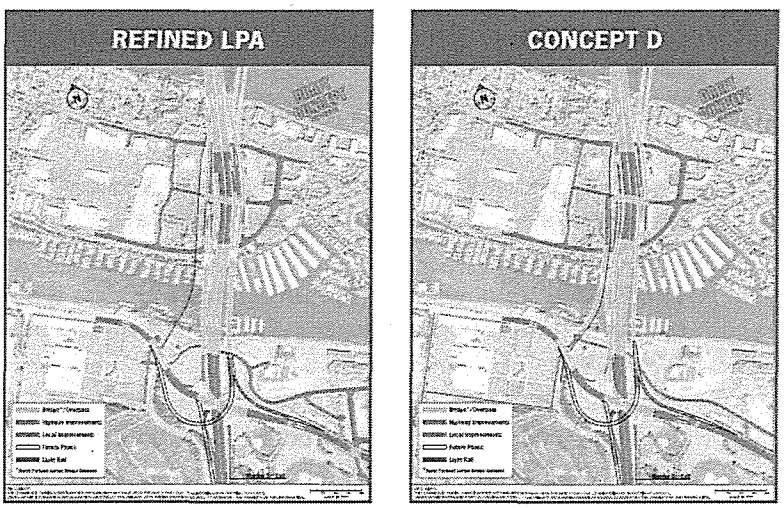


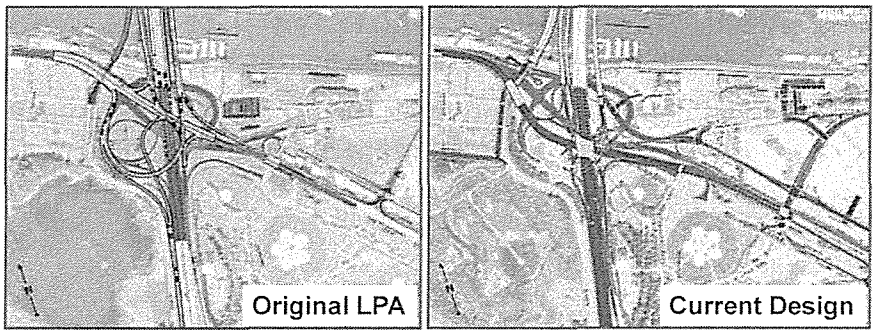
J. Urban development impacts at redesigned interchanges

- The Hayden Island and Marine Drive interchange designs are matched with the arterial bridge connecting Hayden Island and north Portland.
- Refinement continues on design details for several interchanges and treatment at ramp terminals.

Hayden Island interchange examples – original LPA vs Concept D



Marine Drive interchange examples – original LPA vs current design



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K. Bridge design

- The project has utilized many groups including the Urban Design Advisory Group (UDAG), a Sustainability Working Group, and Hayden Island Design Group.
- UDAG's design guidelines are being developed into "architectural standards" for the project.
- Beginning in November 2010, the Bridge Review Panel reviewed project constraints (marine and aviation) and the bridge type.
- The Bridge Review Panel identified three bridge types more suitable than the open web truss design that had been advanced.
- The governors of Oregon and Washington selected a bridge type on April 25, 2011 and directed that the project add a bridge architect to the project.

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Regional Planning	Problems & Solutions	Preliminary Alternatives	Draft EIS	Preferred Alternative	Final EIS & R.O.D.	Engineering & Construction
1999-02	2005	2006	2007-08	2008-11	2011	2012 →

Bridge design

The Governors' decision to select the bridge truss type was based on:

- Reducing and eliminating risks to schedule and budget
- Affordability
- Securing funding

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Status of Metro's LPA conditions

- Resolved or will be resolved with FEIS/ROD
- On track, but requires additional actions/decisions beyond FEIS/ROD
- Unresolved

- A. Tolling
- B. Number of Auxiliary Lanes
- C. Impact Mitigation and Community Enhancement
- D. Demand Management
- E. Financing Plan
- F. Capacity Considerations, Induced Demand and Greenhouse Gases
- G. Preservation of Freight Access
- H. Light Rail
- I. Design of Bicycle and Pedestrian Facilities
- J. Urban Development Impacts at Redesigned Interchanges
- K. Bridge Design

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Regional Planning	Problems & Solutions	Preliminary Alternatives	Draft EIS	Preferred Alternative	Final EIS & R.O.D.	Engineering & Construction
1999-02	2005	2006	2007-08	2008-11	2011	2012 →

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Next Steps

Oregon Department of Transportation | Washington State Department of Transportation | Federal Transit Administration • Federal Highway Administration | City of Vancouver • City of Portland • SW Washington Regional Transportation Council • Metro • C-TRAN • TriMet

Project schedule

- Update cost estimates
- Refine financial plan
- Land use final order
- Legislative review
- Final Environmental Impact Statement
- Federal Record of Decision

- Property acquisition process begins
- Final Design Phase
- Legislative review

- Begin construction

- I-5 Bridge opens

PUBLIC OUTREACH

2011 2012 2013 2014 2015 2016 2017 2018

Columbia River CROSSING

FEIS topics

- Interstate Travel Time, Safety
- Local streets
- Transit System
- Pedestrians and bicycles
- Land use and economics
- Property acquisitions
- Neighborhoods
- Environmental justice
- Aviation and navigation
- Visual resources and aesthetics
- Air quality and greenhouse gasses
- Noise and vibration
- Ecosystems
- Water resources and wetlands
- Geology and soils
- Hazardous materials
- Historical and archaeological resources
- Parks and recreation areas
- Secondary and cumulative effects

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How is the FEIS different from DEIS?

- LPA adopted and design refined to a higher level of detail
- More detail on environmental impacts and mitigation
- Mitigation concepts are commitments
- Comment responses
- Updated data and analysis
  - Detailed impacts to threatened/endangered salmon runs
  - Specific demographics of the displacements
  - Information about archeological sites

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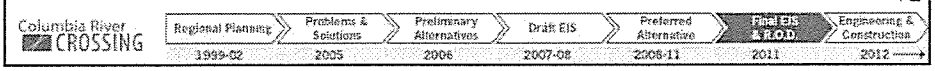

How was public / agency input used to develop the FEIS information?

- Comments about Hayden Island resulted in a public process where Option A in the FEIS was chosen
- Concerns about the open web box girder design resulted in the Bridge Review Panel and recommendations
- Transit alignments in downtown Vancouver were selected through the Vancouver Working Group
- Minimizing salmon impacts through drilled shaft construction techniques
- Marine Drive interchange was refined through the Marine Drive Stakeholders group

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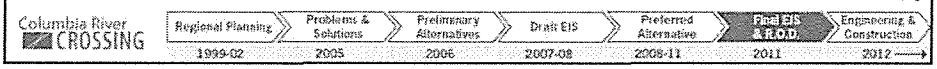

Next steps in 2011

- Continued coordination with local agency project sponsors
  - FEIS
  - Land Use Final Order
- Coordination with both governors, state legislatures and federal partners on finance plan
- Continued bridge design and engineering work
- Final EIS and Record of Decision expected in 2011

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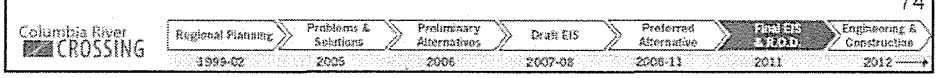

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Washington State Department of Transportation

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MINUTES OF THE METRO COUNCIL WORK SESSION MEETING

May 31, 2011
Metro Council Chamber

Councilors Present: Tom Hughes (Council President), Carlotta Collette, Kathryn Harrington, Shirley Craddick, Carl Hosticka

Councilors Absent: Councilor Rex Burkholder (excused)

Council President Tom Hughes convened the Metro Council Work Session Meeting at 2:00 p.m.

1. ADMINISTRATIVE/ CHIEF OPERATING OFFICER COMMUNICATIONS
Dan Cooper, Chief Operating Office, asked the Council for questions regarding the draft Tax Supervising and Conservation Commission response. The Council supported of the draft.

2. COLUMBIA RIVER CROSSING DISCUSSION ON RESOLUTION NO. 11-4264 – INFORMATION/DISCUSSION
Andy Cotugno of Metro introduced Henry Hewitt, Nancy Boyd, Kris Strickler of the Columbia River Crossing. Mr. Cotugno noted by Resolution No. 08-3960B the Metro Council approved the Locally Preferred Alternative (LPA) for the Columbia River Crossing Project. However, the resolution also raised a number of concerns and considerations that needed to be addressed prior to the Council's consideration of adoption of the Land Use Final Order for the project. Some of the concerns and considerations were such that they could impact aspects of the final design for the project (such as the number of lanes or the Hayden Island interchange design) while others identified the need for further information prior to consideration of final approval (such as related to traffic diversion effects of tolls or the impact on greenhouse gases).

Staff from the Columbia River Crossing provided a PowerPoint that included the project history and background on the National Environmental Policy Act (NEPA) process. Staff went through the status report on each of Metro's LPA conditions and provided discussion. The eleven conditions were:

- Tolling
- Number of Auxiliary Lanes
- Impact Mitigation and Community Enhancement
- Demand Management
- Financing Plan
- Capacity Considerations, Induced Demand and Greenhouse Gases
- Preservation of Freight Access
- Light Rail
- Design of Bicycle and Pedestrian Facilities
- Urban Development Impacts at Redesigned Interchanges
- Bridge Design

Councilors asked clarifying questions regarding the legality and practicality of tolling, specifically in Washington State. While there was support for the projects as part of the community enhancement, Councilors asked for more information for including ongoing programs. Discussion continued with the feasibility of financing the project, data for the greenhouse gas emissions and freight access in

regards to Title 4. Councilors offered support of the progress made, but maintained concern of funding and looked forward to more information regarding the discussion.

3. COUNCIL BRIEFINGS/COMMUNICATION

Council discussed upcoming events including the "It's Our Nature" tour and the trip to Gillam County and Columbia Ridge Landfill.

Adjourned at 4:36 p.m.

Prepared by,

Kim Brown
Council Policy Assistant

ATTACHMENTS TO THE PUBLIC RECORD FOR THE MEETING OF May 31, 2011

Item	Topic	Doc. Date	Document Description	Doc. Number
1	PPT	5/31/11	A long-term, Comprehensive Solution Metro Council Workshop: Status of LPA Conditions	053111cw-1

PRELIMINARY

INTERSTATE 5 COLUMBIA RIVER CROSSING

Environmental Justice Technical Report for the Final Environmental Impact Statement

Columbia River CROSSING

May 2011

Title VI

The Columbia River Crossing project team ensures full compliance with Title VI of the Civil Rights Act of 1964 by prohibiting discrimination against any person on the basis of race, color, national origin or sex in the provision of benefits and services resulting from its federally assisted programs and activities. For questions regarding WSDOT's Title VI Program, you may contact the Department's Title VI Coordinator at (360) 705-7098. For questions regarding ODOT's Title VI Program, you may contact the Department's Civil Rights Office at (503) 986-4350.

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Cover Sheet

Interstate 5 Columbia River Crossing

Environmental Justice Technical Report for the Final Environmental Impact Statement:

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Appendices

APPENDIX A: Data by Census Block Group

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ACRONYMS

API	area of potential impact
BG	block group
BNSF	Burlington Northern Santa Fe Railroad
CCC	Community Cycling Center
CD	collector-distributor
CEJG	Community and Environmental Justice Group
CEQ	Council on Environmental Quality
CMSA	Portland-Salem Consolidated Metropolitan Statistical Area
CO	carbon monoxide
COC	communities of concern
CRC	Columbia River Crossing
CT	census tract
CTR	Commute Trip Reduction (Washington)
C-TRAN	Clark County Public Transportation
dBA	A-weighted decibel
DEIS	Draft Environmental Impact Statement
DOJ	United States Department of Justice
DOT	United States Department of Transportation
ECO	Employee Commute Options (Oregon)
EJ	Environmental Justice
EPA	United States Environmental Protection Agency
ESL	English as a Second Language
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FPL	Federal poverty level
FTA	Federal Transit Administration
GIS	geographic information system
HOT	high-occupancy toll
HOV	high-occupancy vehicle
JARC	Job Access and Reverse Commute
JBMI	Jantzen Beach Moorage, Inc.
LEP	limited English proficiency
L_{eq}	Energy Average Sound Levels
LPA	locally preferred alternative

LRV	light rail vehicle
MAX	Metropolitan Area Express
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NCES	National Center for Education Statistics
NEPA	National Environmental Policy Act of 1969
NOI	Notice of Intent
ODOT	Oregon Department of Transportation
ORT	open road tolling
OTC	Oregon Transportation Commission
PMSA	Primary Metropolitan Statistical Area
PSRC	Puget Sound Regional Council
ROD	Record of Decision
RTC	Regional Transportation Commission
SPUI	single-point urban interchange
SR	State Route
SRO	single-room occupancy
TDM	transportation demand management
TriMet	Tri-County Metropolitan Transportation District
TSM	transportation system management
VHA	Vancouver Housing Authority
WSDOT	Washington State Department of Transportation
WTC	Washington Transportation Commission

1. Summary

1.1 Introduction

Environmental Justice (EJ) acknowledges that the quality of our environment affects the quality of our lives, and that negative environmental impacts should not disproportionately burden low-income or minority populations. This analysis identifies and assesses the project impacts that could disproportionately affect low-income or minority populations, also referred to as EJ populations. Impacts associated with transportation projects may include disruptions in community cohesion, restricted commercial access, raised noise levels, increased water and air pollution, and other adverse impacts.

Pursuant to Title VI of the Civil Rights Act and the Civil Rights Restoration Act, recipients of federal financial assistance must ensure nondiscrimination, on the basis of race, color, or national origin, in all of their programs and activities. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994) reinforces the considerations embodied in National Environmental Policy Act of 1969 (NEPA) and Title VI by requiring each federal agency to analyze the environmental impacts (including human health, economic and social) of federal actions, including impacts on minority populations and low-income populations, when such an analysis is required by NEPA.

Following Executive Order 12898, U.S. Department of Transportation (DOT) issued Order 5610.2, Order to Address Environmental Justice in Minority Populations and Low-Income Populations. It provided guidelines for how environmental justice analyses should be performed and how environmental justice should be incorporated into the transportation decision-making process. The DOT Order requires federal agencies to do the following:

- Explicitly consider human health and environmental effects related to transportation projects that may have a disproportionately high and adverse effect on minority or low-income populations; and
- Implement procedures to provide "meaningful opportunities for public involvement" by members of those populations during project planning and development (DOT Order 5610.2, §5(b)(1)).

The Federal Highway Administration (FHWA) issued a similarly-worded order, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (FHWA Order 6640.23).

The following represent the three major principles of environmental justice:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental impacts, including social and economic impacts, on minority populations and low-income populations.
- Ensure full and fair participation by all potentially affected populations in the transportation decision-making process.
- Prevent the denial of, reduction in or significant delay in the receipt of benefits by minority and low-income populations.

The DOT requires full consideration of environmental justice principles throughout planning and decision-making processes using the principles of NEPA, Title VI, the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970 and other DOT statutes, regulations and guidance that address or affect infrastructure decision-making.

1.2 Description of Alternatives

This technical report evaluates the CRC project's locally preferred alternative (LPA) and the No-Build Alternative. The LPA includes two design options: The preferred option, LPA Option A, which includes local vehicular access between Marine Drive and Hayden Island on an arterial bridge; and LPA Option B, which does not have arterial lanes on the light rail/multi-use path bridge, but instead provides direct access between Marine Drive and the island with collector-distributor (CD) lanes on the two new bridges that would be built adjacent to I-5. In addition to the design options, if funding availability does not allow the entire LPA to be constructed in one phase, some roadway elements of the project would be deferred to a future date. This technical report identifies several elements that could be deferred, and refers to that possible initial investment as LPA with highway phasing. The LPA with highway phasing option would build most of the LPA in the first phase, but would defer construction of specific elements of the project. The LPA and the No-Build Alternative are described in this section.

1.2.1 Adoption of a Locally Preferred Alternative

Following the publication of the Draft Environmental Impact Statement (DEIS) on May 2, 2008, the project actively solicited public and stakeholder feedback on the DEIS during a 60-day comment period. During this time, the project received over 1,600 public comments.

During and following the public comment period, the elected and appointed boards and councils of the local agencies sponsoring the CRC project held hearings and workshops to gather further public input on and discuss the DEIS alternatives as part of their efforts to determine and adopt an LPA. The LPA represents the alternative preferred by the local and regional agencies sponsoring the CRC project. Local agency-elected boards and councils determined their preference based on the results of the evaluation in the DEIS and on the public and agency comments received both before and following its publication.

In the summer of 2008, the local agencies sponsoring the CRC project adopted the following key elements of CRC as the LPA:

- A replacement bridge as the preferred river crossing,
- Light rail as the preferred high-capacity transit mode, and
- Clark College as the preferred northern terminus for the light rail extension.

The preferences for a replacement crossing and for light rail transit were identified by all six local agencies. Only the agencies in Vancouver – the Clark County Public Transit Benefit Area Authority (C-TRAN), the City of Vancouver, and the Regional Transportation Council (RTC) – preferred the Vancouver light rail terminus. The adoption of the LPA by these local agencies does not represent a formal decision by the federal agencies leading this project –FHWA and the Federal Transit Administration (FTA) – or any federal funding commitment. A formal decision by FHWA and FTA about whether and how this project should be constructed will follow the FEIS in a Record of Decision (ROD).

1.2.2 Description of the LPA

The LPA includes an array of transportation improvements, which are described below. When the LPA differs between Option A and Option B, it is described in the associated section. For a more detailed description of the LPA, including graphics, please see Chapter 2 of the FEIS.

1.2.2.1 Multimodal River Crossing

Columbia River Bridges

The parallel bridges that form the existing I-5 crossing over the Columbia River would be replaced by two new parallel bridges. The eastern structure would accommodate northbound highway traffic on the bridge deck, with a bicycle and pedestrian path underneath; the western structure would carry southbound traffic, with a two-way light rail guideway below. Whereas the existing bridges have only three lanes each with virtually no shoulders, each of the new bridges would be wide enough to accommodate three through-lanes and two add/drop lanes. Lanes and shoulders would be built to full design standards.

The new bridges would be high enough to provide approximately 95 feet of vertical clearance for river traffic beneath, but not so high as to impede the take-offs and landings by aircraft using Pearson Field or Portland International Airport to the east. The new bridge structures over the Columbia River would not include lift spans, and both of the new bridges would each be supported by six piers in the water and two piers on land.

North Portland Harbor Bridges

The existing highway structures over North Portland Harbor would not be replaced; instead, they would be retained to accommodate all mainline I-5 traffic. As discussed at the beginning of this chapter, two design options have emerged for the Hayden Island and Marine Drive interchanges. The preferred option, LPA Option A, includes local vehicular access between Marine Drive and Hayden Island on an arterial bridge. LPA Option B does not have arterial lanes on the light rail/multi-use path bridge, but instead provides direct access between Marine Drive and the island with collector-distributor lanes on the two new bridges that would be built adjacent to I-5.

LPA Option A: Four new, narrower parallel structures would be built across the waterway, three on the west side and one on the east side of the existing North Portland Harbor bridges. Three of the new structures would carry on- and off-ramps to mainline I-5. Two structures west of the existing bridges would carry traffic merging onto or exiting off of I-5 southbound. The new structure on the east side of I-5 would serve as an on-ramp for traffic merging onto I-5 northbound.

The fourth new structure would be built slightly farther west and would include a two-lane arterial bridge for local traffic to and from Hayden Island, light rail transit, and a multi-use path for pedestrians and bicyclists. All of the new structures would have at least as much vertical clearance over the river as the existing North Portland Harbor bridges.

LPA Option B: This option would build the same number of structures over North Portland Harbor as Option A, although the locations and functions on those bridges would differ, as described below. The existing bridge over North Portland Harbor would be widened and would receive seismic upgrades.

LPA Option B does not have arterial lanes on the light rail/multi-use path bridge. Direct access between Marine Drive and the island would be provided with collector-distributor lanes. The

structures adjacent to the highway bridge would carry traffic merging onto or exiting off of mainline I-5 between the Marine Drive and Hayden Island interchanges.

1.2.2.2 Interchange Improvements

The LPA includes improvements to seven interchanges along a 5-mile segment of I-5 between Victory Boulevard in Portland and SR 500 in Vancouver. These improvements include some reconfiguration of adjacent local streets to complement the new interchange designs, as well as new facilities for bicyclists and pedestrians along this corridor.

Victory Boulevard Interchange

The southern extent of the I-5 project improvements would be two ramps associated with the Victory Boulevard interchange in Portland. The Marine Drive to I-5 southbound on-ramp would be braided over the I-5 southbound to the Victory Boulevard/Denver Avenue off-ramp. The other ramp improvement would lengthen the merge distance for northbound traffic entering I-5 from Denver Avenue. The current merging ramp would be extended to become an add/drop (auxiliary) lane which would continue across the river crossing.

***Potential phased construction option*:** The aforementioned southbound ramp improvements to the Victory Boulevard interchange may not be included with the CRC project. Instead, the existing connections between I-5 southbound and Victory Boulevard could be retained. The braided ramp connection could be constructed separately in the future as funding becomes available.

Marine Drive Interchange

All movements within this interchange would be reconfigured to reduce congestion for motorists entering and exiting I-5 at this location. The interchange configuration would be a single-point urban interchange (SPUI) with a flyover ramp serving the east to north movement. With this configuration, three legs of the interchange would converge at a point on Marine Drive, over the I-5 mainline. This configuration would allow the highest volume movements to move freely without being impeded by stop signs or traffic lights.

The Marine Drive eastbound to I-5 northbound flyover ramp would provide motorists with access to I-5 northbound without stopping. Motorists from Marine Drive eastbound would access I-5 southbound without stopping. Motorists traveling on Martin Luther King Jr. Boulevard westbound to I-5 northbound would access I-5 without stopping at the intersection.

The new interchange configuration changes the westbound Marine Drive and westbound Vancouver Way connections to Martin Luther King Jr. Boulevard and to northbound I-5. These two streets would access westbound Martin Luther King Jr. Boulevard farther east. Martin Luther King Jr. Boulevard would have a new direct connection to I-5 northbound.

In the new configuration, the connections from Vancouver Way and Marine Drive would be served, improving the existing connection to Martin Luther King Jr. Boulevard east of the interchange. The improvements to this connection would allow traffic to turn right from Vancouver Way and accelerate onto Martin Luther King Jr. Boulevard. On the south side of Martin Luther King Jr. Boulevard, the existing loop connection would be replaced with a new connection farther east.

A new multi-use path would extend from the Bridgeton neighborhood to the existing Expo Center light rail station and from the station to Hayden Island along the new light rail line over North Portland Harbor.

LPA Option A: Local traffic between Martin Luther King Jr. Boulevard/Marine Drive and Hayden Island would travel via an arterial bridge over North Portland Harbor. There would be some variation in the alignment of local streets in the area of the interchange between Option A and Option B. The most prominent differences are the alignments of Vancouver Way and Union Court.

LPA Option B: With this design option, there would be no arterial traffic lanes on the light rail/multi-use path bridge over North Portland Harbor. Instead, vehicles traveling between Martin Luther King Jr. Boulevard/ Marine Drive and Hayden Island would travel on the collector-distributor bridges that would parallel each side of I-5 over North Portland Harbor. Traffic would not need to merge onto mainline I-5 to travel between the island and Martin Luther King Jr. Boulevard/Marine Drive.

***Potential phased construction option*:** The aforementioned flyover ramp could be deferred and not constructed as part of the CRC project. In this case, rather than providing a direct eastbound Marine Drive to I-5 northbound connection by a flyover ramp, the project improvements to the interchange would instead provide this connection through the signal-controlled SPUI. The flyover ramp could be constructed separately in the future as funding becomes available.

Hayden Island Interchange

All movements for this interchange would be reconfigured. The new configuration would be a split tight diamond interchange. Ramps parallel to the highway would be built, lengthening the ramps and improving merging speeds. Improvements to Jantzen Drive and Hayden Island Drive would include additional through, left-turn, and right-turn lanes. A new local road, Tomahawk Island Drive, would travel east-west through the middle of Hayden Island and under the I-5 interchange, improving connectivity across I-5 on the island. Additionally, a new multi-use path would be provided along the elevated light rail line on the west side of the Hayden Island interchange.

LPA Option A: A proposed arterial bridge with two lanes of traffic, one in each direction, would allow vehicles to travel between Martin Luther King Jr. Boulevard/ Marine Drive and Hayden Island without accessing I-5.

LPA Option B: With this design option there would be no arterial traffic lanes on the light rail/multi-use path bridge over North Portland Harbor. Instead, vehicles traveling between Martin Luther King Jr. Boulevard/Marine Drive and Hayden Island would travel on the collector-distributor bridges that parallel each side of I-5 over North Portland Harbor.

SR 14 Interchange

The function of this interchange would remain largely the same. Direct connections between I-5 and SR 14 would be rebuilt. Access to and from downtown Vancouver would be provided as it is today, but the connection points would be relocated. Downtown Vancouver I-5 access to and from the south would be at C Street rather than Washington Street, while downtown connections to and from SR 14 would be made by way of Columbia Street at 4th Street.

The multi-use bicycle and pedestrian path in the northbound (eastern) I-5 bridge would exit the structure at the SR 14 interchange, and then loop down to connect into Columbia Way.

Mill Plain Interchange

This interchange would be reconfigured into a SPUI. The existing "diamond" configuration requires two traffic signals to move vehicles through the interchange. The SPUI would use one

efficient intersection and allow opposing left turns simultaneously. This would improve the capacity of the interchange by reducing delay for traffic entering or exiting the highway.

This interchange would also receive several improvements for bicyclists and pedestrians. These include bike lanes and sidewalks, clear delineation and signing, short perpendicular crossings at the ramp terminals, and ramp orientations that would make pedestrians highly visible.

Fourth Plain Interchange

The improvements to this interchange would be made to better accommodate freight mobility and access to the new park and ride at Clark College. Northbound I-5 traffic exiting to Fourth Plain would continue to use the off-ramp just north of the SR 14 interchange. The southbound I-5 exit to Fourth Plain would be braided with the SR 500 connection to I-5, which would eliminate the non-standard weave between the SR 500 connection and the off-ramp to Fourth Plain as well as the westbound SR 500 to Fourth Plain Boulevard connection.

Additionally, several improvements would be made to provide better bicycle and pedestrian mobility and accessibility, including bike lanes, neighborhood connections, and access to the park and ride.

SR 500 Interchange

Improvements would be made to the SR 500 interchange to add direct connections to and from I-5. On- and off-ramps would be built to directly connect SR 500 and I-5 to and from the north, connections that are currently made by way of 39th Street. I-5 southbound traffic would connect to SR 500 via a new tunnel underneath I-5. SR 500 eastbound traffic would connect to I-5 northbound on a new on-ramp. The 39th Street connections with I-5 to and from the north would be eliminated. Travelers would instead use the connections at Main Street to connect to and from 39th Street.

Additionally, several improvements would be made to provide better bicycle and pedestrian mobility and accessibility, including sidewalks on both sides of 39th Street, bike lanes, and neighborhood connections.

***Potential phased construction option*:** The northern half of the existing SR 500 interchange would be retained, rather than building new connections between I-5 southbound to SR 500 eastbound and from SR 500 westbound to I-5 northbound. The ramps connecting SR 500 and I-5 to and from the north could be constructed separately in the future as funding becomes available.

1.2.2.3 Transit

The primary transit element of the LPA is a 2.9-mile extension of the current Metropolitan Area Express (MAX) Yellow Line light rail from the Expo Center in North Portland, where it currently ends, to Clark College in Vancouver. The transit element would not differ between LPA and LPA with highway phasing. To accommodate and complement this major addition to the region's transit system, a variety of additional improvements are also included in the LPA:

- Three park and ride facilities in Vancouver near the new light rail stations.
- Expansion of Tri-County Metropolitan Transportation District's (TriMet's) Ruby Junction light rail maintenance base in Gresham, Oregon.
- Changes to C-TRAN local bus routes.
- Upgrades to the existing light rail crossing over the Willamette River via the Steel Bridge.

Operating Characteristics

Nineteen new light rail vehicles (LRV) would be purchased as part of the CRC project to operate this extension of the MAX Yellow Line. These vehicles would be similar to those currently used by TriMet's MAX system. With the LPA, LRVs in the new guideway and in the existing Yellow Line alignment are planned to operate with 7.5-minute headways during the "peak of the peak" (the two-hour period within the 4-hour morning and afternoon/evening peak periods where demand for transit is the highest) and 15-minute headways during off-peak periods.

Light Rail Alignment and Stations

Oregon Light Rail Alignment and Station

A two-way light rail alignment for northbound and southbound trains would be constructed to extend from the existing Expo Center MAX station over North Portland Harbor to Hayden Island. Immediately north of the Expo Center, the alignment would curve eastward toward I-5, pass beneath Marine Drive, then rise over a flood wall onto a light rail/multi-use path bridge to cross North Portland Harbor. The two-way guideway over Hayden Island would be elevated at approximately the height of the rebuilt mainline of I-5, as would a new station immediately west of I-5. The alignment would extend northward on Hayden Island along the western edge of I-5, until it transitions into the hollow support structure of the new western bridge over the Columbia River.

Downtown Vancouver Light Rail Alignment and Stations

After crossing the Columbia River, the light rail alignment would curve slightly west off of the highway bridge and onto its own smaller structure over the Burlington Northern Santa Fe (BNSF) rail line. The double-track guideway would descend on structure and touch down on Washington Street south of 5th Street, continuing north on Washington Street to 7th Street. The elevation of 5th Street would be raised to allow for an at-grade crossing of the tracks on Washington Street. Between 5th and 7th Streets, the two-way guideway would run down the center of the street. Traffic would not be allowed on Washington between 5th and 6th Streets and would be two-way between 6th and 7th Streets. There would be a station on each side of the street on Washington between 5th and 6th Streets.

At 7th Street, the light rail alignment would form a couplet. The single-track northbound guideway would turn east for two blocks, then turn north onto Broadway Street, while the single-track southbound guideway would continue on Washington Street. Seventh Street will be converted to one-way traffic eastbound between Washington and Broadway with light rail operating on the north side of 7th Street. This couplet would extend north to 17th Street, where the two guideways would join and turn east.

The light rail guideway would run on the east side of Washington Street and the west side of Broadway Street, with one-way traffic southbound on Washington Street and one-way traffic northbound on Broadway Street. On station blocks, the station platform would be on the side of the street at the sidewalk. There would be two stations on the Washington-Broadway couplet, one pair of platforms near Evergreen Boulevard, and one pair near 15th Street.

East-west Light Rail Alignment and Terminus Station

The single-track southbound guideway would run in the center of 17th Street between Washington and Broadway Streets. At Broadway Street, the northbound and southbound alignments of the couplet would become a two-way center-running guideway traveling east-west on 17th Street. The guideway on 17th Street would run until G Street, then connect with

McLoughlin Boulevard and cross under I-5. Both alignments would end at a station east of I-5 on the western boundary of Clark College.

Park and Ride Stations

Three park and ride stations would be built in Vancouver along the light rail alignment:

- Within the block surrounded by Columbia, Washington 4th and 5th Streets, with five floors above ground that include space for retail on the first floor and 570 parking stalls.
- Between Broadway and Main Streets next to the stations between 15th and 16th Streets, with space for retail on the first floor, and four floors above ground that include 420 parking stalls.
- At Clark College, just north of the terminus station, with space for retail or C-TRAN services on the first floor, and five floors that include approximately 1,910 parking stalls.

Ruby Junction Maintenance Facility Expansion

The Ruby Junction Maintenance Facility in Gresham, Oregon, would need to be expanded to accommodate the additional LRVs associated with the CRC project. Improvements include additional storage for LRVs and other maintenance material, expansion of LRV maintenance bays, and expanded parking for additional personnel. A new operations command center would also be required, and would be located at the TriMet Center Street location in Southeast Portland.

Local Bus Route Changes

As part of the CRC project, several C-TRAN bus routes would be changed in order to better complement the new light rail system. Most of these changes would re-route bus lines to downtown Vancouver where riders could transfer to light rail. Express routes, other than those listed below, are expected to continue service between Clark County and downtown Portland. The following table (Exhibit 1-1) shows anticipated future changes to C-TRAN bus routes.

Exhibit 1-1. Proposed C-TRAN Bus Routes Comparison

C-TRAN Bus Route	Route Changes
#4 - Fourth Plain	Route truncated in downtown Vancouver
#41 - Camas / Washougal Limited	Route truncated in downtown Vancouver
#44 - Fourth Plain Limited	Route truncated in downtown Vancouver
#47 - Battle Ground Limited	Route truncated in downtown Vancouver
#105 - I-5 Express	Route truncated in downtown Vancouver
#105S - I-5 Express Shortline	Route eliminated in LPA (The No-Build runs articulated buses between downtown Portland and downtown Vancouver on this route)

Steel Bridge Improvements

Currently, all light rail lines within the regional TriMet MAX system cross over the Willamette River via the Steel Bridge. By 2030, the number of LRVs that cross the Steel Bridge during the 4-hour PM peak period would increase from 152 to 176. To accommodate these additional trains, the project would retrofit the existing rails on the Steel Bridge to increase the allowed light rail speed over the bridge from 10 to 15 mph. To accomplish this, additional work along the Steel Bridge lift spans would be needed.

1.2.2.4 Tolling

Tolling cars and trucks that use the I-5 river crossing is proposed as a method to help fund the CRC project and to encourage the use of alternative modes of transportation. The authority to toll the I-5 crossing is set by federal and state laws. Federal statutes permit a toll-free bridge on an interstate highway to be converted to a tolled facility following the reconstruction or replacement of the bridge. Prior to imposing tolls on I-5, Washington and Oregon Departments of Transportation (WSDOT and ODOT) would have to enter into a toll agreement with DOT. Recently passed state legislation in Washington permits WSDOT to toll I-5 provided that the tolling of the facility is first authorized by the Washington legislature. Once authorized by the legislature, the Washington Transportation Commission (WTC) has the authority to set the toll rates. In Oregon, the Oregon Transportation Commission (OTC) has the authority to toll a facility and to set the toll rate. It is anticipated that prior to tolling I-5, ODOT and WSDOT would enter into a bi-state tolling agreement to establish a cooperative process for setting toll rates and guiding the use of toll revenues.

Tolls would be collected using an electronic toll collection system: toll collection booths would not be required. Instead, motorists could obtain a transponder that would automatically bill the vehicle owner each time the vehicle crossed the bridge, while 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.

The LPA proposes to apply a variable toll on vehicles using the I-5 crossing. Tolls would vary by time of day, with higher rates during peak travel periods and lower rates during off-peak periods. Medium and heavy trucks would be charged a higher toll than passenger vehicles. The traffic-related impact analysis in this FEIS is based on toll rates that, for passenger cars with transponders, would range from $1.00 during the off-peak to $2.00 during the peak travel times (in 2006 dollars).

1.2.2.5 Transportation System and Demand Management Measures

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

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

- Major new light rail line in exclusive right-of-way, as well as express bus and feeder routes;
- Modern bicycle and pedestrian facilities that accommodate more bicyclists and pedestrians, and improve connectivity, safety, and travel time;
- Park and ride lots and garages; and
- A variable toll on the highway crossing.

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

- Replacement or expanded variable message signs or other traveler information systems in the CRC project area;

- Expanded incident response capabilities;
- Queue jumps or bypass lanes for transit vehicles where multi-lane approaches are provided at ramp signals for entrance ramps;
- Expanded traveler information systems with additional traffic monitoring equipment and cameras, and
- Active traffic management.

1.2.3 LPA Construction

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

1.2.3.1 Construction Activities Sequence and Duration

The following table (Exhibit 1-2) displays the expected duration and major details of each element of the project. Due to construction sequencing requirements, the timeline to complete the initial phase of the LPA with highway phasing is the same as the full LPA.

Exhibit 1-2. Construction Activities and Estimated Duration

Element	Estimated Duration	Details
Columbia River bridges	4 years	• Construction is likely to begin with the bridges. • General sequence includes initial preparation, installation of foundation piles, shaft caps, pier columns, superstructure, and deck.
Hayden Island and SR 14 interchanges	1.5 - 4 years for each interchange	• Each interchange must be partially constructed before any traffic can be transferred to the new structure. • Each interchange needs to be completed at the same time.
Marine Drive interchange	3 years	• Construction would need to be coordinated with construction of the southbound lanes coming from Vancouver.
Demolition of the existing bridges	1.5 years	• Demolition of the existing bridges can begin only after traffic is rerouted to the new bridges.
Three interchanges north of SR 14	4 years for all three	• Construction of these interchanges could be independent from each other or from the southern half of the project. • More aggressive and costly staging could shorten this timeframe.
Light rail	4 years	• The river crossing for the light rail would be built with the bridges. • Any bridge structure work would be separate from the actual light rail construction activities and must be completed first.
Total Construction Timeline	6.3 years	• Funding, as well as contractor schedules, regulatory restrictions on in-water work, weather, materials, and equipment, could all influence construction duration. • This is also the same time required to complete the smallest usable segment of roadway – Hayden Island through SR 14 interchanges.

1.2.3.2 Major Staging Sites and Casting Yards

Staging of equipment and materials would occur in many areas along the project corridor throughout construction, generally within existing or newly purchased right-of-way or on nearby vacant parcels. However, at least one large site would be required for construction offices, to stage the larger equipment such as cranes, and to store materials such as rebar and aggregate. Suitable sites must be large and open to provide for heavy machinery and material storage, must have waterfront access for barges (either a slip or a dock capable of handling heavy equipment and material) to convey material to the construction zone, and must have roadway or rail access for landside transportation of materials by truck or train.

Three sites have been identified as possible major staging areas:

1. Port of Vancouver (Parcel 1A) site in Vancouver: This 52-acre site is located along SR 501 and near the Port of Vancouver's Terminal 3 North facility.
2. Red Lion at the Quay hotel site in Vancouver: This site would be partially acquired for construction of the Columbia River crossing, which would require the demolition of the building on this site, leaving approximately 2.6 acres for possible staging.
3. Vacant Thunderbird hotel site on Hayden Island: This 5.6-acre site is much like the Red Lion hotel site in that a large portion of the parcel is already required for new right-of-way necessary for the LPA.

A casting/staging yard could be required for construction of the over-water bridges if a precast concrete segmental bridge design is used. A casting yard would require access to the river for barges, including either a slip or a dock capable of handling heavy equipment and material; a large area suitable for a concrete batch plant and associated heavy machinery and equipment; and access to a highway and/or railway for delivery of materials.

Two sites have been identified as possible casting/staging yards:

1. Port of Vancouver Alcoa/Evergreen West site: This 95-acre site was previously home to an aluminum factory and is currently undergoing environmental remediation, which should be completed before construction of the CRC project begins (2012). The western portion of this site is best suited for a casting yard.
2. Sundial site: This 50-acre site is located between Fairview and Troutdale, just north of the Troutdale Airport, and has direct access to the Columbia River. There is an existing barge slip at this location that would not have to undergo substantial improvements.

1.2.4 The No-Build Alternative

The No-Build Alternative illustrates how transportation and environmental conditions would likely change by the year 2030 if the 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. The No-Build Alternative also includes several major land use changes that are planned within the project area, such as the Riverwest development just south of Evergreen Boulevard and west of I-5, the Columbia West Renaissance project along the western waterfront in downtown Vancouver, and redevelopment of 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 No-Build and build alternatives. Additionally, the No-Build Alternative assumes bridge repair and continuing maintenance costs to the existing bridge that are not anticipated with the replacement bridge option.

1.3 Long-term Impacts and Final Determination

The mitigations and summary of impacts are included in Sections 6 and 7 of this report. There are numerous impacts to residents, commuters, and businesses, though few of these impacts have the potential to be disproportionately high and adverse effects to EJ populations. Potential effects on EJ populations arise from tolling, the acquisition of tolling transponders, displacements at the Ruby Junction site, displacement of service industry jobs on Hayden Island, and the displacement of the Hayden Island Safeway store.

1.4 Mitigation

Potential mitigation for impacts to EJ populations includes the following:

- Relocation assistance, including special arrangement for low-income residents and those working from home-based businesses.
- Mitigation for tolling, focusing mostly on the impact of electronic transponder acquisition for low-income or English as a Second Language (ESL) populations. Mitigation includes ride share assistance and information outreach programs, transponder accessibility for low-income commuters, and more opportunities.

2. Methods

2.1 Introduction

This section describes the methods used to gather information on the number and location of EJ populations in the study area and the methods used to analyze the potential impacts to EJ populations. This section also outlines the public outreach strategy used to ensure the inclusion of EJ populations in project decision-making.

The CRC project team assessed impacts to EJ populations based on Executive Order 12898 and subsequent requirements and guidance from the DOT, Department of Justice (DOJ), FHWA, and the WSDOT. The team used this guidance to identify disproportionately high and adverse effects that:

- Would be predominantly borne by minority populations or low-income households, or
- Would be experienced by these populations in a way that is appreciably more severe or greater in magnitude than would be experienced by non-minority or non-low-income populations.

The CRC project team followed the FHWA definition of minority which states that a minority is a person who is:

- Black (having origins in any of the black racial groups of Africa);
- Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
- Asian American (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or
- American Indian or Alaskan Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

The CRC project team defined low-income according to FHWA guidance which states that a low-income household is one in which the income is at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines. U.S. Census and other data on poverty status were used to identify the geographic distribution of low-income populations.

In addition to defining the above mentioned terms, FHWA guidance calls for the provision of public involvement opportunities and meaningful access to public information for minority populations and low-income households. As described below in more detail, the CRC project team provided a wide range of opportunities for public involvement.

2.2 Study Area

The original study area for this analysis consisted of the primary and secondary areas of potential impact (APIs) (Exhibit 2-1).

The primary API is the area most likely to experience direct impacts from construction and operation of the proposed project. The primary API extends about 5 miles from north to south. It

starts north of the I-5/Main Street interchange in Washington, and runs to Victory Boulevard in Oregon. North of the Columbia River, the API extends west into downtown Vancouver, and east near Clark College to include potential high-capacity transit alignments and park and ride locations. Around the actual river crossing, the eastern and western sides each extend 0.25 mile from the I-5 right-of-way. South of the river crossing, this width narrows to 300 feet on each side. For the EJ evaluation, the primary API included all census boundaries that fell either completely or partly within the primary API boundary. In the FEIS, the primary API is being referred to as the *Main Project Area*. The *Project Area* also includes the casting and staging areas, Ruby Junction, and the Steel Bridge in Portland.

The secondary API represents the area where indirect impacts (e.g., traffic and development changes) could occur from the proposed project. The study team relied primarily on secondary data to evaluate the likelihood of indirect project impacts. This API includes the area bounded by I-5 to the west, I-205 to the north and east, and I-84 to the south. It extends up to one mile beyond these Interstate highways.

After the closure of the public comment period on the DEIS, the Project Sponsors selected a locally preferred alternative (LPA), with light rail ending at Clark College. With this selection, the project extents were significantly reduced, essentially removing any potential direct transit impacts to Upper Vancouver. Despite this change, the CRC project team has maintained the same API.

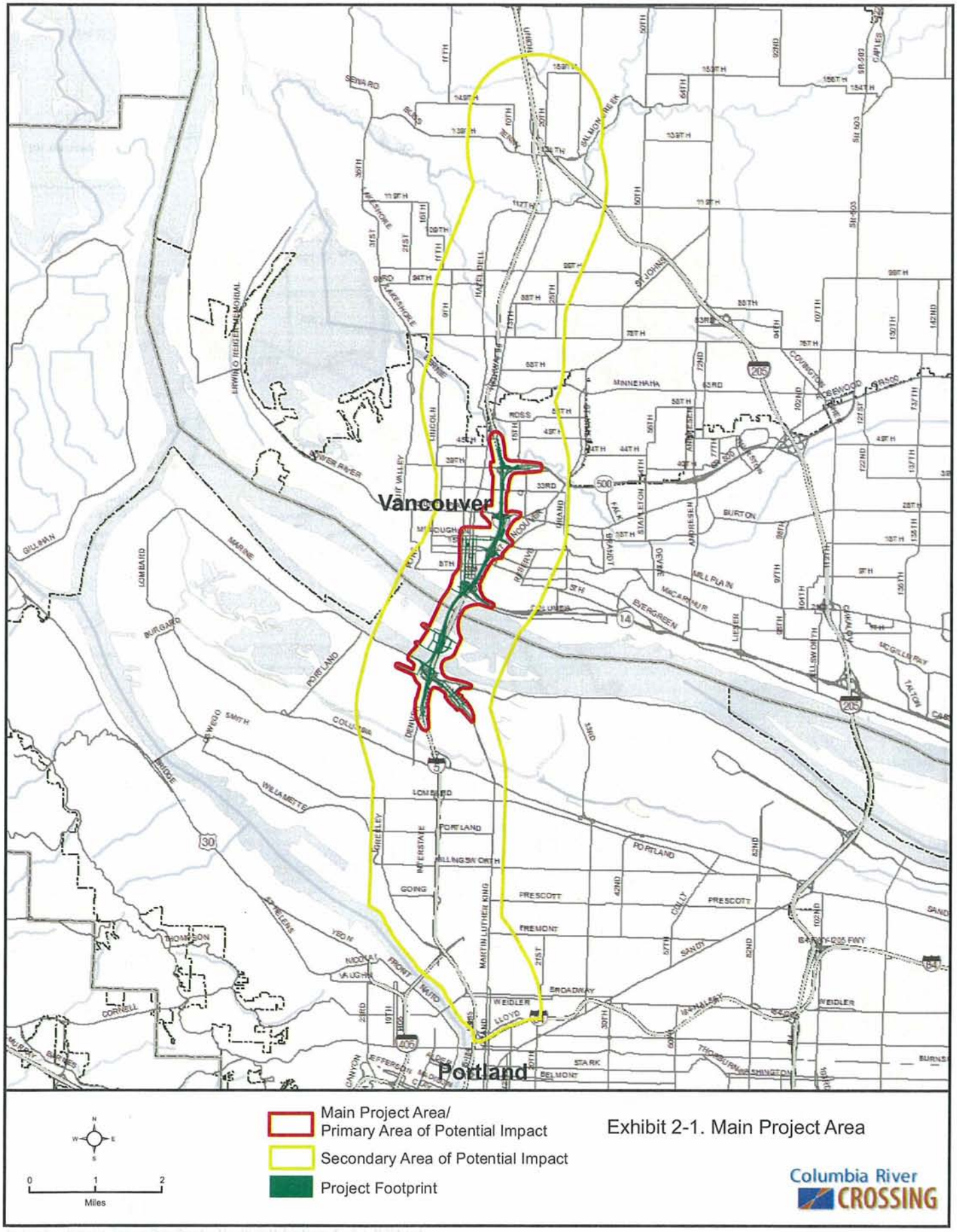
2.3 Data Collection Methods

As part of the environmental justice analyses, the CRC project team developed data and maps depicting the number and percentages of minority and low-income populations. The following information is intended to clarify methodological issues associated with the calculations and how the U.S. Census Bureau data presented in the Technical Reports and DEIS compares with guidelines set by the U.S. Department of Health and Human Services.

2.3.1 Data Collection for Demographic Analysis

Gathering data was the first major effort in conducting a demographic analysis and was largely completed prior to the impact analysis. The CRC project team conducted a demographic analysis, using geographic information systems (GIS) to identify and map 2000 U.S. Census data for all block groups entirely or partially within the primary API (Exhibit 2-2 and Exhibit 2-3). Additional baseline information included:

- Information relevant to EJ from the I-5 Strategic Plan
- Percentages of EJ populations in the primary and secondary APIs
- Existing community facilities and resources such as services, businesses, parks, and community centers
- Current noise, air quality, and transportation conditions


Vancouver
Portland
Main Project Area/
Primary Area of Potential Impact
Secondary Area of Potential Impact
Project Footprint
0
1
2
Miles
Exhibit 2-1. Main Project Area
Columbia River
CROSSING

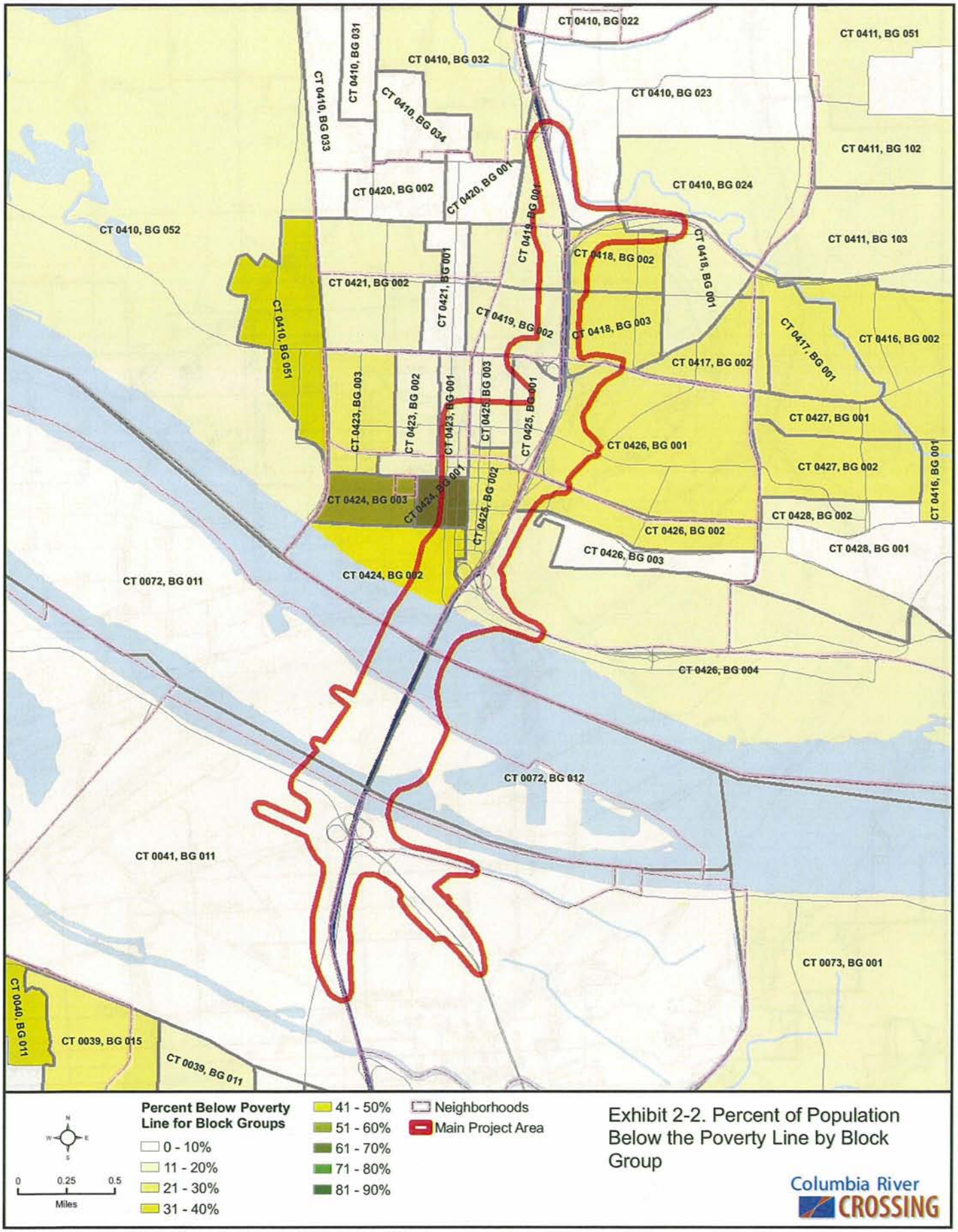
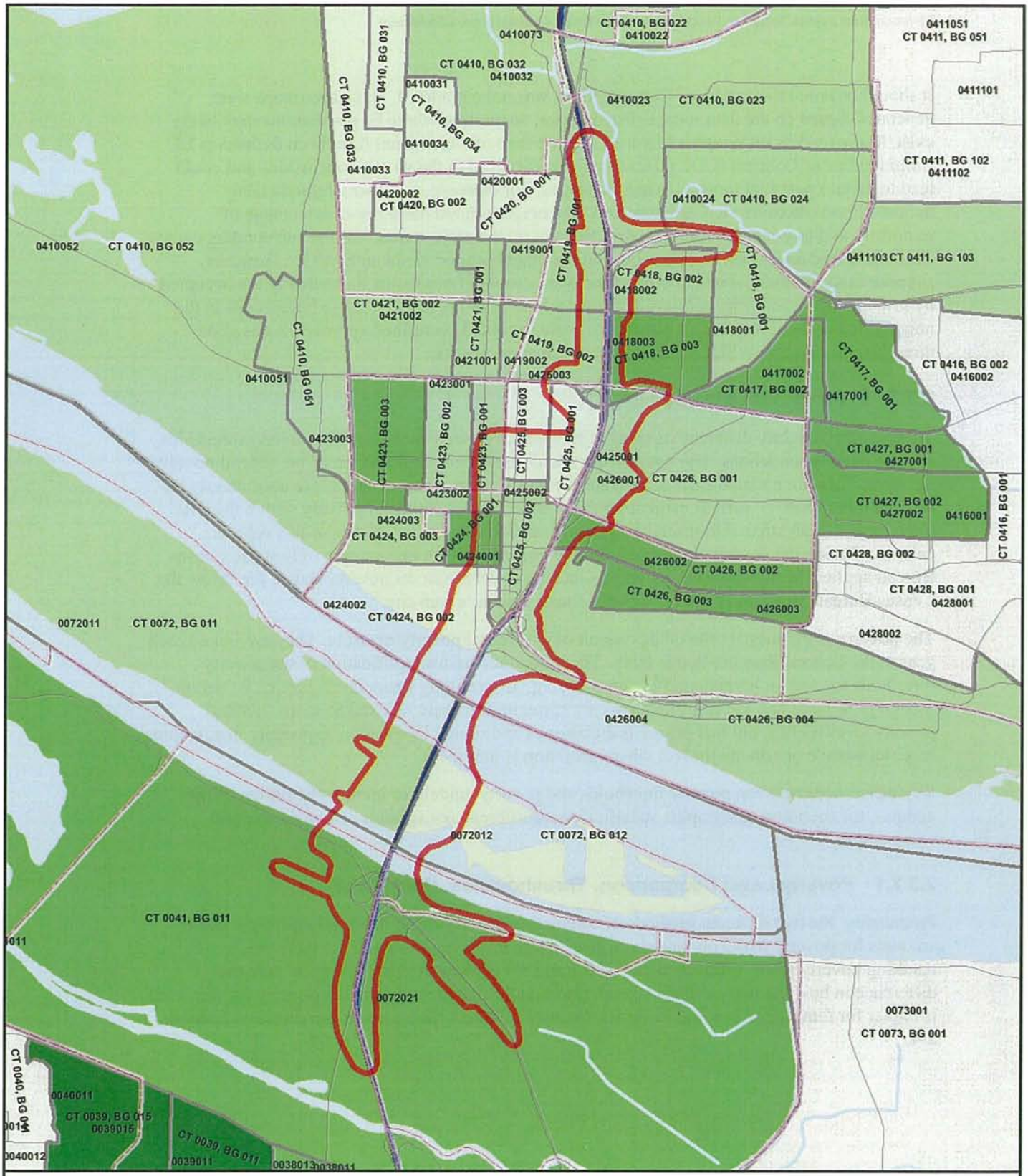


Exhibit 2-2. Percent of Population Below the Poverty Line by Block Group

Columbia River CROSSING


CT 0410, BG 022
0410022
0410073
0411051
CT 0411, BG 051
CT 0410, BG 031
CT 0410, BG 032
0410032
0410031
CT 0410, BG 033
CT 0410, BG 034
0410034
0410033
0410023
CT 0410, BG 023
0411101
CT 0411, BG 102
0411102
0420001
0420002
CT 0420, BG 002
CT 0420, BG 001
0410024
CT 0410, BG 024
0410052
CT 0410, BG 052
0419001
CT 0419, BG 001
CT 0418, BG 002
0418002
CT 0418, BG 001
0411103
CT 0411, BG 103
CT 0421, BG 002
0421002
CT 0421, BG 001
CT 0410, BG 051
CT 0419, BG 002
0418003
CT 0418, BG 003
0418001
0421001
0419002
0425003
0417002
CT 0417, BG 002
CT 0417, BG 001
CT 0416, BG 002
0416002
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0416001
CT 0416, BG 001
0424003
CT 0424, BG 003
CT 0424, BG 001
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0424001
CT 0428, BG 002
0426002
CT 0426, BG 002
CT 0426, BG 003
CT 0428, BG 001
0428001
0424002
CT 0424, BG 002
0426003
0072011
CT 0072, BG 011
0428002
0426004
CT 0426, BG 004
0072012
CT 0072, BG 012
CT 0041, BG 011
0072021
0073001
CT 0073, BG 001
CT 0040, BG 041
0040011
CT 0039, BG 015
0039015
CT 0039, BG 011
0040012
0039011
0038013
0038011
Minority by Census Block Group
0 - 10 %
11 - 20 %
21 - 40 %
41 - 60 %
61 - 80 %
81 - 100 %
Not included in study
Neighborhoods
Main Project Area
0 0.25 0.5
Miles
Exhibit 2-3. Percent Minority by Block Group
Columbia River CROSSING

It should be noted that a map of EJ populations was not completed. Numerous maps were generated, based on the data sources listed above, suggesting where EJ populations may likely exist. Many readers may expect to see an explicit map of which areas have been defined as EJ Communities of Concern (COC). However, this may lead to the wrong conclusions and could lead to certain potential impacts being dismissed. For example, consider a hypothetical neighborhood where impacts are expected. The neighborhood has a lower percentage of minorities and low-income residents than the region, the project area, and the surrounding county. This could lead an analyst to determine that the neighborhood is not an EJ COC. However, suppose this hypothetical neighborhood includes a row of households that actually are occupied by low-income or minority persons. If the project were to impact only these households in the neighborhood, there would be a disproportionate impact. This refined approach is based on direction provided by WSDOT Environmental Justice experts.

2.3.2 Poverty Thresholds

There are two slightly different versions of the federal poverty measure: The poverty thresholds, and the poverty guidelines. The poverty thresholds are the original version of the federal poverty measure. They are updated each year by the Census Bureau. The thresholds are used mainly for statistical purposes — such as estimating the number of households in poverty within the CRC main project study area. All official poverty population figures, for studies of this type, are calculated using the poverty thresholds, not the guidelines.[1] For an example of how the Census Bureau applies the thresholds to a family's income to determine its poverty status, see "How the Census Bureau Measures Poverty" on the Census Bureau's web site.[2]

The poverty guidelines are the other version of the federal poverty measure. They are issued each year in the Federal Register by the HHS. The guidelines are a simplification of the poverty thresholds for use for administrative purposes, e.g., determining financial eligibility for certain federal programs. The poverty guidelines are sometimes loosely referred to as the "federal poverty level" (FPL), but that phrase is ambiguous and should be avoided, especially in situations (e.g., legislative or administrative) where precision is important.

Key differences between poverty thresholds and poverty guidelines include the timing of the updates, the rounding, geographic specificity and different assessments of family size and composition.

2.3.2.1 Poverty Level Comparison: Thresholds vs. Guidelines

Predictably, the two different methods of calculating poverty result in slightly different dollar amounts for poverty based on household size. These levels are shown in the table below. The resulting poverty levels differ by between 0.1 and 5.9 percent. It is interesting to note the difference in how the two methods consider household size (e.g. the Census poverty income level is higher for families of one, but lower for families of three). These levels are shown in Exhibit 2-4.

[1] U.S. Department of Health and Human Services (http://aspe.hhs.gov/poverty/08Poverty.shtml).

[2] (http://www.census.gov/hhes/www/poverty/povdef.html).

Exhibit 2-4. Household Size (HHS) and Census Poverty Levels Compared

		Poverty Guidelines		
Number in household	HHS 2000	Census 2000	Difference	% Difference
1	$8,350	$8,609	$259	3.1%
2	$11,250	$11,239	-$11	-0.1%
3	$14,150	$13,736	-$414	-2.9%
4	$17,050	$17,603	$553	3.2%
5	$19,950	$20,819	$869	4.4%
	2008	2008		
1	$10,400	$10,764	$364	3.5%
2	$14,000	$14,264	$264	1.9%
3	$17,600	$17,172	-$428	-2.4%
4	$21,200	$22,130	$930	4.4%
5	$24,800	$26,257	$1,457	5.9%

Information collected from other sources supplemented the Census data. Additional sources included the 2004 American Community Survey, Section 8 Housing Assistance data from the U.S. Department of Housing and Urban Development, and public school free and subsidized lunch program data from the Vancouver and Portland school districts. The CRC project team also coordinated with local social service agencies to identify development projects that serve EJ populations.

2.4 Analysis Methods

The major steps to the impact analysis that followed or occurred simultaneously with data collection are presented below.

2.4.1 Community Resource Mapping

An inventory of community resources within each neighborhood was collected by the CRC project team. The team met with members of the community, including the Community and Environmental Justice Group (CEJG), who identified the resources that were important to them on a map.

The analysis methods for identifying community resources were as follows:

- Project staff identified neighborhood resources within and near the study area that fit the following commonly accepted neighborhood resource categories: parks, schools, locally and nationally recognized historic structures, places of worship, and emergency services. Project staff created two draft maps based on these resources: one for Oregon and one for Washington.
- CEJG reviewed the two draft neighborhood resource maps and identified additional resources.
- The neighborhood resource maps were distributed and discussed at various neighborhood meetings, resulting in additional identified resources.

- Four open houses were held to discuss the CRC project team's recommendations of the range of alternatives to advance into the DEIS. These open houses were held in the four major geographic areas of the study area: Vancouver, North Vancouver - Clark County, Hayden Island, and North Portland. In addition to information on the range of alternatives, the neighborhood resource maps were distributed and discussed in one-on-one conversations at these open houses, resulting in the identification of additional resources.
- The CRC project team used right-of-way data for the alternatives to determine how the resources identified by the community would be affected.

2.4.2 Displacement Surveys

The CRC project team developed and conducted a series of location-specific surveys to further determine the characteristics of the population that would be directly impacted by the project and whether there would be a disproportionate impact on environmental justice populations.

A demographic survey was delivered to all potentially displaced residents in Oregon in five specific areas: Ruby Junction, Jantzen Beach Moorage (JBMI), Columbia Crossings Marina, the floating home sites along the Oregon mainland, and at the west end of 17th Street. In some cases, such as with the JBMI, the study area included all of the residents of the floating home community. Additional surveys were sent in Washington along I-5 between 29th Street and SR 500. Many of the mailed surveys were followed by an in-person visit, while in other cases the CRC project held meetings with the groups following the mail-out. Below is a brief synopsis of the survey approach used at each of these locations.

2.4.2.1 Ruby Junction

CRC completed interviews with each resident potentially displaced by the expansion of the Ruby Junction light rail maintenance facility. From these interviews, a survey for each resident was completed.

2.4.2.2 Jantzen Beach Moorage

The CRC team coordinated with the Jantzen Beach Moorage board to develop the survey and determine the best way to distribute it to the moorage residents. The survey packet was mailed to all residents on May 13, 2009, not just those with anticipated impacts. The project held two follow-up meetings in May and June 2009. The team coordinated again with the Jantzen Beach Moorage board members to facilitate obtaining responses from those residents who had not returned surveys.

Within the Jantzen Beach Moorage, 28 residents responded; however, eight surveys were removed, so that the remaining 20 respondents were all associated with the individual residences that will be displaced by the LPA. This means that the data can be considered reflective of the demographic composition of those being displaced.

2.4.2.3 Columbia Crossings Marina

The CRC team coordinated with Columbia Crossings property management to determine the best way to distribute it to the marina residents. The Marina management suggested that distributing the survey at a meeting would be most effective, so one meeting was held on May 14, 2009, to distribute the survey. The meeting was unsuccessful in collecting survey information, so the survey packets were subsequently mailed to residents of Row 9 of the Jantzen Bay Marina

portion of the Columbia Crossings. Follow-up contact was initiated with Marina management to attempt to collect outstanding surveys.

2.4.2.4 Floating Homes along Mainland in Harbor

Property owner Milton Brown suggested the CRC team should visit the site and leave the surveys with the residents at the Marina (three floating homes, one single-family residence). Project staff visited the marina three times between May and July 2009, and interviewed one resident. The team has been unsuccessful in reaching the other three residents.

2.4.2.5 Vancouver

The potentially displaced properties between 17th Street and McLoughlin Boulevard and between G Street and I-5 were surveyed. Similarly, the potentially displaced properties along the northern section of I-5 in the Shumway Neighborhood and the two residences above the Funeral Home in the Esther Short Neighborhood were all surveyed. The CRC team mailed surveys, visited the homes, and returned for the surveys at later dates in early 2010.

2.4.2.6 Business Displacements

In order to assess the potential EJ implications of impacts of the commercial displacements more precisely, the businesses which are likely to be impacted were surveyed during the summer of 2009. The questions included those related to relocation, transportation needs, and the following EJ-related inquiries:

- Approximately how many employees are employed with your firm at this location?
- Tell us about your customers. Do you know if they live or work nearby? How many of your customers come from Washington (or Oregon for Vancouver businesses)?
- Do you make deliveries from your business? Do you rely on I-5 to make these deliveries? If so, how do you access I-5 from your business?
- Do you receive deliveries at your business? If so, about how many/day/week? How do deliveries access your property?
- Is yours a minority-owned business?
- Describe the extent to which you employ low-income persons, minorities, or persons with special needs.
- Do you provide services or goods for which minorities or low-income customers dependent?

2.4.3 Tolling Analysis

Highway funding constraints have resulted in the financing of improvement projects through investments that will be covered by toll charges. Since the proposed tolling structure for the LPA would not distinguish between low-income and other commuters, it is important to assess the potential for disproportionate impacts to these populations.

The University of Washington and the Washington State Transportation Center published in 2009 a research paper entitled: The Impacts of Tolling on Low-Income Persons in the Puget Sound Region. The paper starts with the assertion that: "Tolls may be progressive, regressive, or neutral, depending on the social and geographic characteristics of the town or region and the structure of the tolling regime. The distributional effects must be evaluated on a site and project specific basis." (Santos and Rojey 2004, Elliasson and Mattsson 2006, Prozzi et al. 2007).

WSDOT previously conducted research on the equity of tolling for the SR 520 Bridge Replacement and High-Occupancy Vehicle (HOV) Project. They found insufficient published literature on tolling and EJ populations, but did find research specific to high-occupancy toll (HOT) lanes and EJ. While HOT lanes are only somewhat relevant to SR 520 or the CRC projects because they have adjacent un-tolled general purpose lanes, some findings from HOT lane studies are worth noting.

The Colorado Department of Transportation evaluated the use of potential HOT lanes on I-25. They found that issues related to income and equity are not as pronounced as anticipated, and public opinion can be favorably affected when informed about means of avoiding tolls by carpooling or riding the bus. In their study on the equity implications of HOT lanes, the Santa Clara Valley Authority identified four strategies that are commonly used by sponsors of HOT lane projects to address equity concerns. These were used as the framework within which the CRC project team assessed the equity implications of tolling. Below, each strategy is listed along with a description of how the strategy was incorporated into the CRC analysis.

1. Conducting a highly proactive public involvement and educational campaign.

   The numerous public meetings on tolling issues were planned with EJ populations in mind. The meetings were scheduled at different times of day and on different days. Translators were provided and used to translate meeting announcements and materials. In some cases, child care services were also provided. Translated materials were made available through the web and shared with local social service providers.

2. Performing the tolling - equity analyses.

   The CRC project team considered possible means of analysis and determined the following to be the most thorough.

   The analysis included both a technical evaluation and use of a tolling-specific survey of potential Environmental Justice populations. The technical analysis included use of the travel demand model outputs to identify the major travelsheds for both auto and transit trips. The CRC project team used the travel demand model output and GIS data to assess commuter origins and destinations, and compared these data to the neighborhood boundaries. Then the demographic characteristics of each neighborhood were evaluated and compared with that neighborhood's proportion of the adverse impacts and benefits from the project. Generally, the CRC project team looked both for neighborhoods that contribute high numbers of auto trips (benefitting from the improvement) but experience little of the project's impacts, and for neighborhoods that contribute very few trips but experience a high proportion of the project's impacts.

3. Monitoring and evaluating projects to ensure equity effects that are acceptable.

   The project has been implementing a robust outreach program with EJ communities for many years. It will be necessary to continue such efforts well past the publication of the ROD. It will also be necessary to establish monitoring and evaluation measures that will ensure compliance with EJ-related agreements, mitigations, etc. For example, this technical report suggests the benefits of promoting participation from minority-owned businesses in construction contracts and bid opportunities. A monitoring and evaluation program will be necessary to track these measures through final design, construction, and operation of the facilities.

4. Creating revenue expenditure plans that fund benefits and compensation to lower-income stakeholders who would be adversely affected by the project.

This last item was discussed as part of the overall mitigation package for the project. The CRC project team evaluated the potential for an EJ population/ neighborhood/ or housing development to disproportionally suffer impacts without disproportionately experiencing the benefits of the project. The special circumstances of that population have been evaluated and integrated with a mitigation plan.

2.4.4 Review Potential Impacts and Benefits and Analyze Their Location in Relation to EJ Populations

The location, intensity, and duration of potential environmental impacts (including operational, construction, indirect, and cumulative impacts) were reviewed from the following discipline technical reports:

- Acquisitions and Relocations
- Air Quality
- Archaeological and Historic Resources
- Economics
- Land Use
- Neighborhoods
- Noise and Vibration
- Public Services and Utilities
- Section 4(f)
- Transportation
- Visual and Aesthetics

The CRC project team also reviewed demographic data to assess whether impacts would disproportionately affect EJ populations.

Technical reports primarily on acquisitions, air quality, noise and vibration, and transportation provided data on the location, intensity, and duration of potential environmental impacts within the region. Where regional impacts were identified, demographic data for the affected areas were evaluated.

2.4.5 Assess Whether the Project Would Result in Disproportionately High and Adverse Impacts on EJ populations

The CRC project team determined the likelihood that the LPA may have disproportionately high and adverse impacts on EJ populations. Six questions were discussed to help make this determination. They are based on guidance from FHWA.

Question 1: Would the project result in disproportionately high and adverse impacts on EJ populations?

Question 2: Does the project affect a resource that is especially important to an EJ population? For instance, does the project affect a resource that serves an especially important social, religious, or cultural function for a minority or low-income population?

Question 3: Would the project result in disproportionately high and adverse impacts that would be predominately borne by an EJ population?

Question 4: Would the project result in disproportionately high and adverse impacts on an EJ population that would be appreciably more severe or greater in magnitude than the impact that would be suffered by the non-minority and/or non-low-income population?

Question 5: Does the project propose mitigation?

Question 6: Are there project benefits that would accrue to EJ populations?

Following evaluation of these six questions, a final determination was made as to whether the LPA would likely result in disproportionately high and adverse impacts on EJ populations.

2.5 Outreach and Communications

As stated above, the environmental justice analysis included two major components, a technical analysis and an outreach program. These two components are interrelated. The outreach efforts were used to verify collected data, data was used to verify what was heard at outreach events, and the analysis relied on outreach to identify community resources.

The U.S. Environmental Protection Agency (EPA) defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, culture, education, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, and socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, or commercial operations or the execution of federal, state, local, and tribal environmental programs and policies.

Meaningful involvement means that:

1. Potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment or health;
2. The public's contribution can influence the regulatory agency's decision;
3. The concerns of all participants involved will be considered in the decision-making process; and
4. The decision-makers seek out and facilitate the involvement of those potentially affected.

To achieve the goal of meaningful public involvement, the CRC project thoughtfully structured a public involvement process as described below, coordinated with tribes and, in August 2006, formed the Community and Environmental Justice Group.

The CRC project team used public outreach to supplement or refine the information obtained through the data collection methods described above. Outreach included coordination with project-specific community groups, the Metropolitan Planning Organizations in Portland (Metro) and Vancouver (RTC), and other stakeholders. Other information came from project scoping comments, community meetings, open houses, coordination with community-based organizations, local school involvement, information tables at community events, the project's Speaker's Bureau, and community media.

Populations with limited English proficiency were identified using information on race and ethnicity and guidelines from the United State Department of Justice (DOJ). The DOJ recommends that agencies consider providing language translation services if an ethnic group with a primary language other than English composes 5 percent or more of an area or exceeds

1,000 persons. Census information on populations with limited English proficiency and linguistic isolation was used to determine translation needs for public outreach.

Information collected through field visits and public outreach events with community and stakeholder groups further supplemented and refined data collected as described in the previous section. Information was collected from attendance at meetings and events such as AsiaFest, Good in the Hood, Alberta Coop Farmers Market, Vietnamese New Year celebration, Say Hey! Partners in Diversity, Juneteenth Festival, and the Slavic Coalition.

When the DEIS was published in May 2008, CRC staff had participated in nearly 350 public events, giving over 10,000 people a face-to-face opportunity to learn about the project and provide meaningful input. Since the publication of the DEIS, the neighborhood, topical, and other meetings have proceeded. See Appendix A for a full list of outreach events attended by CRC staff. An important component of the public involvement strategy for this project was two-way communication with low-income and minority populations and with populations with limited English proficiency.

The following sections and exhibits summarize the specific outreach efforts targeted to specific, and potentially EJ, communities.

2.5.1 Outreach to Low-income Housing Sites

There are a number of low-income housing sites located in the Vancouver portion of the primary API, but none in the Oregon portion. There are, however, some such sites in Oregon, outside of the primary API to which the project has not yet conducted outreach. Many of the sites below are home to low-income people who may also be seniors or are disabled and frequent users of public transit or, in some cases, paratransit.

Exhibit 2-5. Presentations and Materials Distribution (Low-income Housing Sites)

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
Evergreen Retirement Inn	11/7/2007	5th and Main Street Vancouver	WA	31	Y
Knights of Pythias Retirement Center	11/14/2007	3409 Main Street Vancouver	WA	54	Y
Esther Short Commons	4/29/2008	555 W 8th Street 4th floor lobby Vancouver	WA	12	Y
Columbia House	5/15/2008	130 W 24th Street 9th floor dining room Vancouver	WA	28	Y
Smith Tower	6/2/2008	515 Washington Street Vancouver	WA	20	Y
Vancouver Housing Authority, Resident Advisory Board	9/8/2009	Rise and Stars Community Center 500 Omaha Way Vancouver	WA	9	Y

Note: BIA = Bridge Influence Area

In addition to the presentations in Exhibit 2-5, notification materials about the CRC DEIS and public meetings were shared with the following. These sites were not interested or able to host a formal presentation and site management instead suggested leaving materials with them.

Exhibit 2-6. Distribution of Materials Only (Low-income Housing Sites)

FACILITY	DATE	WHERE	STATE	MATERIALS	IN BIA?
Lewis and Clark Plaza Apartments	4/2008	621 Broadway Street Vancouver	WA	Notification materials about the draft environmental impact statement (EIS) and public meetings	Y
Van Vista	4/2008	410 W 13th Street Vancouver	WA	Notification materials about the draft environmental impact statement (EIS) and public meetings	Y
Knights of Pythias Retirement Center	9/3/2009	3409 Main Street Vancouver	WA	CRC project folio, tolling fact sheet, and tolling survey flier	Y
Esther Short Commons	10/2009	555 W 8th Street 4th floor lobby Vancouver	WA	CRC project folio, tolling fact sheet, and tolling survey flier	Y

2.5.2 Outreach to Seniors

Though not strictly defined as an EJ population, many seniors live on fixed-incomes and are represented in the low-income housing sites listed above. In an effort to reach low-income seniors who may not live in those sites, the project has conducted general outreach to those aged 65 or older, including at the events listed in Exhibit 2-7.

Exhibit 2-7. Outreach Events (Seniors)

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
Senior Studies Institute	10/19/2006	Capital Center 185th and Walker Road Beaverton	OR	8	N
Retired Public Employees of Clark County	2/15/2007	1009 E McLoughlin Luepke Senior Center Vancouver	WA	19	Y
Senior Connections Expo	4/13/2007	Hilton Vancouver 301 6th Street Vancouver	WA	97	Y
Glenwood Place Senior Living	5/29/2008	5500 NE 82nd Avenue Vancouver	WA	46	N
Marshall/Luepke Center	2/18/2009	Marshall Center Vancouver	WA	15	Y
Southwest Washington School Retirees	3/26/2009	Clark County Skills Center Vancouver	WA	60	N
50+ Connections Expo	4/19/2009	Vancouver Hilton 100 Columbia Street Vancouver	WA	160	Y
Glenwood Place Senior Living	5/8/2009	5500 NE 82nd Avenue Vancouver	WA	20	N
Russellville Park Retirement Community	10/6/2009	23 SE 103rd Avenue Portland	OR	15	N
Courtyard Village Vancouver Men's Breakfast	12/5/2009	Courtyard Village Vancouver 4555 NE 66th Avenue Vancouver	WA	14	N

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
50+ Connections Expo	4/11-2010	Vancouver Hilton 100 Columbia Street Vancouver	WA	110	Y

2.5.3 Outreach to Minority Populations

The CRC project team followed FHWA and WSDOT guidance to identify EJ populations. Minorities include individuals listed in the 2000 U.S. Census as considering themselves to be nonwhite (Black or African American, American Indian and Alaskan Native, Asian, Pacific Islander, or other race) or Hispanic or Latino (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race). Exhibits 2-8 and 2-9 summarize outreach activities directed to minority populations.

Exhibit 2-8. Presentations, Meetings, and Community Outreach Events (Minorities)

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
Say Hey! Northwest Partners in Diversity	5/11/2006	Weiden + Kennedy 224 NW 13th Avenue Portland	OR	10	N
Juneteenth Festival	6/17 to 6/18/2006	Peninsula Park Portland	OR	60	N
Good in the 'hood Festival	6/25/2006	King School Park Portland	OR	5	N
Albina Community Bank	7/10/2006	Albina Community Bank 2002 NE MLK Jr. Boulevard Portland	OR	1	N
African American Alliance, Community Unity Breakfast	7/20/2006	Irvington Village 420 NE Mason Street Portland	OR	50	N
Oregon Association of Minority Entrepreneurs' Coffee and Issues Forum (s)	7/28/2006, 1/29/2010, 8/27/2010	OAME 4134 N Vancouver Avenue Portland	OR	10, 120, 120	N
Ho'ike and Hawaiian Festival	7/29/2006	Esther Short Park Vancouver	WA	132	Y
North/Northeast Business Association	8/7/2006	Albina Community Bank 2002 NE MLK Jr. Boulevard Portland	OR	19	N
Say Hey! Northwest Partners in Diversity	8/10/2006	Oregon Convention Center Portland	OR	50	N
PROPER Festival	9/9/2006	Kenton Park Portland	OR	32	Y
Say Hey! Northwest Partners in Diversity	11/9/2006	Self Enhancement Inc. 3920 N Kerby Portland	OR	15	N
African American Alliance Community Unity Breakfast (sponsored by CRC)	1/25/2007	Irvington Village 420 NE Mason Street Portland	OR	45	N
Good in the 'hood Festival	6/23/2007	King School Park 4815 NE 7th Avenue Portland	OR	49	N
Ho'ike and Hawaiian Festival	7/28/2007	Esther Short Park W Columbia and 8th Street Vancouver	WA	113	Y

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
The Urban League	10/4/2007	10 N Russell Street Portland	OR	3	N
Say Hey! Northwest Partners in Diversity	5/8/2008	Aboard the Portland Spirit River Cruise	OR	45	N
Latino Resource Group	5/21/2008	Human Service Council 201 NE 73rd, Suite 101 Vancouver	WA	11	N
Juneteenth Festival	6/14/2008	Jefferson High School 5210 N Kerby Avenue Portland	OR	34	N
Good in the 'hood Festival	6/28/2008	King School Park 4815 NE 7th Avenue Portland	OR	82	N
Ho'ike and Hawaiian Festival	7/26/2008	Esther Short Park W Columbia and 8th Street Vancouver	WA	312	Y
Fair sponsored by Oregon Association of Minority Entrepreneurs and American Council of Engineering Companies	10/14/2008	Oregon Association of Minority Entrepreneurs 4134 N Vancouver Avenue Portland	OR		N
Hispanic Metropolitan Chamber Membership Meeting	10/28/2008	Benson Hotel 309 SW Broadway Portland	OR	20	N
Say Hey! Northwest Partners in Diversity	11/12/2008	Multnomah Athletic Club 1849 SW Salmon Street Portland	OR	n/a	N
Good in the 'hood Festival	6/27/2009	King School Park 4815 NE 7th Avenue Portland	OR	51	N
Ho'ike and Hawaiian Festival	7/25/2009	Esther Short Park W Columbia and 8th Street Vancouver	WA	138	Y
National Night Out events with Hacienda Community Development Corporation	8/4/2009		OR / WA		Y
League of United Latin American Citizens (LULAC), Clark County Council 47010	9/16/2009	Firstenburg Community Center 700 NE 136th Avenue Vancouver	WA	7	Y
Oregon Association of Minority Entrepreneurs' coffee and issues forum	9/25/2009	OAME 4134 N Vancouver Avenue Portland	OR	5	N
Oregon Association of Minority Entrepreneurs coffee and issues forum	10/30/2009	4134 N Vancouver Portland	OR	5	N
Oregon Association of Minority Entrepreneurs' coffee and issues forum (s)	1/29/2010	OAME 4134 N Vancouver Avenue Portland	OR	120	N
Good in the 'hood Festival	6/26/2010	King School Park 4815 NE 7th Avenue Portland	OR	42	N
Ho'ike and Hawaiian Festival	7/31/2010	Esther Short Park Vancouver	WA	127	Y
National Night Out events with Hayden Island Manufactured Home Community	8/3/2010	North Shore Community Playground Lawn 1503 N Hayden Island Drive Portland	OR	33	Y

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
Oregon Association of Minority Entrepreneurs' Contractors Forum 2010 and A&E Contractors Forum	8/13/2010	OAME 4134 N Vancouver Avenue Portland	OR	120	N
Oregon Association of Minority Entrepreneurs' coffee and issues forum (s)	8/27/2010	OAME 4134 N Vancouver Avenue Portland	OR	n/a	N
Oregon Association of Minority Entrepreneurs' Contractors Forum 2010 and A&E Contractors Forum	10/8/2010	OAME 4134 N Vancouver Avenue Portland	OR	n/a	N

Exhibit 2-9. Materials and Notification (Minorities)

EVENT	DATE	WHERE	STATE	MATERIALS	IN BIA?
AsiaFest	5/19/2007	Oregon Convention Center Portland	OR	Project fact sheet (100 copies at TriMet booth)	N

2.5.4 Other Outreach Events

Exhibits 2-10 and 2-11 list events that reached a range of EJ populations but that are not easily categorized under any of the topic headings above.

Exhibit 2-10. Presentations, Meetings, and Community Outreach Events (Miscellaneous)

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
PROPER Community Forum	5/16/2006	Fridays Espresso Café 4131 N Denver Avenue Portland	OR	21	Y
Jantzen Beach SuperCenter employee meet and greet	12/14/2006	Jantzen Beach SuperCenter (indoor mall in front of Caffeine Express) Portland	OR	25	Y
Jantzen Beach SuperCenter employee meet and greet	1/11/2007	Jantzen Beach SuperCenter (indoor mall in front of Caffeine Express) Portland	OR	5	Y
Coalition for a Livable Future	1/4/2007	New Columbia Neighborhood Community Center N Trenton Avenue Portland	OR	65	N
Vancouver Farmers Market	6/9/2007,	Esther Short Park W 8th and Esther Street Vancouver	WA	39 &	Y
ODOT I-5 Delta Park project open house	6/20/2007	Ockley Green School 6031 N Montana Avenue Portland	OR	25	N
Vancouver Farmers Market	7/15/2007	Esther Short Park W 8th and Esther Street Vancouver	WA	84	Y
International Festival	7/29/2007	Esther Short Park W 8th and Esther Street Vancouver	WA	n/a	Y

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
Arbor Lodge Community Fair	8/16/2007	Peace Lutheran Church 2209 N Portland Boulevard (Rosa Parks Way) Portland	OR	29	N
Oregon Symphony Concert and Arbor Lodge Park Festival	8/25/2007	Arbor Lodge Park N Delaware Avenue and N Dekum Street Portland	OR	71	N
Alberta Street Farmers Market	8/30/2007	NE Alberta Street	OR		N
ODOT I-5 Delta Park project open house	4/22/2008	Ockley Green School 6031 N Montana Avenue Portland	OR	41	N
Interstate Corridor Urban Renewal Advisory Committee	6/16/2008	Oregon Association of Minority Entrepreneurs (OAME) 4135 N Vancouver Avenue Portland	OR	35	N
Interstate Farmers Market	6/18/2008	3550 N Interstate Avenue Portland	OR	53	Y
International Fair	7/27/2008	Esther Short Park W Columbia Street and 8th Street Vancouver	WA	132	Y
Vancouver Farmers Market	8/10/2008	Esther Short Park W 8th and Esther Street Vancouver	WA	78	Y
PROPER Festival	9/13/2008	Kenton Park Portland	OR	75	Y
Vancouver Farmers Market	6/14/2009	Esther Short Park W 8th and Esther Street Vancouver	WA	25	Y
Vancouver Farmers Market	7/11/2009	Esther Short Park W 8th and Esther Street Vancouver	WA	86	Y
East Portland Expo	7/25/2009	Ed Benedict Community Park See epoxpo.org for details	OR	10	N
East Columbia Neighborhood Association Barbeque (as part of National Night Out)	8/1/2009	Children's Arboretum Park NE Meadows Drive between NE 13th and NE 6th Portland	OR	15	Y
Vancouver Farmers Market	8/8/2009	Esther Short Park W 8th and Esther Street Vancouver	WA	91	Y
St. Johns Farmers Market	8/22/2009	St. Johns Plaza N Lombard Street and N Philadelphia Avenue	OR	32	N
Interstate Farmers Market	8/26/2009	Overlook Park 3550 NE Fremont Street Portland	OR	41	N
CRC Hayden Island Light Rail Station Planning Workshop	9/30/2009	Jantzen Beach SuperCenter Community Room Portland	OR	57	Y
CRC outreach at Hayden Island Safeway grocery store	11/21/2009	Hayden Island Safeway 11919 N Jantzen Drive Portland	OR	30	Y
CRC outreach at Hayden Island Safeway grocery store	11/22/2009	Hayden Island Safeway 11919 N Jantzen Drive Portland	OR	54	Y

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
CRC outreach at Hayden Island Safeway grocery store	11/25/2009	Hayden Island Safeway 11919 N Jantzen Drive Portland	OR	120	Y
CRC meeting with Hayden Island residents and ODOT	11/30/2009	ODOT Permit Center Hayden Island Portland	OR	10	Y
CRC environmental justice training for CEJG members and others	12/5/2009	Kaiser Town Hall 3704 N Interstate Avenue Portland	OR	20	N
Loaves and Fishes senior lunch at Hayden Island Manufactured Homes	1/27/2010	River Shore Clubhouse 1501 N Hayden Island Drive Portland	OR	20	Y
Oregon Environmental Justice	4/9/2010	East Portland Neighborhood Office 1017 NE 117th Avenue Portland	OR	N/A	N
Hayden Island Livability Project (HILP)	4/15/2010	Hayden Island Mobile Home Community South Shore Clubhouse 12221 N Westshore Drive Portland	OR	40	Y
Portland Sunday Parkways: Northeast	5/16/2010	Alberta Park NE 22nd Avenue and NE Killingsworth Street Portland	OR	80	N
Vancouver Farmers Market	6/12/2010	Esther Short Park W 8th and Esther Street Vancouver	WA	58	Y
Portland Sunday Parkways: North	6/27/2010	Kenton Park N Kilpatrick Street and N Delaware Avenue Portland	OR	113	Y
King Portland Farmers Market	7/11/2010	Kings School Park 4815 NE 7th Avenue Portland	OR	26	N
Portland Sunday Parkways: Outer Southeast	7/18/2010	Lents Park SE 92nd Avenue and Holgate Boulevard Portland	OR	79	N
Vancouver Farmers Market	8/7/2010	Esther Short Park W 8th and Esther Street Vancouver	WA	58	Y
Portland Sunday Parkways: Southeast	8/15/2010	Laurelhurst Park SE 39th and Stark Street Portland	OR	84	N

Exhibit 2-11. Materials and Notification (Miscellaneous)

ORGANIZATION	DATE	WHERE	STATE	MATERIALS	IN BIA?
Clark County YMCA	10/2009	11324 NE 51st Circle Vancouver	WA	CRC project folio, tolling fact sheet, and tolling survey flier	N
Legacy Emanuel Medical Center	10/2009	Portland	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N
Luepke Senior Center	10/2009	1009 E McLoughlin Boulevard Vancouver	WA	CRC project folio, tolling fact sheet, and tolling survey flier	N

2.5.5 Outreach to Transit-dependent and/or Disabled Communities

Many transit-dependent and/or disabled residents were reached via presentations and materials distribution at low-income and senior housing sites, listed above. Additional outreach to transit-dependent communities was conducted via the activities listed in Exhibit 2-12.

Exhibit 2-12. Presentations, Including Materials Distribution (Transit Dependent)

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
C-TRAN Citizens' Advisory Committee	2/22/2007	C-TRAN 2425 NE 65th Avenue Vancouver	WA	20	N
C-TRAN Citizens' Advisory Committee	7/27/2006	C-TRAN 2425 NE 65th Avenue Vancouver	WA	15	N
Columbia River Crossing roundtable discussion with transit-dependent seniors and others	3/19/2008	Luepke Center Vancouver	WA	23	Y
CRC Vancouver Transit Advisory Committee	6/23/2010	Marshall Center Oak Room 1009 E McLoughlin Boulevard Vancouver	WA	n/a	Y
CRC Vancouver Transit Advisory Committee	7/19/2010	C-TRAN Administrative Offices 2425 NE 65th Avenue Vancouver	WA	n/a	N
CRC Vancouver Transit Advisory Committee	7/21/2010	Clark County Elections Building 1408 Franklin Street Vancouver	WA	n/a	Y
CRC Vancouver Transit Advisory Committee	9/15/2010	Clark County Elections Building 1408 Franklin Street Vancouver	WA	n/a	Y
TriMet Committee on Accessible Transportation	10/20/2010	World Trade Center 121 SW Salmon Street Portland	OR	20	N
CRC Vancouver Transit Advisory Committee	11/17/2010	C-TRAN Administrative Offices 2425 NE 65th Avenue Vancouver	WA	n/a	Y

In addition, project staff contacted the Washington State School for the Blind and the Washington School for the Deaf on multiple occasions requesting an opportunity to give a presentation or to meet with students, faculty, and/or staff (Exhibit 2-13). The schools were advised of project milestones such as the DEIS but chose not to become engaged.

Exhibit 2-13. Materials and Notification (Transit Dependent)

EVENT	DATE	WHERE	STATE	MATERIALS	IN BIA?
Transit station fliering (175 distributed)	5/20/2008	Salmon Creek Park and Ride Clark County	WA	CRC DEIS notification postcards, including public meeting announcement	N

EVENT	DATE	WHERE	STATE	MATERIALS	IN BIA?
Transit station fliering (300 distributed)	5/20/2008	Fishers Landing Park and Ride Clark County	WA	CRC DEIS notification postcards, including public meeting announcement	N
Transit station fliering (70 distributed)	5/21/2008	99th Street Park and Ride Clark County	WA	CRC DEIS notification postcards, including public meeting announcement	N

2.5.6 Outreach to Limited-English Proficiency Groups

Prior to issuing the CRC project Notice of Intent (NOI), the CRC project team identified limited English proficiency populations using GIS and the 2000 U.S. Census data. One data source used for limited English proficiency was "language spoken at home." The smallest geographic unit for which "language spoken at home" data are available is the census block group. Because of data limitations and the importance of identifying those populations with the greatest likelihood of experiencing direct impacts (those in the primary API), "language spoken at home" data were collected for all census block groups lying entirely or partially in the primary API. The data showed that those speaking Spanish, Russian, German, and Vietnamese at home represented an average of at least 1 percent of the population in the study block groups. Because the early version of the public involvement plan identified a likelihood that German speakers tended to have high levels of English language fluency, Spanish, Russian, and Vietnamese were chosen as the focus languages; German was not included.

2.5.6.1 Newspaper Advertising

Press releases advertising the fall 2005 and April 2006 open houses were translated into Spanish, Russian, and Vietnamese and distributed to the following newspapers:

- The Asian Reporter
- El Hispanic News
- Portland Observer
- The Skanner

The project has placed paid advertisements in *El Hispanic News* for each of its large public meetings, such as open houses, and public hearings related to May 2008 release of the Columbia River Crossing DEIS. Ads were translated into Spanish for several meetings until the newspaper notified the project that they prefer for ads to be provided in English. News releases are sent to *El Hispanic News* on a regular basis with notice of public meetings and other project activities.

2.5.6.2 Translated Materials

Project information has been routinely translated into those languages, including project newsletters, relevant project documents, and portions of the project web site. Russian, Spanish, and Vietnamese interpreters have been made available at numerous public open houses. Russian and Spanish are the two most common languages (except for English) spoken at home in Portland, Vancouver and Clark County. Vietnamese is the third most common language spoken in Portland and Vancouver.

Project materials have been translated into Russian, Spanish, and Vietnamese since outreach began, including materials on the project Web site. Interpreters in these languages were available

at project open houses held in 2005 and 2006. For subsequent open houses, notification was provided that such interpreters were available upon request.

Exhibit 2-14. Presentations, Including Materials Distribution (Russian-speaking)

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
Slavic Coalition	10/10/2006	IRCO 10301 NE Glisan Street Portland	OR	9	N

Exhibit 2-15. Materials and Notification (Russian-speaking)

ORGANIZATION	DATE	WHERE	STATE	MATERIALS	IN BIA?
Russian Oregon Social Services	10/2009	Ecumenical Ministries of Oregon 4033 SE Woodstock Boulevard Portland	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N

Exhibit 2-16. Spanish-speaking

EVENT	DATE	WHERE	STATE	ATTENDED	IN BIA?
St. John the Evangelist Catholic Church: Open house on WSDOT transportation projects, held after Spanish-speaking Mass	7/26/2009	St. John the Evangelist Catholic Church 8701 NE 119th Street Vancouver	WA	15	N

Exhibit 2-17. Presentations, Including Materials Distribution (Materials and Notification)

ORGANIZATION	DATE	WHERE	STATE	MATERIALS	IN BIA?
Becerra's International Groceries	10/2009	3503 E Fourth Plain Boulevard Vancouver	WA	CRC project folio, tolling fact sheet, and tolling survey flier	N
Carniceria	10/2009	3506 E Fourth Plain Boulevard Vancouver	WA	CRC project folio, tolling fact sheet, and tolling survey flier	N
Oregon Human Development Corporation	10/2009	9600 SW Oak Street Tigard	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N
St. Andrew Catholic Church	10/2009	806 NE Alberta Street Portland	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N

Vietnamese-speaking

No events have been held exclusively with the Vietnamese community, though other events attracting the general public and Asian Americans have been held.

Exhibit 2-18. Materials and Notification (Vietnamese-speaking)

ORGANIZATION	DATE	WHERE	STATE	MATERIALS	IN BIA?
A-Dong Asian Market and Deli	10/2009	3220 E Fourth Plain Boulevard Vancouver	WA	CRC project folio, tolling fact sheet, and tolling survey flier	N
Immigrant and Refugee Community Organization	10/2006	IRCO 10301 NE Glisan Street Portland	OR	Project fact sheets in Russian, Spanish, Vietnamese	N
Immigrant and Refugee Community Organization	5/2008	IRCO 10301 NE Glisan Street Portland	OR	Project fact sheets in Russian, Spanish, Vietnamese	N
Pho Oregon Restaurant	10/5/2009	NE 82nd Avenue and NE Russell Street Portland	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N
Eastern Cathay Restaurant	10/5/2009	NE 82nd Avenue and NE Clackamas Street Portland	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N
Rain Sports Lounge	10/5/2009	NE 82nd Avenue and NE Siskiyou Street Portland	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N
Shenzhen Seafood Restaurant	10/5/2009	NE 82nd Avenue and NE Oregon Street Portland	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N
Oriental Market	10/5/2009	SE 82nd Avenue and SE Yamhill Street Portland	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N
Fubonn Market	10/5/2009	SE 82nd Avenue and SE Clinton Street Portland	OR	CRC project folio, tolling fact sheet, and tolling survey flier	N

2.5.7 Outreach to Neighborhoods

Below is a listing of neighborhood associations in the project area containing EJ populations and that project staff have conducted outreach to, including giving presentations, gathering feedback, and answering questions. This is not an exhaustive list; rather, it focuses on neighborhoods nearest to the project and with whom the project team has most closely coordinated. The project team has met dozens of other neighborhood associations in Portland and Vancouver. The table below summarizes number of meeting with neighborhood associations in the primary and secondary API. A detailed listing, including dates and number of people engaged, is available upon request.

Exhibit 2-19. Neighborhoods within the Primary API

Group	Number of meetings CRC has attended through 11/17/2010	Notes
Portland		
Bridgeton	10	
East Columbia Neighborhood Association	7	
Hayden Island	19	
Hayden Island Mobile Home Owners and Renters Assn.	5	
Kenton	6	

Group	Number of meetings CRC has attended through 11/17/2010	Notes
Vancouver		
Arnada	14	
Carter Park	3	
Central Park	1	
Esther Short	9	
Hough	8	
Hudson's Bay	6	
Lincoln	11	
Northwest	2	
Rose Village	8	
Rosemere	4	No longer recognized by City of Vancouver
Shumway	13	
West Hazel Dell	4	
West Minnehaha	3	

Exhibit 2-20. Other Neighborhood Groups, including Neighborhoods in Secondary API

Group	Number of meetings CRC has attended through 12/31/09	Notes
Portland		
Arbor Lodge Neighborhood Association	1	
Boise Neighborhood Association	2	
Eliot Neighborhood Association	2	
Humboldt Neighborhood Association	4	
Jantzen Beach Moorage Inc.	5	
New Columbia neighborhood	1	
North Portland Neighborhood Services	2	City of Portland's neighborhood coalition office
Northeast Coalition of Neighborhoods	1	City of Portland's neighborhood coalition office
Overlook Neighborhood Association	4	
Piedmont Neighborhood Association	7	
St. Johns Neighborhood Association	3	
Vancouver		
Fruit Valley Neighborhood Association	2	
Harney Heights Neighborhood Association	1	
Meadow Homes Neighborhood Association	2	
Neighborhood Associations Council of Clark County (NACCC)	5	
Oakbrook Neighborhood Association	1	

2.5.8 Notice Provided for Public Meetings During Comment Period on CRC Draft Environmental Impact Statement

The lists below summarize the various tools and venues used by the CRC project team to provide notice of the two public hearings / open houses on May 28, 2008, in Vancouver, and May 29,

2008, in Portland, as well as four informal question and answer sessions held on the following dates in 2008: May 15 (Jantzen Beach SuperCenter, Portland), June 7 (Firstenburg Community Center, Vancouver), June 14 (Beaverton Main Library, Beaverton), June 19 (Clark Public Utilities, Vancouver).

2.5.8.1 Newspaper Display Advertising

Newspaper	Dates Issued	Circulation Number
Asian Reporter	April 29, 2008 May 20, 2008	20,000
The Columbian	April 27, 2008 May 22, 2008	62,000
El Hispanic News • Spanish Translation	May 2008 May 22, 2008	20,000
The Oregonian	May 1, 2008 May 22, 2008	309,467
The Portland Observer	April 30, 2008 May 21, 2008	40,000
The Portland Tribune	May 2 May 22	100,000
The Reflector	May 1, 2008 May 21, 2008	27,840
The Skanner	April 20, 2008 May 21, 2008	40,000
St. John's Sentinel	May 2008	19,000

2.5.8.2 Newspaper Legal Columns

Newspaper	Dates Issued
Columbian	April 28 through May 2, 2008
Oregonian	April 28 through May 2, 2008
Daily Journal of Commerce	April 28 through May 2, 2008

2.5.8.3 Postal Mailings

Postcards were distributed to all mailboxes in the project area (approximately 57,000) to announce the DEIS comment period and public hearing dates.

2.5.8.4 Email Notification

The following emails were sent to the CRC contact database, which consisted of approximately 3,200 email addresses.

- Announcement of the DEIS release date – April 24, 2008
- Announcement of the DEIS release – May 7, 2008
- Monthly E-Update with information about Section 4(f) – May 9, 2008
- Announcement of the Open Houses and Public Hearings, as well as DEIS Errata – May 27, 2008

- Reminder of the DEIS comment period – June 5, 2008

Additional emails were sent to the following groups inviting them to open houses and public hearings. The emails also requested the recipients forward the message to their email distribution lists.

- Neighborhood association leaders from the neighborhoods in the Bridge Influence Area in Portland and Vancouver;
- Columbia River Crossing working groups, including Task Force, Community and Environmental Justice Group, Freight Working Group, Pedestrian and Bicycle Advisory Committee, and Urban Design Advisory Group;
- Neighborhood Associations Council of Clark County Council (NACCC);
- North Portland Neighborhood Services;
- Vancouver Center's Parkview and Viewpoint Condominiums; and
- Bike Gallery employee distribution list.

2.5.8.5 Publications

The following groups requested articles for print in their community flyers or newsletters:

- Vancouver Housing Authority
- New Columbia neighborhood
- City of Vancouver Daily E-newsletter
- Hayden Island Mobile Home Park
- Jantzen Beach Moorage Inc.

2.5.8.6 Environmental Justice Communities

Postcards were hand delivered to the following low-income and senior housing facilities in Vancouver. These facilities were also offered a presentation by a CRC staff person.

- Smith Tower Apartments
- Pythian Home
- Lewis and Clark Plaza Apartments
- Vancouver Housing Authority
- Immigrant and Refugee Community Organization (IRCO), Portland
- Washington State School for the Blind
- Washington School for the Deaf
- New Columbia neighborhood, Portland
- Columbia House, Vancouver
- Latino Resource Group, Portland
- Say Hey! Partners in Diversity
- Esther Short Commons Apartments, Vancouver
- Slavic Coalition

2.5.8.7 Neighborhood Newsletters

City of Vancouver

A total of 20,000 newsletter inserts were sent to the City of Vancouver and distributed to the following neighborhood associations as an attachment to their newsletters. Some neighborhoods in the Project Area are not listed below because inclusion of the insert was up to each neighborhood association's leadership, some of whom declined. Neighborhood association names are followed by the number of newsletters distributed to each:

- Airport Green – 225
- Arnada – 705
- Burton Evergreen – 350
- Carter Park – 1,050
- Cascade Highlands – 1,185
- Countryside Woods – 800
- Ellsworth Spring – 1,200
- Esther Short – 650
- Evergreen Highlands – 370
- First Place – 290
- Fishers Creek – 800
- Hough – 1,175
- Image – 1,450
- Meadow Homes – 225
- Northfield – 230
- Oakbrook – 800
- Ogden – 1,525
- Shumway – 600
- Vancouver Heights – 1,670
- West Minnehaha – 1,300

The City of Portland does not have a similar hard copy newsletter distribution service, but neighborhood associations were notified electronically and via the North Portland Neighborhood Services office.

2.5.8.8 Postcards and Flyers

Postcards and flyers were distributed to the following transit centers, local businesses, CRC outreach events, and community gathering places. Every effort has been made to track distribution of these, but more flyers were distributed to additional places via the project's advisory group members.

Washington

- Three Port Meeting
- 99th Street Transit Center
- Arnada Neighborhood Association
- Cascade Park Library
- City Sandwich
- Columbia Credit Union
- Contessa
- C-TRAN
- Earth, Glaze and Fire Ceramic Painting Studio
- Esther Short Neighborhood Association
- Firstenburg Community Center
- Fishers Landing Transit Center
- Fort Vancouver Regional Library
- Fred Meyer – Chkalov and Mill Plain
- Fruit Valley Neighborhood Association
- Hilton Vancouver
- Home and Garden Idea Fair, Ridgefield
- Hough Neighborhood Association

- Ice Cream Renaissance
- IQ Credit Union – 601 E 16th
- Java House
- Kaiser Permanente Cascade Park
- La Bottega
- Lincoln Neighborhood Association
- Main Street Day Spa
- Marshall/Luepke Community Center
- Mind Candy
- Mint Tea Imports
- Moe's Barber & Styling
- Mon Ami
- Neighborhood Assn's Council of Clark County (NACCC)
- Neighborhood Traffic Safety Alliance
- Newsies
- North Garrison Heights Neighborhood Assn.
- Paradise Kafe
- Port of Camas-Washougal
- Port of Ridgefield
- Public Employees Day
- Rise and Stars Community Center
- Rose Village Neighborhood Association
- Rosemere Neighborhood
- Rotary, Camas-Washougal
- Rotary, Vancouver Sunrise
- Southwest Washington Regional Transportation Council
- Salmon Creek Transit Center
- Shumway Neighborhood Association
- SR 502 Open House
- St. Johns Food Store
- Starbucks – Chkalov & Mill Plain
- Starbucks – downtown Vancouver
- Starbucks – Uptown Village
- Sugar and Cream
- WSDOT - SW Region
- SW Washington Medical Center
- The Village Pearl
- Uptown Attic
- Uptown Village Association
- Vancouver Bicycle Club
- Vancouver Center
- Vancouver City Hall
- Vancouver Downtown Association meeting
- Vancouver Pizza
- Vancouver Planning Commission
- Rotary - Vancouver Sunrise
- Vancouver's Downtown Assn.
- Water Resources Education Center
- West Hazel Dell Neighborhood Association
- West Minnehaha Neighborhood Association
- West Vancouver Freight Alliance
- Willows

Oregon

- Beaverton City Hall
- Beaverton Community Resource Center

- Bicycle Transportation Alliance
- Boise Neighborhood Association
- Bridgeton Neighborhood Association
- Cedar Hills Recreation Center
- City Club of Portland
- City of Portland staff working on Hayden Island Concept Plan
- Columbia Crossings leasing office
- Columbia River Economic Development Council
- Elsie Stuhr Center
- Garden Home Recreation Center
- Hayden Island Mobile Home Owners and Renters Association
- Hayden Island Neighborhood Network
- Humboldt Neighborhood Association
- Jantzen Beach Moorage Inc.
- Jantzen Beach SuperCenter
- Kenton Neighborhood Association
- Kenton Firehouse / North Portland Neighborhood Services
- New Columbia neighborhood
- New Season's Market – Interstate Ave.
- New Seasons Raleigh Hills
- North Portland Library
- Mittleman Jewish Community Center
- Overlook Neighborhood Association
- Piedmont Neighborhood Association
- Portland Bicycle Advisory Committee
- Portland Community College – Cascade Campus
- Portland Pedestrian Advisory Committee
- Portland Planning Commission
- Portsmouth Neighborhood Association
- Ride Connection
- Rose Schnitzer Manor
- Safeway – Hayden Island
- Starbucks – Hayden Island Barnes and Noble
- Say Hey! Partners in Diversity
- Society of American Military Engineers
- St. Johns Library
- St. Johns Neighborhood Association
- Starbucks - St. Johns
- Uwajimaya
- University of Portland Library
- University Park Neighborhood Association

2.5.8.9 Community and Environmental Justice Group

To achieve the goal of meaningful public engagement throughout the project development process, the CRC project team formed the Community and Environmental Justice Group (CEJG). Members of the CEJG came from neighborhoods in the project area and included EJ communities (low-income, African American, Latino), one liaison from the CRC Task Force, and five at-large members. They represented the diverse interests and perspectives of the Vancouver, Portland, and Hayden Island neighborhoods potentially affected by the project. Beginning in August 2006, CEJG met once a month and continued to meet until the CRC project's LPA was selected. To date, CEJG has provided input on a wide variety of project-related issues, including project

background, 12 preliminary alternative packages, and staff recommendation on alternatives to carry forward into the DEIS.

Reporting to the CRC project team, the specific role of the CEJG is to:

- Conduct individual or group review of the CRC project materials.
- Identify issues and concerns in the project development or environmental process, and present recommendations at key milestones to the project team.
- Assist the CRC project team in effectively engaging the public in the project by:
  - Reviewing and commenting on the outreach plan.
  - Identifying service providers and community based organizations in the project area.
  - Informing the CRC project team of known changes in demographics within the API since the 2000 Census.
  - Assisting in identifying community reactions and issues of concern.
- Provide input to the CRC project team into relevant areas of interest or potential impact (such as air quality, noise, highway interchange alignments and design features) to help inform the project's efforts to avoid, minimize, or mitigate potential impacts of the project to their community.
- Communicate frequently with their respective constituency groups to keep them informed of project information, bring their input to the CRC project team, and help develop an understanding and support of project recommendations.
- Identify community concerns related to the project and communicate those concerns to the CRC project team in a timely manner.
- Identify community resources.
- Provide input to the CRC project team to assist with developing potential solutions as challenges arise on the project.
- Provide input to the project on balancing transportation, economic, and livability needs.
- Provide recommendations with regards to specific project elements to ensure there is a balance within impacted populations and that costs and benefits are reasonably distributed.

2.5.9 Tribal Coordination

The CRC project team is committed to frequent and ongoing coordination with tribes that are interested in the project. During early coordination efforts, it was agreed that tribal concerns would not be considered EJ issues, and would not be addressed in this Technical Report. For more information on Tribal coordination and potential impacts to tribes and related resources, please refer to the Historic and Archeological Technical Reports.

The CRC project team designated a CRC Tribal Liaison, with the statewide tribal liaisons for both WSDOT and the ODOT assisting in tribal coordination efforts. All communication with tribes was coordinated through the CRC Tribal Liaison to ensure that information was managed internally and integrated into the government-to-government dialogue with the tribes. The general approach to government-to-government consultation for the CRC project was as follows.

CRC staff met with interested tribes early in the environmental review process in order to review broad issues and establish:

- An understanding of those aspects of the CRC project likely to interest the tribes.
- Preliminary information about the potential for the project to affect tribal land, historical or cultural resources, fishing and other aquatic resources, or any other issues of tribal concern.
- An initial agreement regarding the process for the government-to-government consultations.
- The consultation process integrated both formal and informal contact with the Tribal Council and tribal staff, respectively.

Acknowledging that CRC must afford the interested tribes with more than the opportunity to participate as members of the general public in the planning and permitting process, CRC took the following actions to ensure effective government-to-government consultation:

- Sought tribal input regarding alternatives and opportunities to avoid, reduce, or otherwise mitigate the effects of the CRC project on tribal interests.
- Sought tribal comment throughout the project's environmental review, permitting and regulatory review processes.

2.5.10 Results of Outreach and Coordination

This section describes how the intensive outreach has affected the Environmental Justice analysis. This section is not intended to provide impact analysis or determination of effects to Environmental Justice communities. Impact analysis based on all of the methods discussed in this technical report can be found in Sections 4 and 5.

The key ways in which the outreach has influenced the project include:

- Through individual meetings with specific groups, the CRC project team has gained vital information that has been used in the design and planning processes. For example, the CRC project team has been working to avoid and minimize specific impacts to:
  - The low-income residents of the Smith Tower, in Vancouver, who will be next to construction area.
  - The elderly and handicapped individuals who frequent the Clark County Historic Museum and may have their Americans with Disabilities Act (ADA)-compliant pathway impacted.
  - The representatives of the Jantzen Beach Moorage who have asserted that they have residents who should be considered as part of the EJ population.
  - The residents of the manufactured home community on Hayden Island.
- Community Resource Mapping.
- CEJG. The CEJG has helped the project to address the right issues with the right groups of people. The CEJG has also served as a sounding board for various analytical conclusions and for the development of proposed mitigation.

Exhibit 2-21 below provides a detailed assessment of what has been communicated to the Environmental Justice teams and working groups. Accompanying each input, there is a brief explanation of how this information was used by the project and how the project responded.

Exhibit 2-21. How the Project Has Utilized Public Input on EJ Issues

Comment Received	CEJG/CRC advisory groups	Outreach events/meetings	Written comments	Agency comments	CRC Action	Period
Pre-DEIS Comments						
Provide specific groups or populations a presentation on CRC project.	X	X			Contacted groups to schedule presentations as a result of comments and researched additional ideas based on comments.	Pre-DEIS
Locations of community resources (CRC staff asked questions at CEJG and local neighborhood meetings).	X	X			Included information in DEIS and FEIS.	Pre-DEIS
Require all construction equipment to be outfitted with low sulfur fuel technology to minimize air quality impacts.	X		X		Listed as potential mitigation measure in DEIS and FEIS.	Pre-DEIS
Establish a community enhancement fund that is 1 percent of project cost to be spent within the community to improve livability.	X	X			Provided CEJG and other groups information about specific project impacts with goal of identifying nexus between impacts and potential mitigation actions that could be funded by the project or its partners. CRC staff has stated that an enhancement fund is not likely.	Pre-DEIS
Make it easier for Vancouver people so they don't back up North Portland with traffic congestion.		X			Locally preferred alternative would improve congestion on I-5 and reduce cut-through traffic.	Pre-DEIS
Provide project area tour to CEJG members.	X				Organized tour in fall 2006.	Pre-DEIS
Contact potentially affected property owners as soon as possible to let them know they are next to alignments being considered.	X	X			Mailed letter to all potentially affected property owners; organized two meetings in August 2007 with potentially affected property owners. Mailed letter and had two public meetings with additional property owners in July 2009 who could be affected by proposal for additional improvements to SR 500 interchange and who were not informed previously.	Pre-DEIS
Avoid impacts to neighborhoods and historic properties from transit alignment.		X	X	X	Alignment selected by working group minimizes and avoids the majority of historic properties.	Pre-DEIS
Create a transit system that is reliable, efficient and accessible.		X	X		Light rail extension and continuing use of express buses selected as locally preferred alternative.	Pre-DEIS
Create an aesthetically pleasing bridge.	X	X	X		Formed Urban Design Advisory Group to assist project with bridge design; hired a nationally recognized bridge architect to create design that has been endorsed by UDAG and Project Sponsors Council.	Pre-DEIS
Ensure Web site provides information that people need about the project and is easily navigated.	X				Redesigned Web site in April 2007. Web site is continually updated with new information.	Pre-DEIS
Provide training on environmental justice to CEJG.	X				Training led by Running Grass of EPA held in December 2006.	Pre-DEIS

Comment Received	CEJG/CRC advisory groups	Outreach events/meetings	Written comments	Agency comments	CRC Action	Period
Include supplemental bridge as a DEIS alternative.	X	X	X		Alternatives that would retain the existing bridges were analyzed in the DEIS, but not selected.	Pre-DEIS
Do not increase noise and pollution.	X	X	X	X	Studies show that project will reduce noise impacts in the study area, and that air quality will greatly improve.	Pre-DEIS
Locate bike/ped path away from prevailing winds so exhaust fumes and noise are less.	X				Working closely with the CRC Pedestrian and Bicycle Advisory Committee to create an inviting and usable path. The pathway across the river will be covered to reduce effects from traffic.	Pre-DEIS
DEIS Phase Comments						
Supportive of project		X			N/A	
Supportive of increased safety with auxiliary lanes		X			N/A	
Explain DEIS to the public so they may understand and comment on it.	X				Created guide to the DEIS with CEJG's assistance on how to comment and also an explanatory table of contents. Took to all outreach events and distributed with 200 copies of DEIS placed at community locations.	DEIS
Expand distribution of DEIS.	X	X			Placed DEIS at community centers, housing authority and libraries throughout project area, North Portland and Clark County.	DEIS
Assess if project will affect subsistence fishing.				X	Searched all DEIS comments and found none; surveyed staff leads and found no indications of subsistence fishing in project area.	DEIS
Conduct a health impact assessment.		X	X	X	Completed the individual analyses that to assess health impacts as part of DEIS research and reporting.	DEIS
Provide information on air quality analysis and project effects (both data and how to interpret).	X	X	X	X	Air quality analyst for DEIS gave presentation at CEJG meeting and attended open houses; held four question and answer sessions on contents of DEIS; convened separate independent expert review panels on greenhouse gases and travel demand modeling to confirm DEIS analysis on traffic data which informs air quality analysis; using variable tolling to help reduce toxic air emissions from stop and go traffic.	DEIS
Provide information on noise analysis and project effects.	X	X	X	X	Noise analyst for DEIS attended open houses and CEJG meeting to provide information and answer questions; held four question and answer sessions on contents of DEIS.	DEIS

Comment Received	CEJG/CRC advisory groups	Outreach events/meetings	Written comments	Agency comments	CRC Action	Period
Protect historic structures for Hudson's Bay Company village via noise walls.				X	Landscaping will be installed to protect from noise. Complete noise analysis was conducted.	DEIS
Conduct analysis of noise level changes based on tidal variations.	X	X			No discernable difference found	DEIS
Build noise walls on ramps in addition to mainline.			X		Not found to be cost-effective except in a few locations.	DEIS
Provide information on construction effects.	X	X			Informational materials will have been and will be distributed. Public outreach events were held and will continue on the final design.	DEIS
Provide information on mitigation.	X	X			Discussed timeline for mitigation at CEJG meetings; created and distributed fact sheet on mitigation process; included potential mitigation activities in DEIS based on comments received and effects analysis.	DEIS
Meet or exceed MBWE guidelines.		X	X		CRC has contracted with minority-owned and women-owned businesses during the NEPA phase. CRC staff attended informational fair sponsored by Oregon Association of Minority Enterprises to provide early project information to MBWE businesses. CRC will meet or exceed MBWE contracting guidelines, as required by state laws.	DEIS
Light rail alignment should not displace The Wellness Project.		X	X		Locally preferred alternative does not include light rail alignment on Main Street, thereby avoiding this displacement.	DEIS
Investigate effects to children.			X	X	Investigated and found no project impacts to daycare centers or children's programs. Improvements to pedestrian and bike paths will allow walking and biking to schools and parks.	DEIS
Address the psychological effect and costs of putting a new transportation route through a community.		X			Costs and benefits of light rail extension are being fully investigated for finance plan; Vancouver Working Group and City staff have been consulted in selection of light rail alignment.	DEIS
Do not allow businesses to be negatively affected by new transit line.		X	X		Vancouver Working Group included representatives from local businesses and final recommendations took business concerns into account.	DEIS
Do not select the supplemental bridge option because it would retain bridge lifts.		X	X		Locally preferred alternative calls for replacing the existing bridge and eliminating bridge lifts.	DEIS

Comment Received	CEJG/CRC advisory groups	Outreach events/meetings	Written comments	Agency comments	CRC Action	Period
Create a safe transit system.	X	X	X		CRC is using design strategies proven to reduce the potential for crime at stations and on trains. Significant input from advisory groups, local jurisdictions and the public will help in the design of a safe system.	DEIS
Ensure wheelchair accessibility with transit.		X			All transit stations and vehicles will be wheelchair accessible and comply with ADA standards.	DEIS
Post-DEIS Comments						
Assess whether JBMI is an EJ community and provide relocation assistance.	X	X			ODOT researching potential (with Department of State Lands) to provide floating home relocation assistance (in form of building a new moorage) in advance of FEIS/ROD. Environmental Team conducted two demographic surveys of floating home communities.	Post-DEIS
Conduct training on environmental justice so community can effectively advocate for itself.	X	X			Training held Dec. 5, 2009, with FHWA trainer.	Post-DEIS
Talk about construction impacts early.	X	X			CRC staff talk about general construction impacts at ongoing neighborhood presentations.	Post-DEIS
Do outreach to commute trip reduction program.		X			CRC staff will schedule in preparation for construction.	Post-DEIS
Build safe and secure transit system (park and rides, stations, and on train).	X	X			CRC is using design strategies proven to reduce the potential for crime at stations and on trains. Significant input from advisory groups, local jurisdictions and the public will help in the design of a safe system.	Post-DEIS
Avoid impacts to manufactured homes community and community resources (e.g., Hayden Island Safeway and Plaid Pantry).	X	X	X		CRC staff talks regularly with groups and individuals on Hayden Island regarding design and highway alignment.	Post-DEIS
Use postal mail to communicate with Hayden Island residents because many do not use the internet.		X			Provided fliers to homeowners associations and clubhouses for distribution by members. Mailed postcards to all addresses to announce transit design workshop in September 2009.	Post-DEIS
Assess impacts to lower income service industry workers on Hayden Island.		X			Ongoing technical analysis. More outreach with demographic surveys to occur.	Post-DEIS
Analyze the effects of tolling on low-income populations.		X	X	X	Project will expand public transit options for all travelers; public comments related to tolling effects included in Tolling Study Committee report.	Post-DEIS
Preserve parking and driveway associated with Luepke Senior Center.		X			Minimization efforts have been unable to avoid all parking impacts.	Post-DEIS

Comment Received	CEJG/CRC advisory groups	Outreach events/meetings	Written comments	Agency comments	CRC Action	Period
Conduct additional outreach with transit dependent populations in Vancouver as follow up with workshops held in 2008.		X			CRC staff will schedule additional presentations as design continues.	Post-DEIS
Do not increase number of highway lanes through North Portland.		X	X		Auxiliary lanes are not designed to expand the highway outside of the project limits. The number of through highway lanes will remain as three. Auxiliary lanes are provided to address project purpose and need, which includes safety.	Post-DEIS
Don't encourage more neighborhood traffic through Kenton.		X			Locally preferred alternative being designed to improve travel mobility and travel choices and reduce neighborhood cut-through traffic.	
Provide information about on health effects from the CRC project.	X				Information is contained in the DEIS. More specific information and data is now available in this EJ technical report.	

2.6 Human Health Impacts

Human health issues are embedded in NEPA's intent and in its implementation. While there is rarely if ever a section entitled "Human Health Impacts" in an EIS, evaluating and protecting the health of people and populations is the primary driver behind many of the studies conducted in the preparation of an EIS. The analyses conducted for the CRC DEIS, and additional updates completed for the FEIS, address all potentially significant human health impacts that could reasonably result from the proposed action. Subsequently, this environmental justice analysis has taken these potential effects to human health into consideration, evaluating whether these effects constitute high, adverse, and disproportionate impacts.

Because "human health" was part of the original NEPA, it was also reflected in the Council on Environmental Quality's (CEQ's) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500 – 1508), issued in 1978. To address the NEPA responsibilities established by CEQ, the FHWA issued NEPA implementing regulations (23 CFR 771, Environmental Impact and Related Procedures), and has issued updates and additional guidelines and advisories since then. These regulations and guidelines were built upon the purpose and procedures established in NEPA of 1969 and in CEQ's 1978 NEPA implementing regulations. FHWA's original regulations, as well as updates and guidelines since then, have directed EISs to include studies that evaluate impacts on human health.

For the CRC EIS, the studies that directly or indirectly evaluate impacts related to human health include the following:

- Air Quality
- Economics
- Hazardous Materials
- Land Use

- Neighborhoods
- Parks and Recreation
- Public Services
- Transit
- Water Quality and Hydrology
- Noise and Vibration
- Pedestrians and bicycles
- Traffic
- Visual and Aesthetics

Where the analyses for these disciplines have identified potential adverse impacts, these impacts have been assessed within this technical report for possible implications for EJ populations.

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3. Affected Environment

3.1 Introduction

The primary API is expected to experience direct impacts from the project, including potential acquisition of property and physical construction activities. This section addresses existing conditions in the primary and secondary APIs.

Some project activities would cause indirect impacts that may be relatively distant from the actual construction areas. For this assessment, the project established a secondary API. In this area, there may be changes to traffic patterns, job growth, etc. that could impact EJ populations and other communities. The secondary API reaches from the Lloyd District/I-84 in Portland, north to where the I-5 and I-205 highways merge in Washington. It is also possible that impacts could be identified outside of the secondary API. For example, tolling I-205 may impact EJ populations on the east side of Vancouver. This area is not geographically restricted, and may extend far from the project.

3.2 Regional Conditions

3.2.1 Population, Households, and Employment

The Portland-Vancouver metropolitan area has experienced years of rapid growth, and is expected to continue growing. Exhibit 3-1 shows historical and forecast population and housing data for the Portland-Vancouver metropolitan area. Approximately 1.9 million people live in the five-county region (Multnomah, Washington, Clackamas, and Yamhill Counties in Oregon, and Clark County in Washington), an increase of about 400,000 people since 1990. Much of the increase in population during that time can be attributed to migration into the metropolitan area because of the dynamic economic conditions and available employment opportunities. By 2025, the population of the region is expected to grow to approximately 2.8 million. On a percentage basis, the population is projected to grow in the future at a slightly slower rate than it has in recent years.

Exhibit 3-1. Population, Employment, and Housing

	Actual	Actual	Forecast	Average Annual Growth Rate	
Parameter	1990	2000	2025	1990-2000	2000-2025
Population	1,477,900	1,874,500	2,768,200	2.4%	1.6%
Households	575,500	725,400	1,104,200	2.4%	1.7%
Employment[a]	715,200	958,000	1,515,500	3.0%	1.9%

Source: Metro Regional Government.

a Employment is total salary and wage employment.

3.2.2 Economic Conditions

The greater Portland-Vancouver metropolitan area is a favorable location for companies serving major West Coast and international markets. Fueled by growth in the electronics manufacturing and warehousing/distribution sectors in the mid-1990s, the region experienced growth in population, employment, and housing. The recessions in 2001 and in 2008 have caused some of

the higher unemployment rates in the nation. The safe and efficient movement of people and goods to and from the area is an important factor in the continued long-term health of the local and regional economy.

3.2.2.1 Employment and Income

The Portland-Vancouver metropolitan area has current and projected job growth with employers that require efficient transportation systems for the movement of goods, services, and employees to and from their places of business. Exhibit 3-2 presents historic and projected employment in the Portland-Vancouver five-county region by industry sector for 1990, 2000, and 2025. Total jobs in the area increased from 715,200 jobs in 1990 to approximately 958,000 jobs in 2000. By 2025, businesses within the greater Portland-Vancouver metropolitan area are expected to employ over 1.5 million individuals.

From 1990 to 2000, all major industry sectors in the region experienced positive growth. The service industry sector and the construction/mining industry experienced the largest annual growth rates in the region. The growth in the manufacturing sector can be largely attributed to the Portland-Vancouver metropolitan area's strong semiconductor and electronics manufacturing industries. Average annual growth rates are projected to slow between 2000 and 2025 compared to the growth experienced between 1990 and 2000. The service sector is projected to grow faster than any other industry.

Exhibit 3-2. Employment by Industry

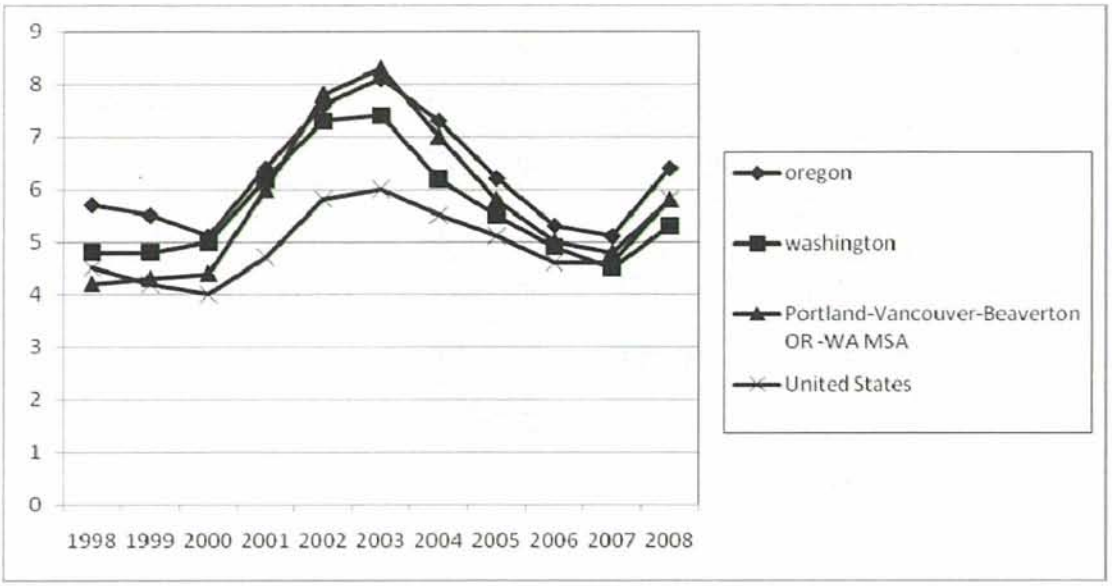
Industry	Actual 1990	Actual 2000	Forecast 2025	Average Annual Growth Rate 1990-2000	Average Annual Growth Rate 2000-2025
Manufacturing	121,700	145,500	177,200	1.8%	0.8%
Construction and Mining	36,300	53,900	81,000	4.0%	1.6%
Transportation, Communications, and Utilities	41,600	55,400	80,900	2.9%	1.5%
Retail and Wholesale Trade	183,400	235,400	367,900	2.5%	1.8%
Finance, Insurance, and Real Estate	52,100	64,500	90,200	2.2%	1.4%
Services	182,200	276,300	546,300	4.3%	2.8%
Federal, State, and Local Government	98,000	127,000	172,000	2.6%	1.2%
Total Employment	715,200	958,000	1,515,500	3.0%	1.9%

Source: Portland Metro.

Exhibit 3-3 presents unemployment rates for the Portland-Vancouver primary metropolitan statistical area (PMSA), the states of Oregon and Washington, and the United States over the most recent 10-year period for which data are available (1998 through 2008). From 1998 to 1999, the Portland-Vancouver PMSA unemployment rate trended lower than rates overall in Washington, Oregon, and the nation. By 2002, the regional unemployment rate was greater than rates in each state and the nation. The relatively greater increase in the region's unemployment rate was partially caused by the region's reliance on electronic and computer manufacturing, which was greatly impacted by the international economic downturn in those employment sectors. Slow job growth continued through 2003. In 2004 job growth increased; the Portland-Vancouver metropolitan statistical area (MSA) unemployment rate dropped below Oregon's average, but was still larger than the Washington State average. This lower unemployment rate continued through 2007, but jumped dramatically between the years of 2007 and 2008. This rise in unemployment is consistent with a global change in economic conditions. The most recent unemployment information (October 2009) shows an 11.3 percent unemployment rate for the

State of Oregon and a 9.3 percent unemployment rate for the State of Washington. The nation's unemployment rate for this same period is 10 percent, and the unemployment rate for the MSA is 10.7 percent.

Exhibit 3-3. Unemployment Rate



Source: Bureau of Labor Statistics, 2009.

Exhibit 3-4 presents median household incomes for the Portland-Vancouver MSA, the states of Oregon and Washington, and the United States. In 2000, the median household income of the Portland-Salem Consolidated MSA was approximately $46,000 and was slightly above state and national averages. By 2005, the regional median household income was just under $50,000 and the same as the Washington state average (still above the national and the Oregon state average). By 2008 the regional and the State of Washington median household income had risen to just under $60,000. Although Oregon state income and national income had also risen during this time, the difference between these two groups had grown.

Exhibit 3-4. Median Household Income 2000 through 2008

Source: U.S. Census: 2000 Decennial Census, American Community Survey (2005 and 2008 data).

a The Portland-Vancouver MSA level of analysis did not exist during the 2000 Census, therefore the Portland-Salem Consolidated MSA (CMSA), which extends from north of Vancouver to south of Salem, was used.

3.2.2.2 Salary Levels for Selected Local Jobs

During the analysis of impacts to local businesses, the CRC project team gathered data on income levels. Later in the project planning process, data were collected for specific businesses that will be relocated or otherwise significantly impacted. For this technical report, and in coordination with the acquisitions and economics analyses, it was determined that the largest potential negative impact to employers would be on Hayden Island. In order to better understand potential EJ impacts related to the service-type businesses that are most likely to be acquired, the following data were gathered.

The service and sales sectors are major sources of employment for Hayden Island residents. Food preparation and service-related employers are more likely to offer low-income positions (e.g., dishwashers, cooks, hosts, and counter attendants). The majority of food preparation and service jobs are provided by restaurants, fast food establishments, and hotels. According to the Oregon Employment Department, the average salaries of most food preparation and service workers within Multnomah and Washington Counties fall within the range of $18,000 and $23,000 per year.

The 2008 federal poverty level, established by the Department of Health and Human Services, is $10,764 for a one-person household (Exhibit 3-5). The likelihood that a household would earn below the federal poverty level increases with household size. Eligibility for federal programs is often determined by using a multiplier of the federal poverty level. The CRC project analyzed low-income population distributions in order to determine the impacts to these persons.

Exhibit 3-5. Federal Poverty Level, 2008

	Poverty Threshold[a]
Number in Household	2008
1	$10,764
2	$14,264
3	$17,172
4	$22,130
5	$26,257

Source: Federal Register (2007). http://aspe.hhs.gov/poverty/07poverty.shtml.

3.2.3 Population Conditions

3.2.3.1 Minority Populations

According to the 2000 U.S. Census, 27 percent of the population in the secondary API is minority (Exhibit 3-6). Although minorities are located throughout the secondary API, the percentage of minority populations is higher in the Portland block groups (42 percent) than in the Vancouver block groups (15 percent). Exhibit 2-3 maps these block groups, and Exhibit 3-7 shows the percentage of minority populations living in the secondary API. Table A-1 in Appendix A lists the percentage of minority populations living in the primary and secondary API by census block group.

Exhibit 3-6. EJ Populations

Area	Total Population	% Minority	% Low-Income
Portland Block Groups	62,264	42	17
Vancouver Block Groups	84,407	15	13
Secondary API Total	146,671	27	15

Source: U.S. Census 2000, Summary Tape File 3, Tables P7 and P88.

The names of ethnic and demographic categories used in this report are taken from those used by the U.S. Census Bureau. Because of rounding, exhibits in this report summarizing this data show rates of 0 when few individuals in a census category are part of a large population.

Exhibit 3-7. Minorities (Percent)

	Race							Ethnicity
Area	White Alone	Black or African American Alone	American Indian and Alaska Native Alone	Asian Alone	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Portland Block Groups	58	23	1	4	0	0	5	9
Vancouver Block Groups	85	2	1	2	0	0	3	7
Secondary API Total	73	11	1	3	0	0	4	8

Source: U.S. Census 2000, Summary Tape File 3, Table P7.

In Appendix A, Table A-2 shows the number and percent of each census race and ethnicity category by census block. Particularly high concentrations of minority populations (70 percent or over) can be found in 10 block groups in the Boise, King, Humboldt, Piedmont, Eliot, Irvington, and Woodlawn neighborhoods of Portland. Census tract (CT) 33.01 block group (BG) 3 has the highest proportion of minority residents on the Oregon side of the Columbia River, in the Boise neighborhood of Portland. Exhibit 3-8 maps these data by neighborhood. Table A-2 shows that the block groups mentioned above are primarily African American, although many have substantial populations of Hispanics as well. The highest concentration of minorities in Vancouver is in block group CT 8.04 BG 1 in the NE Hazel Dell neighborhood (41 percent minority), where 30 percent of the block group is low-income.

3.2.3.2 Low-income Populations

Low-income populations, which are those populations with incomes below the poverty line, are shown by neighborhood on Exhibit 3-9 and by block group on Exhibit 2-2. Table A-1 in Appendix A lists the percentage of low-income populations living in the secondary API by census block group.

In the secondary API, 15 percent of the population is low-income. Low-income populations are located throughout the secondary API, but these percentages are slightly higher in the Portland block groups (17 percent low-income) than in the Vancouver block groups (13 percent low-income). In Oregon, the following Portland neighborhoods contain block groups with greater than 20 percent of residents living below the federal poverty line:

- King
- Overlook
- Piedmont
- Boise
- Eliot
- Arbor Lodge
- Humboldt
- Kenton

In Washington, the following Vancouver neighborhoods contain block groups with greater than 20 percent of residents living below the federal poverty line:

- NE Hazel Dell
- Hudson's Bay
- Rose Village
- Esther Short
- Harney Heights
- Hough
- Central Park
- Fruit Valley

3.2.3.3 Disabled Population

More people with disabilities live near the project than average for the Portland-Vancouver metropolitan area. The disabled population rates vary widely among neighborhoods. Esther Short reports a 45 percent disability rate, likely due to the senior housing located in the area. All other neighborhood disability rates fall between 16 and 30 percent.

The Washington State Schools for the Blind and the Deaf are near the study area. The School for the Blind is at 2214 E 13th Street near Mill Plain Boulevard and E Reserve Street. The School for the Deaf is at 611 Grand Boulevard, at Grand and Evergreen. The School for the Blind provides mobility classes with instruction on crossing the street, business area travel skills, and bus travel. The CRC project team will need to work with City and school representatives to assure that the project does not result in unnecessary adverse impacts to roadways used for mobility training.

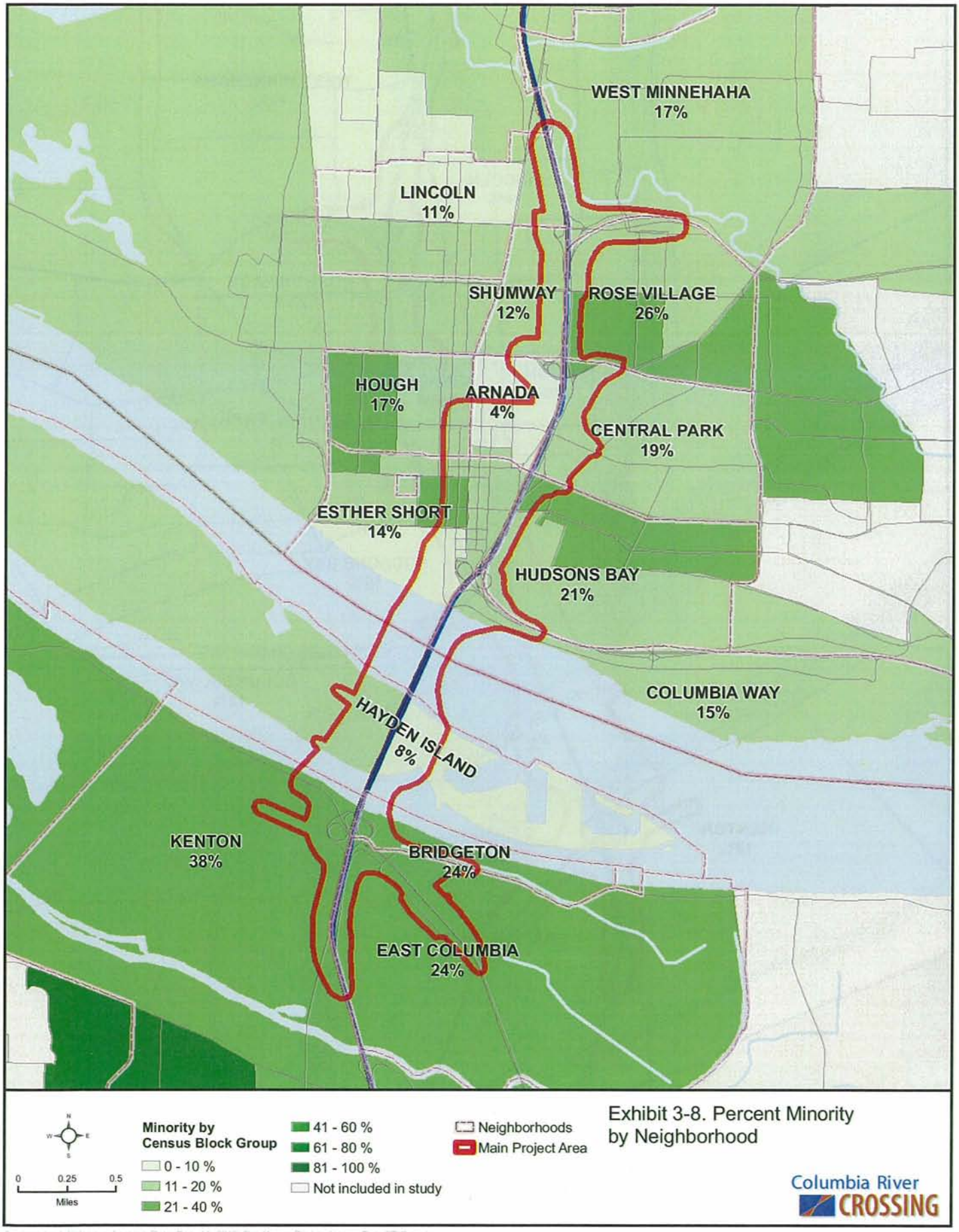


Exhibit 3-8. Percent Minority by Neighborhood

Columbia River CROSSING

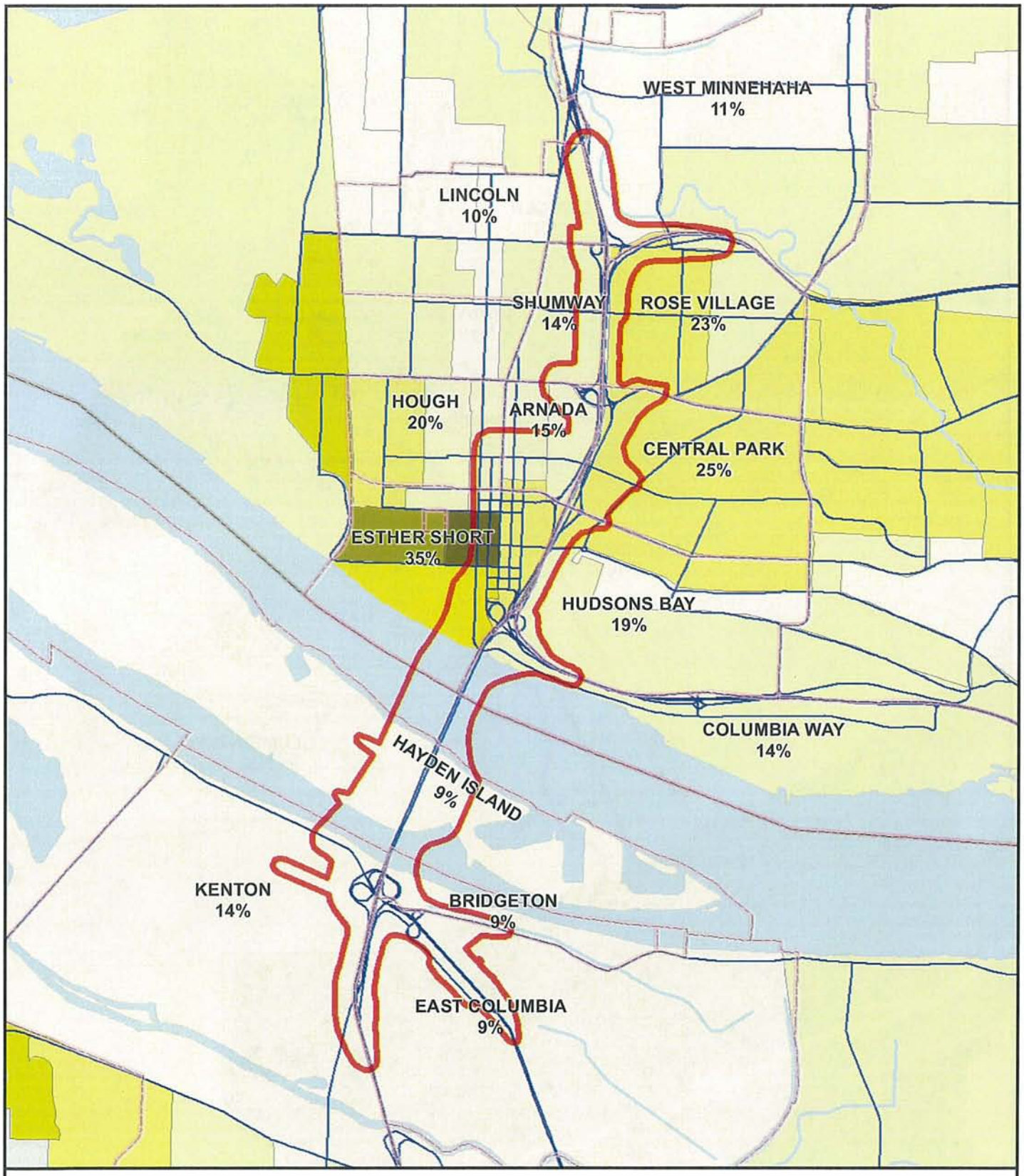


Exhibit 3-9. Percent of Population Below the Poverty Line

Columbia River CROSSING

3.2.4 Transportation

Transportation used to travel to work can indicate how reliant the population is on transit and how much the population would benefit from improvements to transit. About 4 percent of the total population in the secondary API uses public transportation to travel to work (Exhibit 3-10). Table A-4 in Appendix A lists transportation mode data by census block group. Seven percent of people in the Portland block groups and 2 percent of people in the Vancouver block groups take public transportation to work. Several block groups (CT 21 BG 2, CT 24.02 Block Groups 2 and 3, and CT 25.02 BG 3) in the Kerns, Sullivan's Gulch, and Irvington neighborhoods of Portland and one (CT 24 BG 1) in the Esther Short neighborhood of Vancouver have 15 percent or more of the population using public transportation to travel to work.

Exhibit 3-10. Means of Transportation to Work

Area	People Taking Public Transportation to Work	% People Taking Public Transportation to Work
Portland Block Groups	4,659	7
Vancouver Block Groups	1,725	2
API Total	11,043	4

Source: U.S. Census 2000, Table P 30.

3.2.4.1 Regional Transit Rider Demographics

Both TriMet and C-TRAN have collected data to understand the characteristics of their ridership population. This section summarizes findings from recent studies conducted by these agencies.

TriMet Interstate MAX Line Riders

According to a study produced by TriMet in 2009, the largest percentage (28 percent) of weekday trips on Interstate MAX were made by people 25-34 years of age in 2005. The next largest user group (19 percent) was composed of people 35-44 years of age. The smallest user group (3 percent) was composed of people 65 years and older.

In 2005, nearly two-thirds (64 percent) of rides on Interstate MAX were made by individuals who classified themselves as Caucasian/White. This compares to nearly three-quarters (73 percent) of rides made by individuals who classified themselves as Caucasian/White in the 2000 Systemwide Origin and Destination Study, meaning that a larger number of minorities use the Interstate MAX line than other MAX lines. African Americans composed the largest minority group in 2005 (16 percent), followed by Hispanic/Latino and Other (both 6 percent).

In 2005, 69 percent of all weekday Interstate MAX line rides were made by individuals in households earning less than $50,000 per year, and 31 percent of trips were by individuals from households earning $50,000 or more per year.

"Choice Riders" (riders who had a car available but preferred to use TriMet) composed 39 percent of Interstate MAX line riders in 2005. Twenty-seven percent of riders did not have a car available, 16 percent of riders reported that they did not drive or did not know how to drive, and 17 percent stated that they did not have a car because they prefer to use TriMet.[3]

[3] TriMet Interstate MAX Light Rail Before and After Study. Revised Draft January 2009.

C-TRAN Riders

According to a 2003 Rider Satisfaction Survey, the largest percentage (22 percent) of C-TRAN weekday riders were 19-24 years of age, followed by 21 percent for 25-34 year olds. The smallest user group (5 percent) was composed of people 65 years of age and older.

Eighty percent of riders were Caucasian, while 11 percent were African American, 4 percent were American Indian/Alaska Native, and 3 percent were Asian/Pacific Islander. Less than 1 percent of riders were Hispanic or Latino.

Most C-TRAN riders (57 percent) reported earning under $30,000, 30 percent declined to state their income, 12 percent earned $30,000-$75,000, and the smallest percentage (1 percent) earned more than $75,000.

A majority of C-TRAN riders (61 percent) do not have access to a working automobile, while 37 percent or respondents have access to one or more automobiles.[4]

In 2008, C-TRAN conducted another rider satisfaction survey. The demographic profile for riders was, for the most part, very similar to the 2003 profile. The major difference was that C-TRAN riders became more racially diverse over the 5 year period. The number of combined weekday and weekend Caucasian riders dropped from 81 percent to 69 percent, while the number of minorities in all categories except Native American Indian increased. The greatest increase was in the number of Hispanic/Latino riders, which rose from less than 1 percent to 4 percent.[5]

3.2.5 Limited English Proficiency

People with limited ability to understand English are not always minority or low-income and therefore not necessarily EJ populations. Agencies try to understand the language needs of people in order to involve them in the project planning process. Information on race and ethnicity is useful in identifying populations with limited ability to understand English and the need for translation services to communicate project information.

Translation and interpretation services in Spanish, Vietnamese, and Russian have been provided to persons with limited English proficiency (LEP) in order to include them in the project's recommendation-making process. The decision to provide these services is based on census data and information from previous studies, such as the I-5 Transportation and Trade Partnership Strategic Plan and the Delta Park Project Environmental Assessment. Data indicated that there are block groups in the secondary API with Hispanic and Asian populations that constitute 5 percent or more of the population. The recommendation to provide translation and interpreter services in Russian came from public outreach on the I-5 Transportation and Trade Partnership Project and the Delta Park Project. See Section 2.5, Outreach and Communications, for more information.

3.2.6 Community Conditions

3.2.6.1 Air Quality

Air quality has improved in the Portland-Vancouver metropolitan area since the early 1980s, and the area is currently designated as a maintenance area for carbon monoxide (CO) and an attainment area for all other pollutants. The Air Quality Technical Report contains additional information on pollutants in the project area.

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[4] C-TRAN Rider Satisfaction Survey Findings, December 2003.

[5] C-TRAN Rider Satisfaction Survey Findings, May 2008.

For transportation projects in the Portland-Vancouver metropolitan area, the main pollutants of concern are CO and ozone. Volatile organic compounds and nitrogen oxides contribute to ozone formation. Particulate matter (PM) has also been raised as a pollutant of public concern for the CRC project. Highway vehicles are an important source of the pollutants of concern, which may contribute to smog and health problems in the primary and secondary APIs.

3.2.6.2 Noise

Sensitive noise receptors are, in general, those areas of human habitation or substantial use where the intrusion of noise has the potential to adversely impact the occupancy, use, or enjoyment of the environment. These can include residences, schools, hospitals, parks, and places of business requiring low levels of noise. The primary API is densely developed and contains many sensitive noise receptors. There is dense residential development in a number of areas, as well as sensitive uses such as parks, hospitals, schools, and cemeteries. Noise currently impacts substantial areas of the primary API adjacent to I-5, and existing noise attenuation sound walls are inadequate. The project would mitigate noise, particularly in the sensitive areas. The Noise and Vibration Technical Report contains additional information on noise-related factors and impacts within the primary API.

3.2.7 Community Resources

The CRC project team developed an inventory of community resources within each neighborhood. The team met with community members who identified resources that were important to them. In addition, the CRC project team identified neighborhood resources within and near the study area that fit the following commonly accepted neighborhood resource categories: parks, schools, locally and nationally recognized historic structures, and emergency services. Project staff then created two draft neighborhood resource maps: one for Oregon and one for Washington. On September 14, 2006, CEJG reviewed the resource maps and identified additional resources. These maps were further reviewed and added to during neighborhood meetings and open houses. The maps were also reviewed by the public as a part of the DEIS.

The Neighborhoods Technical Report includes additional information on community resources. The neighborhood profiles provided in the following sections of this chapter also discuss these resources.

3.2.7.1 Transportation Assistance Programs

This section identifies several programs in the Portland-Vancouver metropolitan area that are designed to assist special groups of individuals with the costs and challenges of transportation.

C-TRAN offers programs that can assist low-income populations. Low-income individuals can obtain identification cards for special/reduced fares (e.g., cash fares, tickets, or passes). C-TRAN verifies low-income through proof of current receipt of Washington State Medical Coupons or a Washington State Food Stamp Identification card only. C-TRAN does not accept any other form of low-income qualification; their discount is on monthly passes only. Seniors also receive discounted rates with C-TRAN.

TriMet offers similar programs that can assist low-income populations. TriMet offers Honored Citizen Fares for seniors 65 and older, people on Medicare, and those who have a disability. These fares are accepted on buses, MAX, and streetcars for travel in all zones.

The Community Cycling Center (CCC) is a charitable nonprofit organization dedicated to reaching children, restoring communities, and recycling bicycles. The CCC offers after-school riding and maintenance/safety programs, and classes in safety, bike repair, commuting, and

riding. The CCC also offers a Learn & Earn a Bike program for low-income youth and adults, as well as a low-cost repair/vocational training and a used bike retail shop. The CCC is located at 1700 NE Alberta Street in Portland.

The Create a Commuter project uses Job Access and Reverse Commute (JARC) funds to make bicycles available to low-income individuals for their work trips. The Create a Commuter program gives bicycles to individuals who are referred by partner social services agencies. Bicycles are available at no charge to recipients. In addition to the bicycle, program participants receive safety equipment, including a helmet, lock, air pump, and patch kit. Individuals with children are eligible to receive a trailer, along with related training.

The JARC program provides transit services to assist low-income and unemployed persons in commuting to jobs and training and to develop transit services to transport workers to suburban job sites. Previously a discretionary grant program under SAFETEA-LU, JARC became a formula program that provides 60 percent of funding directly to large urban areas, with 40 percent going to states to split between small cities and rural areas. Examples of JARC projects include late-night and weekend service, Guaranteed Ride Home Programs, vanpools or shuttle services to improve access to employment or training sites, car-share or other projects to improve access to autos, access to child care and training.

3.2.7.2 School Lunch Programs

Because 2000 census data are several years old, we further confirmed the presence of low-income, minority, and LEP populations in the study area by obtaining school data from the National Center for Education Statistics (NCES) for the 2004-2005 school year. For the Vancouver school district, more than 32 percent of students participated in the Free Lunch Program (which means they came from families with household incomes below 130 percent of the federal poverty level). Additionally, 7.8 percent of students within the Vancouver School District were on reduced cost lunch programs.

Although the data suggests that there may be an even larger presence of low-income, minority, and LEP populations in the study area than what is indicated by Census data alone, note that the school data cannot be compared directly with 2000 U.S. Census data for the following reasons:

- School district boundaries encompass an area larger than the travelshed, so the data includes some students who came from households outside the travelshed.
- NCES does not collect data on the percentage of students who come from families below the federal poverty level. The closest measure is the percentage of students eligible for the Free Lunch Program. Income eligibility for the Free Lunch Program (130 percent of the federal poverty level) is higher than the low-income threshold for environmental justice.
- NCES data reports the demographics of students, rather than households.

3.2.8 Travelshed Demographics

This section considers where users of the I-5 bridges live and work, or the origins of trips for bridge users, otherwise known as the travelshed. The trip origins of bridge users are evaluated to determine the characteristics of the population that will be most affected by tolling bridge crossings. Other analytical tasks have focused on the demographic specifics of the households and individuals who will be most directly impacted by the project (such as residential displacements). The following findings are more general in nature and are part of the task to compare who would be impacted by the project with who would benefit from the project. In this technical report, different data point to how minority and low-income persons may

disproportionately use transit and thereby benefit from the expansion of the MAX system. The following discussion focuses on automobile-users of the bridges, their geographic distribution and their demographic composition.

In September 2009, the CRC project team conducted a study spanning 39 zip codes in both Oregon and Washington. The study looked at the number of trips across the I-5 bridges taken by households and the zip code of each trip's origin. The number of trips in each zip code was totaled for comparison. All the zip codes that were found to be the origin of trips are considered to be the travelshed. The total number of trips in each zip code ranged from 18 to 1,905. The results of this study were paired with 2000 census data regarding race/ethnicity, household income, and overall population to find the basic demographic makeup of the 39 zip codes in the travelshed.

The initial study confirmed previous analyses, showing significantly more trips originating from Washington than from Oregon (Exhibit 3-11). The zip codes where the most trips originated were Washington zip codes 98661 and 98682, with 1,905 trips and 1,540 trips respectively. The zip code with the most trips made in Oregon was 97217 with 827 trips.

Exhibit 3-11. Travelshed Zip Code Demographics

Zip Code	Percent Minority	Percent Low-income Households	Number of Trips
Oregon			
97056	6%	6%	87
97201	16%	13%	114
97203	39%	20%	466
97204	36%	52%	18
97205	18%	31%	38
97206	23%	12%	136
97209	19%	29%	166
97210	10%	12%	146
97211	52%	15%	435
97212	24%	11%	222
97213	20%	10%	149
97214	15%	15%	205
97215	17%	8%	50
97216	24%	12%	44
97217	38%	14%	827
97218	43%	17%	94
97220	27%	13%	187
97221	10%	4%	68
97225	10%	6%	157
97227	56%	26%	39
97229	20%	5%	298
97230	24%	11%	131
97231	10%	5%	41
97232	12%	10%	120
97233	33%	19%	82
Washington			
98604	6%	5%	913
98606	6%	4%	247

Zip Code	Percent Minority	Percent Low-income Households	Number of Trips
98642	7%	5%	668
98660	15%	21%	713
98661	22%	18%	1905
98662	14%	8%	1021
98663	14%	15%	845
98664	14%	9%	934
98665	15%	12%	1305
98682	15%	8%	1540
98683	21%	6%	906
98684	16%	10%	781
98685	10%	6%	1457
98686	11%	6%	856

Source: U.S. Census 2000 and Project Team Study 2009.

The CRC project team assessed impacts to EJ populations based on Executive Order 12898 and subsequent requirements and guidance from state and national agencies. The team used this guidance to identify disproportionately high and adverse effects that are predominantly borne by minority populations or low-income households, or that would be experienced by these populations in a way that is appreciably more severe or greater in magnitude than would be experienced by non-minority or non-low-income populations. Exhibit 3-11 show a comparison of minority households and low-income households for each within the travelshed.

3.2.8.1 Minority Households

The CRC project team followed the FHWA definition of minority which states that a minority is a person who is Black, Hispanic, Asian American, American Indian, or Alaskan Native. As discussed below, the project did not find any direct correlation between minority percentages and the number of bridge users for any zip code.

Minority Percentages and Trip Origins

Over half of zip codes in the travelshed had minority populations of over 15 percent, the majority of which were located in Oregon. The 20 zip codes with the highest number of bridge users had minority populations ranging from 52 percent (the second-highest minority percentage) to 5.5 percent (the lowest minority percentage of the travelshed). Likewise, the 19 zip codes with the lowest number of bridge users had minority populations that ranged from 56 percent (the highest minority percentage in the travelshed) to 5.9 percent (the second-lowest minority percentage in the travelshed).

Highest Minority Percentages

The six zip codes with the highest minority populations were located in Oregon, all in the north and central areas of Portland. The percentage of minorities in these zip codes ranged from approximately 36 percent in 97203 to 56 percent in zip code 97217. In Washington, there were four zip codes with minority populations of approximately 15 percent or more. The two zip codes that generated the most trips within the travelshed, 98661 and 98682, had some of the highest minority populations in the Washington side of the travelshed with approximately 22 percent and 15 percent, respectively.

Lowest Minority Percentages

There were ten zip codes with minority populations under 11 percent. These zip codes were scattered throughout Washington and Oregon: five in the north and northeast portions of the study area, and six along the western side of the study area in Oregon. None of those zip codes were within 2 miles of the project area. In addition, zip codes with minority populations under 11 percent were evenly distributed throughout the highest and lowest number of bridge users. Only four of those ten zip codes had surveyed bridge use of over 300 trips.

3.2.8.2 Low-income Households

Because the travelshed analysis analyzed populations within zip codes rather than individuals, census data on poverty status by zip code was used to identify low-income populations. The CRC project team found that the percentage of low-income households on the whole did not correlate with the number of bridge users. However, three of the four zip codes with the highest rates of low-income households also had the lowest number of bridge users in the survey.

Household Income and Trip Origins

There were 20 zip codes in the study area that had 11 percent or more low-income households. Within the majority of these 20 zip codes the number of bridge users varied from very few users to some of the highest numbers of users. There was no correlation between percentage of low-income residents and number of bridge users. All of the zip codes within 2 miles of the project area had low-income populations over 11 percent.

Four of the zip codes with more than 11 percent of low-income households were located in Washington; these zip codes ranged from 12 percent to 21 percent low-income. Two of the four zip codes, 98661 and 98665, had some of the highest numbers of bridge users, at 1,905 and 1,305, respectively (Exhibit 3-11).

Highest Percentage of Low-income Households

The zip code with the highest percentage of low-income households (52 percent) was 97204, located in the central business district of Portland. The next three zip codes with the highest percentage of low-income households, ranging from approximately 26 percent to 31 percent, were located in the Portland central business district as well. The study found that three of these four zip codes also had the lowest number of trips across the bridge. The CRC project team anticipated that bridge use trips originating from within the Portland Central City would be lower, since that area provides key services and is the region's employment center. All four of these zip codes were more than 2.5 miles from the project impact area. The implications for this EJ analysis are that the highest minority and low-income concentrations in the region are from zip codes that use the bridges very little. While these populations will not benefit from the project as much as many others, they also will not be directly impacted.

Lowest Percentage of Low-income Households

The 10 zip codes with the lowest percentages of low-income households were scattered evenly throughout Washington and Oregon, along the west side of the study area in Oregon and the north and east portions of the study area in Washington. In addition, none of the 10 zip codes with the lowest percentage of low-income households were within 2 miles of the project area. The number of bridge users varied from very few users to some of the highest numbers of users. There was no correlation between a low percentage of low-income residents and number of bridge users.

3.2.8.3 Travelshed Demographics Summary

The study of trip origins using the I-5 bridges indicates that a majority of bridge users travel from the southern half of Clark County. The study shows that within Clark County many of the zip codes with high levels of minority and low-income residents also produce the highest numbers of bridge trips.

3.2.9 Conclusions

There are concentrations of EJ populations within the primary and secondary APIs. Although a large number of Portland block groups with high concentrations of EJ populations exist in the secondary API, the bulk of these block groups fall outside the primary API. Vancouver generally has lower percentages of EJ populations, though some of these populations may be concentrated in areas within the primary API. Potential EJ populations within and near the primary and secondary APIs have been engaged to confirm the findings of this analysis and to further identify EJ populations, community resources, and project concerns.

3.3 EJ Community Conditions (Portland)

The following section provides an overview of EJ populations and specific neighborhood profiles for neighborhoods within or intersected by the primary API in Portland. Exhibit 3-8 shows the percentage of minority population by neighborhood.

3.3.1 Minority Populations

According to the 2000 U.S. Census, the secondary API in Portland has a higher percentage (42 percent) of minority populations than most of Vancouver (15 percent). Particularly high concentrations of minority populations (70 percent or higher) live in 10 block groups in the Boise, King, Humboldt, Piedmont, Eliot, Irvington, and Woodlawn neighborhoods. The minority populations in these block groups are primarily African American, although substantial Hispanic populations are present as well.

3.3.2 Low-income Populations

The secondary API in Portland also contains slightly higher percentages of low-income residents (17 percent) than the Vancouver side. As a whole, 15 percent of the population within the secondary API is low-income. Eight neighborhoods within the Portland subareas contain block groups with greater than 20 percent of residents living below the federal poverty line: King, Piedmont, Eliot, Humboldt, Overlook, Boise, Arbor Lodge, and Kenton.

3.3.3 Transportation

Transportation used to travel to work can indicate how reliant the population is on transit and how much the population would benefit from improvements to transit.

TriMet provides bus and light rail transit services in the Portland metropolitan region. They operate the MAX and Portland Streetcar light rail service on three lines and bus service throughout the region. Just under one-third (33 percent) of transit riders use the bus or MAX for commuting to work, followed by recreation, shopping and other personal business uses. Fifty percent of TriMet riders use a combination of bus, MAX or the Portland Streetcar, 31 percent ride only MAX, 18 percent ride only busses, and 1 percent only ride the Portland Streetcar. MAX-only riders tend to live in Washington County, have the highest median income ($61, 800), and average 8.2 transit trips per month. Bus-only and bus/MAX riders use transit more often, at 15.4

and 17.4 trips per month, respectively. These riders are more likely to live in Multnomah County and are more likely to be transit-dependent (TriMet Attitude and Awareness Survey 2004).

C-TRAN operates 27 bus routes throughout Vancouver and Clark County, and provides express service to downtown Portland. It also offers C-VAN, a curb-to-curb service for people who cannot access regular route service, and a Bike & Bus program. Half (52 percent) of C-TRAN's ridership is under age 35 and earns less than $30,000 annually. Sixty-five percent of riders are transit-dependent, and approximately 17 percent of riders are minority. C-TRAN riders use transit for a variety of uses, including work (56 percent), shopping/errands (40 percent), going to appointments (39 percent), recreation (36 percent) and going to school (23 percent) (C-TRAN 2003 Rider Satisfaction Survey).

In the project API, transit usage is higher in the Portland subareas than in Vancouver. Seven percent of people in the Portland block groups take public transportation to work. In several block groups (CT 21 BG 2, CT 24.02 Block Groups 2 and 3, and CT 25.02 BG 3) in the Kerns, Sullivan's Gulch, and Irvington neighborhoods, 15 percent or more of the population travel to work by public transportation. The Esther Short neighborhood in Vancouver also has a high percentage of persons traveling by transit, with 34 percent of the population not even owning a car.

3.3.4 Neighborhood Profiles

The following neighborhood profiles include the relevant sections of more comprehensive neighborhood profiles found in the Neighborhood and Population Technical Report.

3.3.4.1 Hayden Island Profile

Minority demographic data for the Hayden Island neighborhood reveal differences from Multnomah County and Portland (Exhibit 3-12). The Caucasian percentage is higher than both the county and city rates, whereas the percentage of all other races and ethnicities is lower than both the county and the city, with the exception of Native Hawaiian and Other Pacific Islander alone. The percentage of African American, Some Other race Alone, Two or More Races, and Hispanic or Latino populations in the Hayden Island neighborhood is less than one-third the rates of the county or city.

Additional neighborhood demographic data show further differences among the neighborhood, county, and city (3-12). Hayden Island has lower percentages of median home value, population below the poverty level, large households, and housing units with no vehicle compared to both the county and city. The median home value in Hayden Island is approximately 62 percent of the median home value in the county and approximately 63 percent of the median home value in the city. The percentage of population below the poverty level is slightly more than half the percentage in the county or city. No residents in the neighborhood are members of a large household, compared to 8 percent in both the county and city. Seventy-nine percent of Hayden Island residents live in owner-occupied housing, compared to slightly more than half in the county and city. The number of housing units with no vehicle in Hayden Island is less than half the rates of the county and city.

Exhibit 3-12. Hayden Island Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Hayden Island	2086	92%	2%	0%	4%	0%	1%	1%	3%
Multnomah County	660,486	76%	5%	1%	6%	0%	0%	4%	7%
Portland	529,025	75%	6%	1%	6%	0%	0%	4%	7%

Exhibit 3-13. Hayden Island Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Hayden Island	$96,950	9%	25%	8%	0%	79%	5%
Multnomah County	$156,600	12%	19%	11%	8%	57%	13%
Portland	$154,700	13%	19%	12%	8%	56%	14%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44.

a Large family means five or more people per household.

Jantzen Beach Moorage Demographic Data

Early in the project planning, it was recognized that the 2000 Census was not a sufficient, single source of demographic data. As a result, the CRC project team has also used data from Claritas,[6] school lunch programs, affordable housing agencies, and other sources. As described in Section 5, there are direct impacts to the floating home community on the south side of the island in the Jantzen Beach Moorage. In order to better understand the impacts to JBMI, additional demographic data have been collected.[7] Surveys were sent to the residents and are summarized below.

As of November 8, 2007, a total of 129 surveys were returned from 88 households. There are a total of 177 households on the island. According to these surveys, the JBMI community is predominantly two-person households, but ranges from one to five people.

Of the respondents who indicated their race (127 out of 129 returned surveys), 92 percent are White, while the remaining 8 percent includes four mixed-ethnicity individuals, one Native American, one Hispanic, one Pacific Islander, one "American," and two respondents who indicted "Other," but did not specify an ethnicity.

Exhibit 3-14 illustrates the range of ages reported by respondents (of those who indicated their age). Of the 120 respondents, 18 percent are 44 years of age or younger, 83 percent are 45 years or older, and 60 percent are 55 years or older.

[6] Claritas is a private source of up-to-date demographic data and projections.

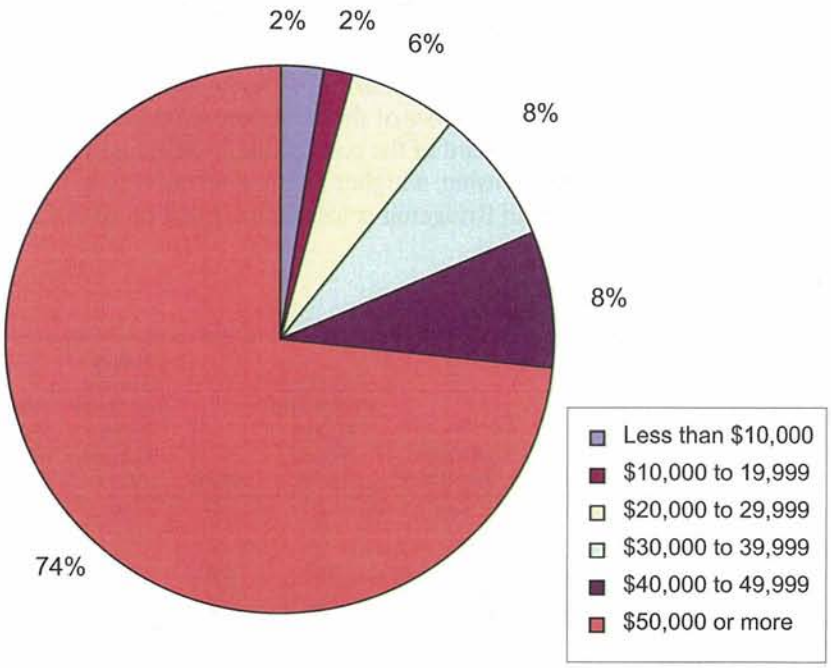
[7] JBMI is the non-profit homeowners association that owns and operates the moorage on the south side of Hayden Island.

Exhibit 3-14. Age Data for Jantzen Beach Moorage Residents

Age	18-24	25-34	35-44	45-54	55-64	65 years or more
Number of Respondents	2	9	10	28	50	21

Of the 129 returned surveys, 124 indicated household income in 2006. As shown in Exhibit 3-15, 74 percent of respondents indicated their annual household income is $50,000 or more, 16 percent indicated it is between $30,000 and $49,999, 10 percent indicated it is below $29,999, and 2 percent indicated that their annual household income is less than $10,000 a year.

Exhibit 3-15. Household Income



All of the 129 respondents indicated the modes of travel they typically use to travel to work. While a majority specified a single mode of travel, up to four modes of travel were reported on a single survey. Of 129 responses, 98 indicated they travel by car, truck, or van; 17 indicated "Not applicable," likely showing that the respondent does not work; and nine respondents indicated that they "work from home." Bicycling, walking, taking the bus, riding a motorcycle, using light-rail, taking the streetcar or trolley, or taking a taxi were also indicated as modes used to travel to work, but with less frequency (between one and six respondents indicated each mode).

Of the 141 responses, 117 respondents indicated the modes of travel they usually employ to leave Hayden Island. While the majority specified a single mode of travel, up to four modes of travel were reported on a single survey. One hundred twelve responses indicated they use a car, truck, or van; eight indicated they use a boat; and six use the bus. Walking, bicycling, taxi, and motorcycle were also indicated as modes of travel but with less frequency (between three to five respondents).

In addition to the survey summarized above, the CRC project team surveyed and interviewed specific businesses and residents that have been identified as likely to be displaced by the CRC project. The findings from this task are discussed in Section 4.8.

3.3.4.2 Bridgeton Profile

Minority demographics for the Bridgeton neighborhood reveal differences among the neighborhood, Multnomah County, and Portland (Exhibit 3-16). Note that as the Census reports, only 38 people live in Bridgeton; therefore, these percentages could change dramatically with changes to even one household. The percentage of Caucasian and Hispanic or Latino individuals is lower than in the county and city, while the percentage of African Americans is higher in comparison. The percentage of African Americans is double that in Multnomah County and almost double the percentage in Portland. The percentage of Hispanic or Latinos in Multnomah County and Portland is seven times higher than in Bridgeton. Demographic data show no residents reporting as Some Other Race Alone or Two or More Races.

Additional demographic data for Bridgeton illustrate differences among the neighborhood, county, and city (Exhibit 3-17). The number of those 65 years of age or older is one-third of the city rate and slightly more than one-third of the county rate. Additionally, 71 percent of Bridgeton residents live in owner-occupied housing, a higher rate than in the county or city. The percentage of housing units with no vehicles in Bridgeton is less than one-fourth of the county and city percentages.

Exhibit 3-16. Bridgeton Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Bridgeton	39	76%	11%	1%	7%	0%	0%	5%	1%
Multnomah County	660,486	76%	5%	1%	6%	0%	0%	4%	7%
Portland	529,025	75%	6%	1%	6%	0%	0%	4%	7%

Exhibit 3-17. Bridgeton Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Bridgeton	$134,500	9%	23%	4%	7%	71%	3%
Multnomah County	$156,600	12%	19%	11%	8%	57%	13%
Portland	$154,700	13%	19%	12%	8%	56%	14%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44.

a Large family means five or more people per household.

3.3.4.3 East Columbia Profile

Minority demographics for the East Columbia neighborhood reveal differences among the neighborhood, Multnomah County, and Portland (Exhibit 3-18). The percentage of Hispanic or Latino individuals is notably lower than in the county and city, while the percentage of African

Americans is higher in comparison. The percentage of African Americans is double that in Multnomah County and almost double the percentage in Portland. The percentage of Hispanic or Latinos is Multnomah County and Portland is seven times higher than in East Columbia.

Additional demographic data for East Columbia illustrate differences among the neighborhood, county, and city (Exhibit 3-19). Approximately 71 percent of East Columbia residents live in owner-occupied housing, a higher rate than in the county or city. The percentage of housing units with no vehicles in Bridgeton is less than one-fourth of the county and city percentages.

Exhibit 3-18. East Columbia Race/Ethnicity

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
East Columbia	344	76%	11%	1%	7%	0%	0%	5%	1%
Multnomah County	660,486	76%	5%	1%	6%	0%	0%	4%	7%
Portland	529,025	75%	6%	1%	6%	0%	0%	4%	7%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-19. East Columbia Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% of Large Families[b]	% of Owner-Occupied Housing	% of Housing Units with No Vehicle
East Columbia	$152,950	9%	23%	8%	71%	3%
Multnomah County	$156,600	12%	19%	8%	57%	13%
Portland	$154,700	13%	19%	8%	56%	14%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P88, P42, H16, H7, and H44.

a Large family means five or more people per household.

3.3.4.4 Kenton Profile

Minority demographics for Kenton reveal differences among the neighborhood, Multnomah County, and Portland (Exhibit 3-20). The percentage of Caucasians is lower than in the county or city, while the percentage of African Americans is more than double, and the percentage of Two or More Races is double, the percentages in the county and city. Additional demographic data show more similarities among the neighborhood, county, and city than in the race and ethnicity demographics (Exhibit 3-21). One exception is the percentage of Kenton residents 65 years of age or older, which is half the city percentage and slightly more than half the percentage of the county.

Exhibit 3-20. Kenton Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Kenton	7,086	62%	13%	2%	6%	0%	0%	8%	9%
Multnomah County	660,486	76%	5%	1%	6%	0%	0%	4%	7%
Portland	529,025	75%	6%	1%	6%	0%	0%	4%	7%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-21. Kenton Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Kenton	$119,456	14%	26%	6%	11%	66%	14%
Multnomah County	$156,600	12%	19%	11%	8%	57%	13%
Portland	$154,700	13%	19%	12%	8%	56%	14%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44.

a Large family means five or more people per household.

3.3.4.5 Rockwood Neighborhood in Gresham

Although the principal project components will be constructed along I-5 near the I-5 CRC Bridge, expansion of the light rail maintenance center at Ruby Junction in Gresham is necessary to support the expansion of light rail service to Vancouver. The maintenance center is within the Rockwood Neighborhood in Gresham, so data for the census block group surrounding the Ruby Junction portion of the Rockwood neighborhood was collected and is summarized below (Exhibits 3-22 and 3-23). There are wide variations between the Multnomah County demographic characteristics and those of the census block group at Ruby Junction, the largest of which are the percentage of Hispanic or Latino ethnicity and the percentage of the population below the poverty level. These census data indicate that any impacts to residents or businesses in this area may likely disproportionately affect members of an EJ population. The survey of specific displaced households is consistent with these findings.

Exhibit 3-22. Rockwood Area Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Rockwood Area	2,342	45%	4%	0%	1%	0%	0%	3%	47%
Multnomah County	660,486	76%	5%	1%	6%	0%	0%	4%	7%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-23. Rockwood Area Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Rockwood Area	$137,500	35%	21%	8%	23%	19%	22%
Multnomah County	$156,600	12%	19%	11%	8%	57%	13%
Portland	$154,700	13%	19%	12%	8%	56%	14%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44.

a Large family means five or more people per household.

The CRC project team surveyed the properties that will be displaced or partially displaced by the expansion at Ruby Junction to determine whether those impacted by the project match the demographic characteristics of population in the area. The survey shows that characteristics of the 10 occupied residences that will be displaced differ somewhat from the characteristics of the residences in the census tract data and more closely resemble those in Multnomah County. Only three of the 10 residents reported Hispanic or Latino ethnicity. One residence indicated some other race alone, and six indicated Caucasian race. Additionally, only two of the 10 residences potentially earn incomes below the poverty level, based on the number of occupants in the household and the total annual income reported. The survey indicated there are six people between 0 and 18 years of age, 17 people between 19 and 64 years of age, and three people age 65 and older living in the Ruby Junction residences.

3.4 EJ Community Conditions (Vancouver and Clark County)

3.4.1 Minority Populations

Approximately half of the minority populations in the Vancouver API are Hispanic. The highest concentration of minorities, at 41 percent, is located in Census Bureau block group (CT 8.04 BG 1) in the NE Hazel Dell neighborhood of Vancouver, north of the primary API. Thirty percent of this block group is low-income. Exhibit 3-8 shows the distribution of census data minority population rates by neighborhood.

3.4.2 Low-income Populations

Nine neighborhoods within the Vancouver subareas contain block groups with greater than 20 percent of residents living below the federal poverty line: Sherwood, NE Hazel Dell, Rose Village, Harney Heights, Central Park, Hudson's Bay, Esther Short, Hough, and Fruit Valley. Overall, 13 percent of the populations within the Vancouver subareas are low-income. Exhibit 3-9 shows the distribution of census data low-income population rates by neighborhood.

3.4.3 Transportation

Transit usage is lower in Vancouver than in Portland; 2 percent of people living in the Vancouver block groups use public transportation to travel to work. In the Esther Short neighborhood, 15 percent or more of the population use public transportation to travel to work.

3.4.4 Neighborhood Profiles

The following neighborhood profiles include the relevant sections of more comprehensive neighborhood profiles found in the Neighborhood and Population Technical Report.

3.4.4.1 West Minnehaha Profile

The minority demographics in the West Minnehaha neighborhood are similar to those in Clark County and Vancouver (Exhibit 3-24). The ethnicity population percentages for each attribute are within 1 percent for these areas, with the exception of Caucasians, Asians, and Two or more races. The percentage of Caucasians in West Minnehaha is slightly higher than in Vancouver and slightly less than Clark County. The percentage of Asians in West Minnehaha is half that of Vancouver. The percentage of Two or More Races residents in West Minnehaha is almost double the Clark County percentage.

Additional demographic data for the West Minnehaha neighborhood (Exhibit 3-25) reveal that the neighborhood falls between Clark County and Vancouver for median home value and the percentage of population below the poverty level. The median home value in West Minnehaha is approximately $10,000 more than in Vancouver, and is approximately $2,200 less than in Clark County. The percentage of owner-occupied housing in West Minnehaha is higher than in either Clark County or Vancouver, although only slightly higher than the county's rate. The percentage of population reporting a disability is higher in West Minnehaha than in Clark County and Vancouver.

Exhibit 3-24. West Minnehaha Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
West Minnehaha	3,091	83%	3%	2%	2%	0%	0%	4%	6%
Clark County	345,238	86%	1%	1%	3%	0%	0%	3%	5%
Vancouver	143,226	82%	2%	1%	4%	1%	0%	4%	6%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-25. West Minnehaha Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
West Minnehaha	$150,867	11%	26%	6%	9%	70%	6%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44. Clark County Tax Assessor's Property Information Center, last accessed July, 2007.

a Large family means five or more people per household.

3.4.4.2 Lincoln Profile

Minority demographics in the Lincoln neighborhood resemble those in Clark County. There are more differences between Lincoln and Vancouver (Exhibit 3-26). There is a slightly higher percentage of Caucasians and a lower percentage of Asian and Hispanic or Latino population in the Lincoln neighborhood than in the county. In comparison to Vancouver, Lincoln has a higher percentage of Caucasians and lower percentages of Asians, Native Hawaiian and Other Pacific Islander alone, Some Other Race Alone, and Hispanic or Latino populations.

The Lincoln neighborhood has a lower median home value, percentage of residents with a disability, and percentage of large families than Clark County and Vancouver (Exhibit 3-27). The percentage of the population living below the poverty level and that living in owner-occupied housing fall between the rates in Clark County and Vancouver. Residents in Lincoln have fewer vehicles per housing unit in comparison to the county and city.

Exhibit 3-26. Lincoln Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Lincoln	3,440	89%	2%	1%	1%	0%	0%	3%	3%
Clark County	345,238	86%	1%	1%	3%	0%	0%	3%	5%
Vancouver	143,226	82%	2%	1%	4%	1%	0%	4%	6%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-27. Lincoln Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Lincoln	$136,000	10%	15%	9%	7%	61%	11%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44. Clark County Tax Assessor's Property Information Center, last accessed July, 2007.

a Large family means five or more people per household.

3.4.4.3 Shumway Profile

Minority data for the Shumway neighborhood reveal that the neighborhood has similar demographics as Clark County, with the exception of the percentages of Asian and Two or More Races populations (Exhibit 3-28). From rounding, Shumway shows 0 percent Asian population while Vancouver has 4 percent and Clark County has 3 percent. The remaining race and ethnicity rates are within 1 percentage point of the neighborhood and county rates.

The neighborhood has a higher percentage of Caucasians and Two or More Races than the city. There are no Asian or Native Hawaiian and other Pacific Islander Alone residents in the Shumway neighborhood. Shumway and Vancouver have the same percentages of African American, American Indian and Alaska Native Alone, and Hispanic or Latino populations.

Additional demographic data (Exhibit 3-29) show that almost 20 percent of housing units in Shumway do not have cars, and slightly fewer than half of the housing units are owner-occupied. The rate of housing units with no vehicle in Shumway is three times higher than in Clark County and more than twice as high as in Vancouver. The percentage of owner-occupied housing in Shumway is lower than in both Clark County and Vancouver, although only slightly lower than in the city. The percentage of population below the poverty level is higher and the median home value is lower than both Clark County and Vancouver.

Exhibit 3-28. Shumway Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Shumway	1,127	88%	2%	0%	0%	0%	0%	5%	6%
Clark County	345,238	86%	1%	1%	3%	0%	0%	3%	5%
Vancouver	143,226	82%	2%	1%	4%	1%	0%	4%	6%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-29. Shumway Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Shumway	$126,000	14%	18%	10%	5%	46%	18%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44. Clark County Tax Assessor's Property Information Center, last accessed July, 2007.

a Large family means five or more people per household.

3.4.4.4 Rose Village Profile

Minority demographic data for the Rose Village neighborhood show that the neighborhood has a lower percentage of Caucasians than either Clark County or Vancouver (Exhibit 3-30). In comparison, Rose Village has a higher percentage of American Indian and Alaska Native Alone, Some Other Race Alone, and Hispanic or Latino residents than the county or city. Rose Village residents reported three times the percentage of Some Other Race Alone residents than Vancouver.

Additional demographic data for the Rose Village neighborhood reveal several differences among Rose Village, Clark County, and Vancouver (Exhibit 3-31). Overall, the neighborhood has a higher percentage of population below the poverty level and lower percentage of owner-occupied housing and lower median home value than the city and county. The percentage of population below the poverty level in Rose Village is almost double the percentage in the city, and more than double the county percentage. Fewer than 50 percent of the housing units in Rose Village are owner-occupied, compared to slightly more than 50 percent in the city and almost 75 percent in the county. The median home value is approximately 40 percent lower than median home values in Clark County and approximately 33 percent lower than in Vancouver. Slightly over one-fourth of Rose Village residents report a disability, and slightly more than 10 percent of the housing units do not have a vehicle. In both cases, the rates in Rose Village are higher than rates in the county and the city.

Exhibit 3-30. Rose Village Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Rose Village	5,269	74%	3%	2%	2%	0%	9%	4%	14%
Clark County	345,238	86%	1%	1%	3%	0%	2%	3%	5%
Vancouver	143,226	82%	2%	1%	4%	1%	3%	4%	6%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-31. Rose Village Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Rose Village	$95,425	23%	27%	6%	10%	42%	13%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44. Clark County Tax Assessor's Property Information Center, last accessed July, 2007.

a Large family means five or more people per household.

3.4.4.5 Hough Profile

Minority demographics in the Hough neighborhood resemble those in Clark County and Vancouver (Exhibit 3-32). The rate of Asian population in Hough is one fourth of the city percentage. The percentage of Two or More Races in Hough is more than double that of the county, and almost double the city percentage.

Additional demographic data for the Hough neighborhood show several differences among Hough, the county, and city (Exhibit 3-33). Hough has a lower median home value, a higher percentage of population below poverty level, more residents with a disability, less owner-occupied housing, and fewer housing units with a vehicle. The median home value in Hough is approximately 22 percent lower than in Clark County and approximately 11 percent lower than in Vancouver. The percentage of population in Hough below the poverty level is more than twice that of Clark County, and almost twice that of the city. The percentage of population in Hough with a disability is approximately one-third more than either the county or city. The rate of owner-occupied housing is almost half that of Clark County and approximately one-third less than in Vancouver. One-fourth of the housing units in Hough do not have vehicles.

Exhibit 3-32. Hough Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Hough	2,285	83%	2%	1%	1%	0%	0%	7%	7%
Clark County	345,238	86%	1%	1%	3%	0%	0%	3%	5%
Vancouver	143,226	82%	2%	1%	4%	1%	0%	4%	6%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-33. Hough Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Hough	$125,400	20%	30%	8%	9%	36%	25%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44. Clark County Tax Assessor's Property Information Center, last accessed July, 2007.

a Large family means five or more people per household.

3.4.4.6 Arnada Profile

Minority demographics in the Arnada neighborhood reveal that the neighborhood has a higher percentage of Caucasians than either Clark County or Vancouver (Exhibit 3-34). Correspondingly, the percentages of all other races and ethnicities in the data set are lower than those of the county and city, with the exception of American Indian and Alaska Native Alone, which is the same in all three jurisdictions. The percentages of African Americans, Asians, Native Hawaiian and Other Pacific Islander Alone, Some Other Race Alone, Two or More Races, and Hispanic or Latino in the Arnada neighborhood are all half or less than half those of the county and city.

Additional demographic data for Arnada show that the neighborhood has a slightly higher percentage of population below the poverty level, slightly more residents with a disability, and fewer housing units without vehicles than either Clark County or Vancouver (Exhibit 3-35). Larger demographic differences among the neighborhood and the county and city are found in the age and family size attributes. Arnada has almost half the rate of residents 65 years of age or older compared with the county and city. Similarly, there is less than half the rate of large families in Arnada compared with the city, and nearly one-third the rate of large families in Arnada compared with the county.

Exhibit 3-34. Arnada Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Arnada Neighborhood	984	96%	0%	1%	0%	0%	0%	1%	2%
Clark County	345,238	86%	1%	1%	3%	0%	0%	3%	5%
Vancouver	143,226	82%	2%	1%	4%	1%	0%	4%	6%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-35. Arnada Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Arnada	$127,000	15%	20%	6%	4%	53%	11%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44. Clark County Tax Assessor's Property Information Center, last accessed July, 2007.

a Large family means five or more people per household.

3.4.4.7 Central Park Profile

The minority demographics in the Central Park neighborhood are similar to those in Vancouver (Exhibit 3-36). Although both the neighborhood and the city have the same percentage of Caucasian population, the percentages of other races and ethnicities vary slightly. The percentage of African American population in Central Park is half that of the city, while the percentage of Native Hawaiian and Other Pacific Islander Alone population is double that of the city. The percentage of Hispanic or Latino population in Central Park is one-third higher than in the city. Compared with Clark County, the neighborhood has a lower percentage of African Americans, but a more than double the percentage of Native Hawaiian and Other Pacific Islander Alone, and Some Other Race Alone. The percentage of Hispanic or Latino population in the Central Park neighborhood is almost double the percentage in the county.

Additional demographic data for the Central Park neighborhood reveal several differences among the neighborhood and the county and city (Exhibit 3-37). One-fourth of the Central Park population is below poverty level, which is more than double the percentage in the county or city. The percentage of population 65 years of age or older in Central Park is half the percentage in Clark County and slightly more than half that in Vancouver. Approximately one-fourth of Central Park residents live in owner-occupied housing, compared to approximately half of Vancouver residents and two-thirds of Clark County residents. Finally, one-fourth of housing units in Central Park do not have vehicles.

Exhibit 3-36. Central Park Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Central Park	2,091	81%	1%	1%	3%	2%	0%	4%	9%
Clark County	345,238	86%	1%	1%	3%	0%	0%	3%	5%
Vancouver	143,226	82%	2%	1%	4%	1%	0%	4%	6%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-37. Central Park Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Central Park	$107,600	25%	27%	5%	7%	26%	25%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44.

a Large family means five or more people per household.

3.4.4.8 Esther Short Profile

Minority demographics in Esther Short are similar to those of Clark County (Exhibit 3-38). Although both the neighborhood and the county have the same percentage of Caucasian population, the percentages of other races and ethnicities vary slightly. Compared with Vancouver, the neighborhood has a higher percentage of Caucasian and a lower percentage of American Indian and Alaska Native Alone, Asian, Native Hawaiian and Other Pacific Islander Alone, Some Other Race Alone, and Two or More Races.

Additional demographic data for Esther Short show that the neighborhood demographics differ from the county and city (Exhibit 3-39). The median home value in Esther Short is approximately 61 percent of the median home value in Clark County and 67 percent the value in Vancouver. The percentage of the population below poverty level in the Esther Short neighborhood is almost four times as high as in Clark County and almost three times as high as in Vancouver. Almost half of Esther Short residents reported a disability, which is more than double the percentage reported for the county or city. It should be noted that many new residential units were constructed in the Esther Short Neighborhood since 2000. These new households in these units, which are predominantly market rate, will have likely altered the neighborhoods demographics.

The percentage of large families in the neighborhood is one-third of the percentage in the city and almost one-fourth that of the county. The percentage of owner-occupied housing is less than one-fourth of a percent in Clark County and less than one-third in Vancouver. Finally, 34 percent of housing units in Esther Short do not have vehicles. This rate is almost six times higher than in Clark County and slightly more than four times higher than in Vancouver.

Exhibit 3-38. Esther Short Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Esther Short	2,074	86%	2%	0%	3%	0%	0%	3%	6%
Clark County	345,238	86%	1%	1%	3%	0%	0%	3%	5%
Vancouver	143,226	82%	2%	1%	4%	1%	0%	4%	6%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-39. Esther Short Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Esther Short	$93,750	35%	45%	8%	3%	15%	34%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44.

a Large family means five or more people per household.

3.4.4.9 Hudson's Bay

Minority demographics for Hudson's Bay show that the neighborhood has a lower percentage of Caucasians than Clark County or Vancouver (3-40). Correspondingly, some of the percentages for the other races and ethnicities are higher. The percentage of African American population is more than three times higher in the Hudson's Bay neighborhood than in the county and the city. Additionally, the percentage of the Some Other Race Alone is more than double the Clark County percentage and almost double the Vancouver percentage. The Hispanic or Latino population in Hudson's Bay is double the county percentage and almost double the city percentage.

Further demographic data show additional differences between Hudson's Bay, Clark County and Vancouver (Exhibit 3-41). The primary differences are the poverty level, large family rate, amount of owner-occupied housing, and number of housing units with no vehicle. The percentage of population below the poverty level in Hudson's Bay is more than twice that of the county. The percentage of large families in Hudson's Bay is just over one-fourth the percentage in the county and is one-third that of the city. The percentage of owner-occupied housing in the neighborhood is less than half that of the county and city. The rate of housing units with no vehicles in Hudson's Bay is twice that of Clark County.

Exhibit 3-40. Hudson's Bay Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Hudson's Bay	1,386	83%	7%	0%	1%	1%	5%	1%	10%
Clark County	345,238	89%	2%	1%	3%	0%	2%	3%	5%
Vancouver	143,226	84%	2%	1%	4%	1%	3%	4%	6%

Exhibit 3-41. Hudson's Bay Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Hudson's Bay	$132,350	19%	28%	8%	3%	24%	12%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44.

a Large family means five or more people per household.

3.4.4.10 Columbia Way Profile

Minority demographic data for the Columbia Way neighborhood generally show similarities to the county and city, with the exception of Native Hawaiian and Other Pacific Islander alone and Hispanic or Latino (Exhibit 3-42). The percentage of Native Hawaiian and Other Pacific Islander alone is four times higher than the city rate (none are reported for Clark County). Hispanic or Latino population percentage is less than half that of the county and one-third that of the city.

Additional demographic data for Columbia Way generally show demographics similar to the county and city, with the exception of the percentage of population 65 years or older and the percentage of large families (Exhibit 3-43). The percentage of Columbia Way residents who are 65 years of age or older is more than twice as high as the county percentage and almost twice as high as the city percentage. The percentage of large families in the Columbia Way neighborhood is less than half the percentage in the county and slightly more than half of the city percentage.

Exhibit 3-42. Columbia Way Minorities

Area	Total Population	Caucasian	African American	American Indian and Alaska Native Alone	Asian	Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
Columbia Way	680	85%	3%	0%	3%	5%	0%	3%	2%
Clark County	345,238	86%	1%	1%	3%	0%	0%	3%	5%
Vancouver	143,226	82%	2%	1%	4%	1%	0%	4%	6%

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Table P7.

Exhibit 3-43. Columbia Way Demographics and Characteristics

Area	Median Home Value	% of Population Below Poverty Level	% on Disability	% 65 Years of Age or Older	% of Large Families[a]	% Owner-Occupied Housing	% of Housing Units with No Vehicle
Columbia Way	$137,000	14%	22%	21%	5%	47%	10%
Clark County	$153,100	9%	18%	10%	11%	67%	6%
Vancouver	$140,800	12%	19%	11%	9%	53%	8%

Sources: U.S. Census Bureau, 2000. Summary Tape File 3, Tables H85, P56, P88, P42, P8, H16, H7, and H44.

a Large family means five or more people per household.

3.5 Subsidized and Free Lunch Programs in Schools

To supplement the 2000 Census data, the CRC project team has analyzed additional data sets, including the subsidized and free school lunch programs in Portland and Vancouver. The following section compares schools in the area and the percentages of children who qualify for reduced price and free lunches. Identifying the number of students qualifying for these programs increases the understanding of low-income populations in the study area.

3.5.1.1 Portland Schools

During the 2004-2005 school year, 40.0 percent of students in the Portland School District were on free lunch programs. Exhibit 3-44 shows that the Portland School District average is above the Oregon average of 35.7 percent and slightly lower than the Multnomah County average of 41.9 percent. Over the same period, 7.9 percent of students in the Portland School District were on

reduced lunch programs, which is lower than both the Multnomah County (8.9 percent) and the Oregon averages (9.3 percent).

Several Portland schools whose districts intersect or fall within the primary API have a higher percentage of students on free and reduced lunch programs than the Portland School District as a whole (Exhibit 3-45). Exhibit 3-46 shows the locations of the schools in the project area with lunch programs.

Exhibit 3-44. Portland School District

Boundary	% Students on Free Lunch	% Students on Reduced Lunch
Portland School District	40.0	7.9
Multnomah County	41.9	8.9
Oregon	35.7	9.3

Source: http://www.nces.ed.gov/ccd/schoolsearch/. School lunch data is from the 2004-2005 school year.

Exhibit 3-45. Portland School Lunch Programs

Percentage of Students on Free and Reduced Lunch Programs for Portland Schools Within the Primary API

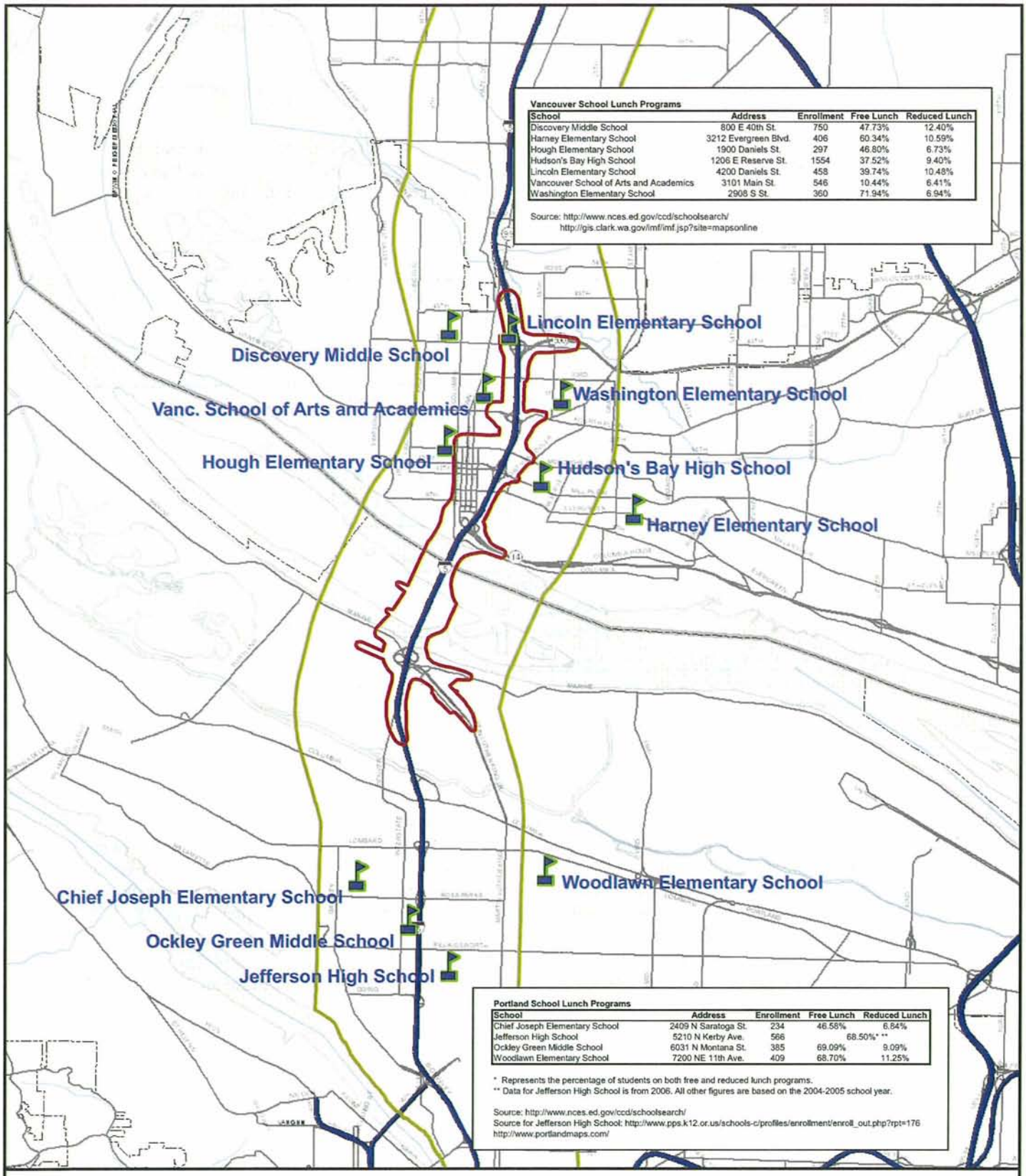
School	Address	Property ID	Enrollment	Free Lunch	Reduced Lunch
Chief Joseph Elementary School	2409 N Saratoga St.	R146170	234	46.6	6.8
Jefferson High School	5210 N Kerby Ave.	R298127	566	68.5[a,b]	
Ockley Green Middle School	6031 N Montana St.	R315542	385	69.1	9.1
Woodlawn Elementary School	7200 NE 11th Ave.	R266355	409	68.7	11.3

Source for Jefferson High School: http://www.pps.k12.or.us/schools-c/profiles/enrollment/enroll_out.php?rpt=176.
http://www.portlandmaps.com/.
http://www.nces.ed.gov/ccd/schoolsearch/.

a Represents the percentage of students on both free and reduced lunch programs.

b Data for Jefferson High School is from 2006. All others are based on the 2004-2005 school year.

Woodlawn Elementary School located east of I-5 and just south of Lombard Street had 68.7 percent of students on a free lunch program, while 11.3 percent were on reduced lunch programs. Ockley Green Middle School, located just north of Ainsworth Street, between Interstate Avenue and I-5, had 69.1 percent of students on a free lunch program. This was 29 percent higher than the Portland School District average of 40.0 percent. Jefferson High School, located east of I-5 between Alberta and Killingsworth Streets, had 68.5 percent of its students on free and reduced lunch programs. Note that there were no available data for Jefferson High School that differentiated between the number of students on free lunch programs and those on reduced lunch programs.



Vancouver School Lunch Programs

School	Address	Enrollment	Free Lunch	Reduced Lunch
Discovery Middle School	800 E 40th St.	750	47.73%	12.40%
Harney Elementary School	3212 Evergreen Blvd.	406	60.34%	10.59%
Hough Elementary School	1900 Daniels St.	297	46.80%	6.73%
Hudson's Bay High School	1206 E Reserve St.	1554	37.52%	9.40%
Lincoln Elementary School	4200 Daniels St.	458	39.74%	10.48%
Vancouver School of Arts and Academics	3101 Main St.	546	10.44%	6.41%
Washington Elementary School	2908 S St.	360	71.94%	6.94%

Source: http://www.nces.ed.gov/ccd/schoolsearch/
http://gis.clark.wa.gov/imf/imf.jsp?site=mapsonline

Portland School Lunch Programs

School	Address	Enrollment	Free Lunch	Reduced Lunch
Chief Joseph Elementary School	2409 N Saratoga St.	234	46.58%	6.84%
Jefferson High School	5210 N Kerby Ave.	566	68.50%* **	
Ockley Green Middle School	6031 N Montana St.	385	69.09%	9.09%
Woodlawn Elementary School	7200 NE 11th Ave.	409	68.70%	11.25%

* Represents the percentage of students on both free and reduced lunch programs.
** Data for Jefferson High School is from 2006. All other figures are based on the 2004-2005 school year.

Source: http://www.nces.ed.gov/ccd/schoolsearch/
Source for Jefferson High School: http://www.pps.k12.or.us/schools-c/profiles/enrollment/enroll_out.php?rpt=176
http://www.portlandmaps.com/

Exhibit 3-46. School Lunch Programs

Columbia River CROSSING

3.5.2 Vancouver Schools

During the 2004-2005 school year 32.8 percent of students within the Vancouver School District were on free lunch programs. As shown in Exhibit 3-47, this percentage is higher than both the Clark County average (23.3 percent) and the Washington State average (27.2 percent). Over the same period, 7.8 percent of students within the Vancouver School District were on reduced lunch programs, which is slightly lower than the Clark County average of 8.0 percent and the Washington State average of 8.1 percent.

Several Vancouver schools whose boundaries intersect or fall within the primary API had considerably higher percentages of students on free and reduced lunch programs (Exhibit 3-48). Washington Elementary School, located east of I-5 between Fourth Plain Boulevard and SR 500, had 71.9 percent of students on a free lunch program during the 2004-2005 school year. This is 39 percent higher than the Vancouver School District average of 32.8 percent. Hough Elementary, located west of I-5 between McLoughlin and Fourth Plain Boulevards, had 46.8 percent of students on free lunch programs. Harney Elementary School, located east of I-5 between SR 14 and Mill Plain Boulevard, had 60.3 percent of students on a free lunch program, while 10.6 percent of students were on a reduced lunch program. Discovery Middle School, located on 40th Street, just west of I-5, had 47.7 percent of students on a free lunch program and 12.4 percent of students on a reduced lunch program.

Exhibit 3-47. Vancouver School District

Boundary	% Students on Free Lunch	% Students on Reduced Lunch
Vancouver School District	32.8	7.8
Clark County	23.3	8.0
Washington	27.1	8.1

Source: http://www.nces.ed.gov/ccd/schoolsearch/. School lunch data is from the 2004-2005 school year.

Exhibit 3-48. Vancouver School Lunch Programs

Percentage of Students on Free and Reduced Lunch Programs for Vancouver Schools Within the Primary API

School	Address	Tax Lot ID	Enrollment	Free Lunch	Reduced Lunch
Discovery Middle School	800 E 40th St.	12454005	750	47.7	12.4
Harney Elementary School	3212 Evergreen Blvd.	37560000	406	60.3	10.6
Hough Elementary School	1900 Daniels St.	46700000	297	46.8	6.7
Hudson's Bay High School	1206 E Reserve St.	38279910	1,554	37.5	9.4
Lincoln Elementary School	4200 Daniels St.	6632000	458	39.7	10.5
Vancouver School of Arts and Academics	3101 Main St.	11254000	546	10.4	6.4
Washington Elementary School	2908 S St.	22960000	360	71.9	6.9

Source: http://www.nces.ed.gov/ccd/schoolsearch/ and http://gis.clark.wa.gov/imf/imf.jsp?site=mapsonli.

3.6 Low-income Housing

There are a number of subsidized housing units, public housing projects, and other low-income housing sites in the primary API. Exhibit 3-49 shows the locations of low-income housing in the primary and secondary APIs. This section lists and provides brief descriptions of these sites. Potential impacts to these sites are addressed in the Segment-level Impacts section (5.3).

No low-income housing sites are located within the Oregon portion of the primary API/Main Project Area. However, there are a number of such sites in Vancouver that are within the primary API, or near to it. These housing sites rely upon a number of different funding sources and programs, including housing vouchers, tax credits, and others.

Housing Choices Vouchers, formerly referred to as Section 8 Vouchers, allow a household to rent a unit from a private landlord for 30 percent of their income. The Vancouver Housing Authority (VHA) pays the remainder of the rent to the landlord. These vouchers are only available to the elderly, disabled, or families with children.

Low-Income Housing Tax Credits are administered by the Washington State Housing Finance Commission and are allocated to developers creating affordable housing. By contract agreement, the developer provides housing that is affordable to households with incomes at or below 60 percent of the area's median income.[8] The contract stipulates that these affordability requirements stay in place for a minimum of 15 years.

3.6.1 Sites

3.6.1.1 Central Park Place

Central Park Place is single room occupancy (SRO) building owned by the VHA. It is located on the southeast corner of the Department of Veterans Affairs (VA) Vancouver campus on Fort Vancouver Way, on the edge of the primary API. The VA campus is directly east of I-5, although Central Park Place is on the opposite side of the campus.

The building provides 124 units for homeless veterans and non-veterans alike. Half of the residents are veterans, and half are referred by local nonprofit agencies. Central Park Place offers 88 SRO units, 35 studio apartments, and a two-bedroom manager's unit. Eight of the units are fully accessible for people with disabilities. The 35 studios provide permanent housing for elders and people with chronic mental illnesses.

3.6.1.2 Evergreen Retirement Inn

The Evergreen Retirement Inn is within the primary API on the corner of Fifth and Main Streets in Vancouver's Esther Short neighborhood, one block from the proposed light rail alignment through south downtown Vancouver. This property receives low-income housing tax credits in exchange for providing affordable housing to the area's elderly population. There are 78 units at Evergreen, 70 of which are low-income units.

[8] Affordable is defined as approximately one-third of the residents' income.

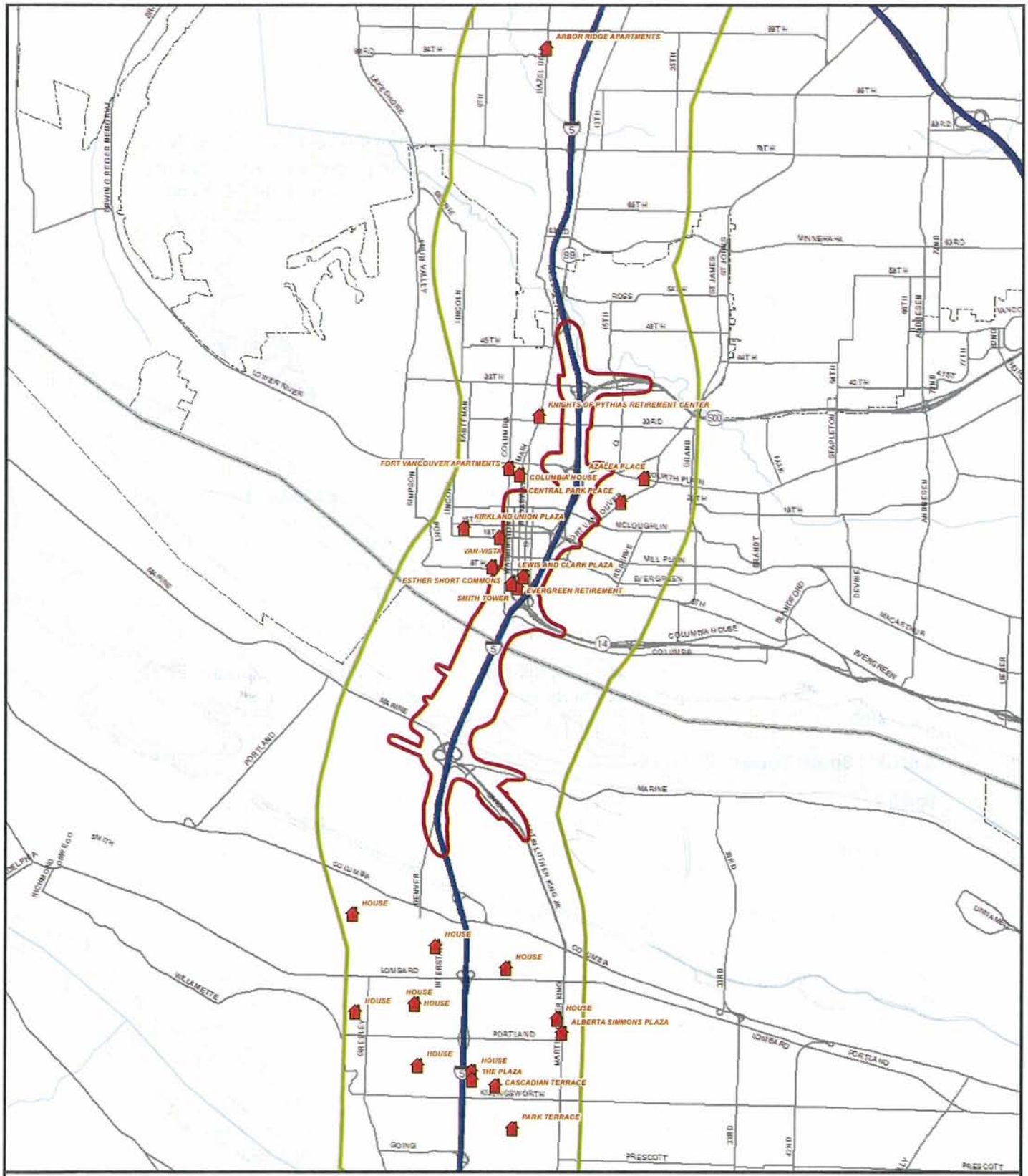


Exhibit 3-49. Low-income Housing

Columbia River CROSSING

3.6.1.3 Van-Vista

Van-Vista is located on the western edge of the primary API the corner of on 13th and Daniels Street in the Esther Short neighborhood, two to three blocks from the proposed transit alignments on Washington or Broadway. This low-income rental property was developed by the VHA and receives tax credits in return for providing affordable housing. There are 98 one-bedroom units and 2 two-bedroom units at Van-Vista. Forty of these units are reserved for seniors, while the remaining 60 provide assisted living services.

3.6.1.4 The Lewis and Clark Plaza

The Lewis and Clark Plaza is located within the primary API on 7th and Broadway in the Esther Short neighborhood, directly on or two blocks from the proposed light rail alignments through south downtown Vancouver, at 621 Broadway. Completed in 2004, it is a four-story, 46-unit affordable senior housing project.

3.6.1.5 The Esther Short Commons

The Esther Short Commons is located within the primary API on Eighth and Esther, two blocks away from the proposed transit alignments through south downtown Vancouver, and includes 139 work force apartments. The Workforce Housing Initiative is the fastest growing segment of the VHA's portfolio of housing. Although income requirements vary, Workforce Housing offers rents that are affordable to families earning 60 to 80 percent of area median income.

3.6.1.6 Knights of Pythias Retirement Center

The Knights of Pythias Retirement Center is located in the secondary API in the Shumway neighborhood. This site accepts Housing Choice vouchers and serves the area's elderly population.

3.6.1.7 Smith Tower

Smith Tower is located within the primary API on Sixth and Washington Streets in the Esther Short neighborhood, and is directly on the proposed light rail alignment. This property is run by Manor Management services and accepts Housing Choice vouchers. Smith Tower is an elderly care facility that provides one-bedroom units.

3.6.1.8 Columbia House

Columbia House is located is located on the western edge of the primary API between 24th and Columbia in the Hough neighborhood, and is one to two blocks east of the proposed light rail alignment. This property is run by VHA and accepts Housing Choice vouchers. Columbia House offers 151 one- and two-bedroom units to the elderly.

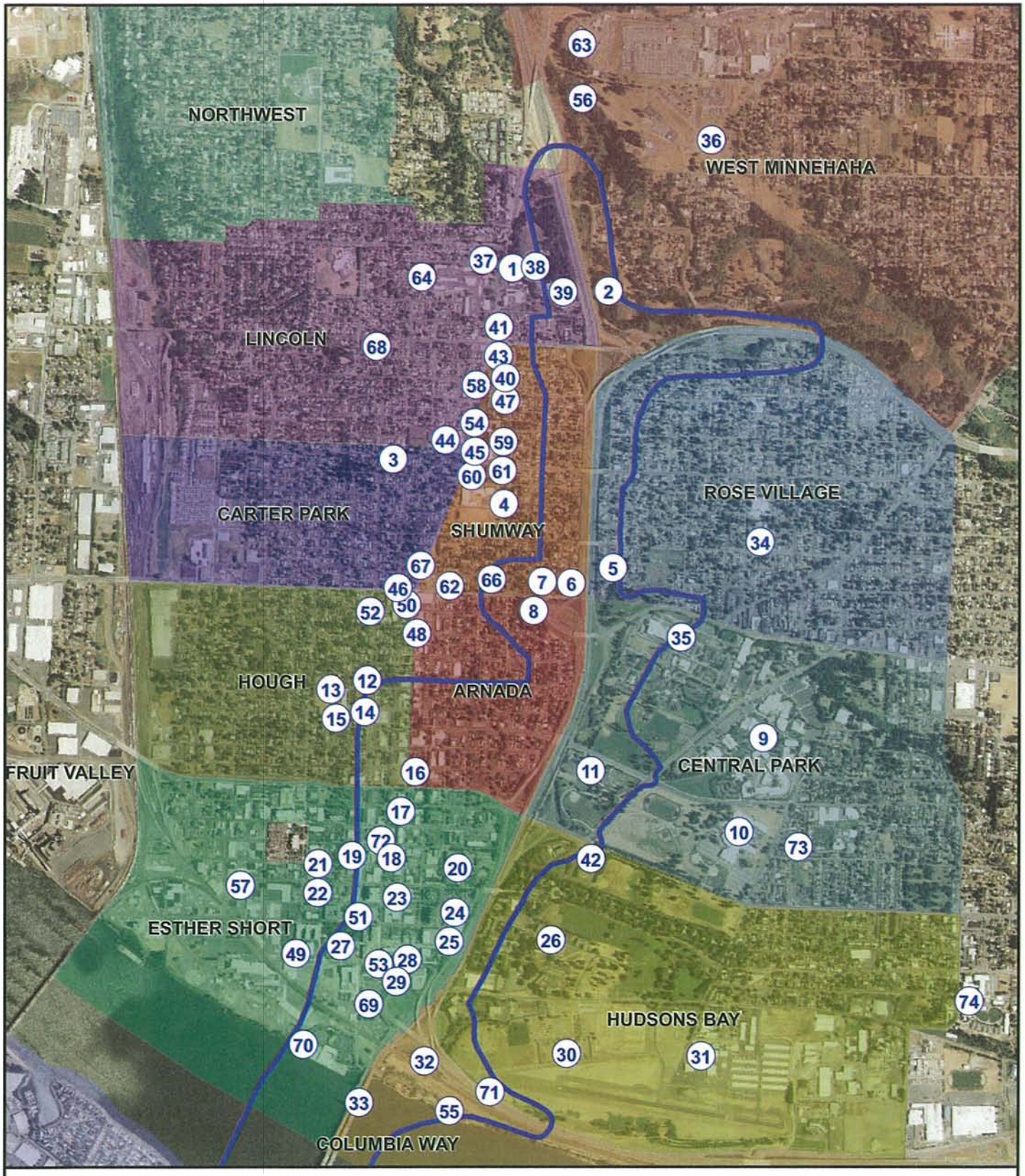
3.6.1.9 Fort Vancouver Apartments

The Fort Vancouver Apartments are on the western edge of the primary API on 25th and Columbia Streets in the Hough neighborhood; the structure is one to two blocks east of the proposed light rail alignment. This property is run by VHA and accepts Housing Choice vouchers. The Fort Vancouver Apartments provide 19 one-bedroom units for those with mental illness.

3.7 Community Resources

The CRC project team collected an inventory of community resources within each neighborhood in the project area. The team met with members of the community who identified the resources that were important to them and located these resources on a map. Maps and legends of community resources for Washington and Oregon are provided on Exhibit 3-50, Exhibit 3-51, and Exhibit 3-52. For additional information on methods used to identify community resources and specific resources, see the Neighborhoods Technical Report.

PRELIMINARY



Main Project Area

0 0.25 0.5 Miles

Exhibit 3-50. Neighborhood Resources
Clark County, Washington (1 of 2)

Columbia River CROSSING

1 **Covington House**
4201 Main Street
historical

2 **Leverich Park**
39th and M Street
park

3 **Carter Park**
33rd Street
park

4 **Shumway Park**
3014 F Street
park

5 **Leach Park**
28th and K Street
park

6 **2613 "H" Street House**
2613 H Street
historical

7 **Swan House**
714 E. 26th Street
historical

8 **Arnada Park**
W. 25th and G Street
park

9 **Clark College**
1800 E. Mcloughlin Bouleva
educational

10 **Hudson's Bay High School**
1206 E. Reserve Street
educational

11 **Marshall and Luepke Centers**
1009 E. McLoughlin Bouleva
community center

12 **Hough Elementary School**
1900 Daniels Street
educational

13 **Steffan House**
2000 Columbia Street
historical

14 **Charles Zimmerman House**
1812 Columbia Street
historical

15 **Hough Aquatic Center**
1801 Esther Street
recreational

16 **Carnegie Library**
1511 Main Street
educational

17 **Hidden, Lowell M. House**
100 W. 11th Street
historical

18 **Vancouver Telephone Exchange**
112 W. 11th Street
historical

19 **Chumasero-Smith House**
310 W. 11th Street
historical

20 **House of Providence (Academy)**
400 E. Evergreen
historical

21 **Langsdorf House**
1010 Esther Street
historical

22 **Lloyd DuBois House**
902 Esther Street
historical

23 **Elks Building**
916 Main Street
historical

24 **Future Library**
educational

25 **Regal Cinema**
801 C Street
recreational

26 **National Historic Reserve**
East Reserve Street to I-5
historical

27 **Slocum House/Ester Short Park**
605 Esther Street
historical/park

28 **Heritage Building**
601 Main Street
historical

29 **Evergreen Hotel**
500 Main Street
historical

30 **Fort Vancouver**
612 E. Reserve Street
historical

31 **Pearson Field**
1115 E. 5th Street
historical

32 **Old Apple Tree Park**
East of I-5
historical/park

33 **I-5 Bridges**
historical

34 **Washington Elementary School**
2908 S Street
educational

35 **VA Medical Center**
1601 E. 4th Plain Boulevard
healthcare

36 **Dog Park**
Between 15th and 18th
park

37 **First Presbyterian Church**
4300 Main Street
religious institution

38 **Kiggins Sports Fields/Stadium**
800 E. 40th Street
recreational

39 **Discovery Middle School**
801 E. 40th Street
educational

40 **Safeway**
3707 Main Street
shopping

41 **Community Wellness Center**
317 E. 39th Street
healthcare

42 **Fort Vancouver Regional Library**
1007 E. Mill Plain
educational

43 **Home Ownership Center**
3801-A Main Street
public service

44 **SW Washington Medical Center**
3400 Main Street
healthcare

45 **Arts & Academics School of Vancouver**
3101 Main Street
educational

46 **Vancouver Housing Authority**
2500 Main Street
public service

47 **YWCA**
3609 Main Street
community center

48 **Uptown Village**
Main Street
shopping

49 **Farmers Market**
555 W. 8th Street
shopping

50 **Starbucks**
2420 Main Street
community/recreation

51 **Starbucks**
304 W. 8th Street
community/recreation

52 **Columbia House**
33415 NW Lancaster Road
community/recreation

53 **Smith Tower**
515 Washington Street
senior/low income

54 **Pythian Home**
3409 Main Street
senior/low income

55 **Waterfront Park**
115 Columbia Way
park

56 **Discovery & Ellen Davis Trails**
Highway 99 and I-5
park

57 **Vancouver Fire Department, #82**
900 W. Evergreen Boulevard
public service

58 **Vancouver Fire Department, #86**
400 E. 37th Street
public service

59 **Vancouver Health and Rehabilitation Center**
400 E. 33rd Street
public service

60 **First United Methodist Church of Vancouver**
401 E. 33rd Street
religious institution

61 **Evergreen Habitat for Humanity**
521 E. 33rd Street
public service

62 **First Church of Christ Scientist**
204 E. 4th Plain Boulevard
religious institution

63 **Bonneville Power, Ross Complex**
5411 NE Highway 99
public services

64 **City of Vancouver Water Tower**
42nd and NW Washington
historical

65 **WSDOT Service Center**
11018 NE 51st Circle (not in map extent)
public service

66 **Saint Luke's Episcopal Church**
426 E. 4th Plain Boulevard
religious institution

67 **First Baptist Church**
108 W. 27th Street
religious institution

68 **Trinity Lutheran Church**
309 W. 39th Street
religious institution

69 **Accordiing to His Word Worship Center**
210 W. 4th Street
religious institution

70 **Amphitheater at Vancouver Landing**
100 Columbia Street
park

71 **Land Bridge**
park

72 **Saint James Catholic Church**
218 W. 12th Street
religious institution

73 **State School for the Blind**
2214 E. 13th Street
educational

74 **State School for the Deaf**
611 Grand Blvd.
educational

Exhibit 3-51. Neighborhood Resources
Clark County, Washington (2 of 2)

Columbia River CROSSING

PRELIMINARY

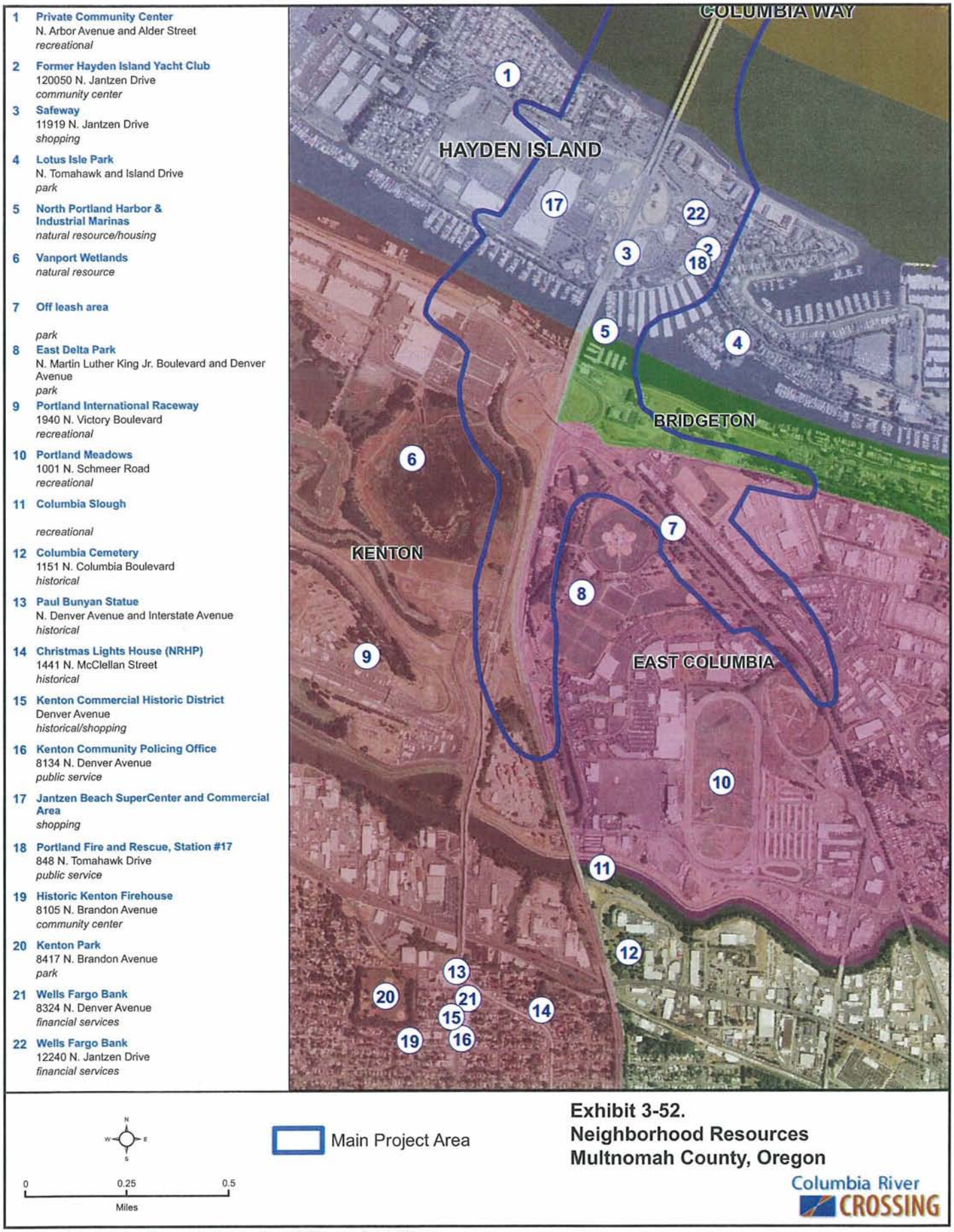


Exhibit 3-52.
Neighborhood Resources
Multnomah County, Oregon

Columbia River CROSSING

4. Long-term Effects

4.1 How is this Section Organized?

In this section, anticipated long-term effects of the No-Build Alternative are described first, followed by a discussion of the long-term effects of the LPA. General long-term effects of the LPA are summarized, followed by a geographically specific discussion of impacts. Effects to EJ populations from the expansion of the light rail transit maintenance base and tolling the I-5 bridges are discussed at the end of this section.

4.2 No-Build Alternative Long-term Impacts

The No-Build Alternative would avoid all direct displacement of residents, community resources, or jobs. Long-term impacts for neighborhoods would include increased travel times for residents traveling within the I-5 corridor. The No-Build Alternative would not bring high-capacity transit (HCT) to Hayden Island or Vancouver. Low-income populations use transit proportionately more than other populations, and would be unable to benefit from HCT under the No-Build Alternative. Also, the potential benefits associated with the project's ability to generate temporary construction jobs and long-term business development would not be actualized in the No-Build alternative. There would be no toll for the No-Build Alternative, so EJ populations would not have the expense of tolls or the need for transponders.

4.2.1 Traffic

Under the No-Build Alternative the length of time for southbound congestion on the I-5 bridge would increase from 2 hours currently to over 7 hours in 2030. During the 2-hour morning peak, southbound I-5 travel times are forecast to increase by 3 minutes (20 percent) for a vehicle-trip along I-5 from SR 500 to Columbia Boulevard, and by 15 minutes (50 percent) for a vehicle-trip from 179th Street to I-84.

Under 2030 No-Build conditions, northbound congestion periods would increase from 4 hours to almost 8 hours. During the 2-hour afternoon peak, northbound I-5 travel times are forecast to increase by 2 minutes (15 percent) for a vehicle-trip from Columbia Boulevard to SR 500, and by 6 minutes (16 percent) from I-84 to 179th Street. The No-Build Alternative would only accommodate about 55,000 person-trips during peak periods, and congestion is predicted to increase to 15 hours/day by 2030.

Many intersection failures in both Portland and Vancouver would take place under the No-Build. In both cities, 17 intersections would fail to meet standards during the morning peak. During the afternoon peak, 33 intersections would no longer meet standards.

4.2.2 Air Quality

An analysis was performed to estimate air pollutant levels, including carbon monoxide (CO) concentrations, near poorly performing intersections for the project alternatives. No violations of the National Ambient Air Quality Standards (NAAQS) were shown for conditions under the No-Build Alternative.

4.2.3 Noise

Existing noise levels along the project corridors range from 47 to 74 decibels (dBA) L_{eq}.[9] There are many noise-sensitive land uses that currently exceed the appropriate traffic noise criteria (65 dBA threshold in Oregon, and 66 decibels threshold in Washington). Under the No-Build Alternative, noise levels would increase by up to 4 dBA and the number of noise impacts would increase. Currently, there are an estimated 234 traffic noise impacts to noise-sensitive land uses; that number would raise to 275 under the No-Build Alternative.

Without mitigation, traffic noise impacts are expected to increase with the LPA (Options A and B) compared to existing conditions and the No-Build Alternative. Without mitigation, the traffic noise impacts under the LPA would occur at 332 residential equivalents. However, with the proposed noise walls the project will reduce noise levels for existing conditions and from the No-Build. Please refer to the Noise and Vibration Technical Report for more details.

4.3 The Locally Preferred Alternative Summary of Project Impacts

This section presents a summary of the EJ impacts from the LPA. As ODOT and WSDOT improve and maintain critical facilities throughout the region, such as I-5, users of this regional transportation system would benefit, regardless of their origin or destination. For example, any improvements made to I-5 would benefit users by reducing congestion on parallel facilities, including Highway 99 and Main Street in Vancouver, because drivers would more frequently choose to use the improved I-5. In addition, improved and more consistent travel times throughout the system would increase transit system reliability, which benefits all users. Improvements and additions to transit service in other corridors would allow more people to access transit or access destinations with transit. The reductions in highway congestion and the improvements in safety have benefits for all users, including freight haulers and other commercial enterprises.

Specific impacts from the project are addressed in the following sections. The first sections discuss direct impacts specific to individual properties. The later sections address more regional concerns. For these impact discussions, the project impact area is separated into four geographic subareas – the Oregon Mainland, Hayden Island, Downtown Vancouver (Columbia River to Fourth Plain Boulevard), and Upper Vancouver (north of Fourth Plain Boulevard) – and EJ impacts are discussed by subarea.

4.4 Oregon Mainland Impacts

4.4.1 Residential Units and Community Resources

In the Bridgeton neighborhood, portions of a boat sales and marina business, known as Pier 99 in Bridgeton, will be displaced by the project. Long-term impacts in Kenton are focused at the north end of the neighborhood near the Portland Expo Center and the North Portland Harbor. The project would displace several structures including three floating homes and one multi-family residence (a duplex) on land. Two businesses would also be displaced. The marina also houses 17 moored boats, and the boat moorage and marina operations could be partially reestablished after project completion. Brown's Marina was not identified as a community resource. The project

[9] See the Noise and Vibration Technical Report for a discussion of noise level metrics.

would permanently displace up to 250 parking spaces at the Portland Expo Center. Please refer to section 4.10 for discussion of the impacts at the Ruby Junction Maintenance Facility.

Residential survey information indicates that no minority or low-income residents will be displaced, so there are no disproportionate adverse EJ impacts.

4.4.2 Low-income Housing

There will be no direct long-term impacts to low-income housing locations within the Oregon Mainland area.

4.4.3 Traffic

In most locations, there are reductions in volumes on the local street system. This occurs as motorists switch routes to the previously congested Interstate corridor.

During the morning peak, westbound traffic on both sides of the highway would decrease less than 10 percent compared to No-Build conditions. Eastbound traffic on both sides of I-5 would increase up to 10 percent, with the higher growth forecast for the eastside of I-5. During the morning peak, southbound traffic in Portland would decrease by up to five percent over No-Build conditions. Northbound traffic in Portland would remain unchanged or decrease between 10 and 20 percent compared to No-Build conditions.

During the afternoon/evening peak, eastbound and westbound traffic on both sides of the highway would change by less than 10 percent compared to No-Build conditions. Northbound and southbound traffic in Portland would change by less than 10 percent during the afternoon/evening peak hour.

This section characterizes the performance of local streets at intersections. Intersections, rather than the links between them, are where failures often occur. This section compares the operations at dozens of local intersections with the adopted local standards, and discloses any foreseeable failures. Many of these failures would be prevented with the mitigation measures listed at the end of this section. Many of these mitigation measures would not need to be employed for many years, and may be redesigned as traffic patter change through the years.

Under 2030 No-Build conditions, 25 intersections were analyzed, one of which would not meet applicable performance standards during the morning peak hour - the intersection of Fremont Street with Martin Luther King Jr. Boulevard. During the afternoon/evening peak hour, three intersections would not meet applicable performance standards: Martin Luther King Jr. Boulevard with Fremont and Alberta Streets, Interstate Avenue with Argyle and Going Streets, and Marine Way with Vancouver Avenue.

With the LPA or LPA with highway phasing, Portland's local street operations would improve along the I-5 corridor relative to No-Build conditions. For example, at the I-5 interchange with Marine Drive, 2030 afternoon peak intersection performance would improve from a volume-to-capacity ratio (V/C) of 0.82 (LOS F) with the No-Build Alternative to V/C 0.42 (LOS B) with the LPA. This indicates that the LPA would improve mobility and accessibility to this freight and employment corridor during the afternoon peak. Similar findings were observed during the morning peak. The LPA with highway phasing would improve the 2030 p.m. peak V/C to 0.64 (LOS B) from 0.82 (LOS F).

With either the LPA or LPA with highway phasing improvements, the total number of Portland intersections and ramps would increase to 38, primarily as a result of additional intersections associated with the local roads in the Hayden Island and Marine Drive interchange areas. During the 2030 morning peak hour, 37 of these 38 intersections and ramps would be expected to operate

within acceptable standards, while one would fail to meet standards. The intersection of Interstate Avenue with Going Street is expected to fail to meet applicable performance standards and to require mitigation. During the 2030 afternoon/evening peak hour, with either the LPA or LPA with highway phasing improvements, all intersections would operate within acceptable standards.

4.4.4 Noise

Under LPA Option A, there are nine floating homes predicted to meet or exceed the FTA noise impact criteria. With LPA Option B, the number of floating homes exceeding the FTA criteria increases to 18. All floating home impacts are at locations off the south shore of Hayden Island and will be reported in the following section on Hayden Island. No other highway or light rail impacts were identified in the Portland segment of the transit corridor.

4.5 Hayden Island Impacts

4.5.1 Residential Units and Community Resources

The LPA will require the relocation of a number of floating homes in North Portland Harbor. Current designs indicate that the project would displace 32 floating homes and boat houses, 12 in the Columbia Crossings moorage to the east of the bridge and 20 in the Jantzen Beach Moorage to the west of the bridge (Exhibit 4-1).

Though a substantial impact to the residents, this does not likely constitute a disproportionate impact to EJ populations. According to the 2000 Census and other data, Hayden Island does not have a high rate of EJ residents compared to surrounding Portland neighborhoods. A demographic survey conducted by the CRC project team indicates that the floating home community has notably lower rates of EJ residents (based on those that responded) than surrounding neighborhoods, and it is therefore less likely to impact an EJ resident in this community.

Section 4.8 summarizes the survey findings for all survey responses. In Hayden Island, 9 percent of the 32 displaced residents for which we have survey data are members of a minority population and nine percent are low-income. These numbers do not indicate a disproportionate impact compared with the regional or secondary API demographics.

The direct impacts on Hayden Island, have the potential to significantly affect wage-earning opportunities for those seeking service industry employment. An estimated 39 businesses will be displaced on Hayden Island, with 643 employees affected. Business acquisitions would be comprised of a variety of commercial, service and retail establishments. This includes a section of restaurant and bar establishments currently between the existing freeway and N Center Drive; a restaurant and an office supply store west of N Center Drive; 12 eateries and a cellular services store north of N Hayden Island Drive; and the Safeway store east of I-5.


JANTZEN
CENTER
UNNAMED
JANTZEN
Jantzen Beach Moorage
Row C
Row B
Row A
North Portland Harbor
I5
I5
Columbia Crossings
Jantzen Bay Moorage
Row 9
PIER 99
PIER 99
MARINE DR-I5 FWY
I5 FWY-MARINE DR
UNNAMED
UNNAMED
MARINE
N
W
E
S
0
90
180
Feet
Displacement Type
Other
Residence
Business and Residence
Parcel Boundaries
Edge-of-Pavement
Exhibit 4-1. Floating Home Communities, North Portland Harbor
Columbia River CROSSING

Some of these displaced businesses may choose to not relocate locally. Even with relocation assistance, some of the employees may be unable to retain their jobs; for example, an employee may have to accept a new job during the transition period of relocation. In order to better assess the potential impacts to low-income populations, the CRC project team assessed the low-paying jobs that may be potentially lost as a result of the project.

The service and sales sectors are major sources of employment for Hayden Island residents as well as for residents of Vancouver and North Portland. On a whole, food preparation and service-related employers often offer low-wage positions such as dishwashers, cooks, hosts, and counter attendants. According to the Oregon Employment Department, the average salaries of most food preparation and service workers within Multnomah and Washington Counties fall within the range of $18,000 to $23,000 per year. Wages within this range would lift all individuals and most small families above the federal poverty guidelines.

In addition to the loss of many entry-level or relatively unskilled labor positions, the displacement of the Safeway would also displace a very active bottle return center. The Oregon Bottle Bill, passed in 1971 and amended in 2007, requires cans, bottles, and other containers of carbonated soft drink, beer, and (since 2009) water sold in Oregon to be returnable with a minimum refund value. It is administered and enforced by the Oregon Liquor Control Commission.[10] The Safeway bottle return center is very active. The store managers report thousands of dollars each week paid out through the returns.

This bottle return center provides an opportunity for community members to generate a small amount of income, which may supplement other employment or may constitute some individuals' sole means of making a living. Many of these individuals could be unemployed, underemployed, transient, and potentially homeless.

According to the Oregon State Department of Environmental Quality, the 5-cent refund value applies only to containers sold in Oregon.[11] No Oregon deposits are to be paid on containers purchased in Washington or Idaho. Nevertheless, the CRC project team has witnessed individuals taking bags of recyclable bottles and cans from Washington into Oregon. These bottles may have been purchased in Oregon and discarded in Washington, or may not all be refundable.

Regardless of where the bottles are collected, the return center at Safeway is providing a service to the most economically disadvantaged citizens of the immediate neighborhoods. The question remains, however, as to whether this effect would be considered to be highly adverse. There are other locations where bottles can be returned on the island and in North Portland. Many of these smaller establishments (such as convenience marts) enforce limits on the number of returns per visit. Unlike the Safeway return center, some locations require the patron to enter the store and interact with staff which could be a deterrent for certain individuals who prefer to not do so.

So long as these businesses continue to operate, and proper access to them is maintained, the displaced return center at Safeway would not constitute a high degree of impact.

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[10] Oregon's Bottle Bill. Oregon Liquor Control Commission. http://www.oregon.gov/OLCC/bottle_bill.shtml/#Retailer_s_Responsibilities___Resources. Retrieved 2009-02-12.

[11] http://www.deq.state.or.us/lq/sw/bottlebill/bottlebillfaq.htm#AnswerA7.

4.5.2 Low-income Housing

There are no identified low-income housing units on Hayden Island. However, extensive outreach has been conducted with residents of the floating home communities and the manufactured home communities. In over 60 meetings to date, conversations have included a focus on specific impacts to low, or lower, income households, construction impacts, and the unique challenges of relocating residents from manufactured homes or floating homes.

4.5.3 Traffic

As reported for the Oregon Mainland, the total number of Portland local intersections and ramps would increase to 38, primarily as a result of additional intersections associated with the local roads in the Hayden Island and Marine Drive interchange areas. During the 2030 morning peak hour and the 2030 afternoon/evening peak hour, with either the LPA or LPA with highway phasing improvements, all intersections on Hayden Island would operate within acceptable standards.

4.5.4 Noise

Under LPA Option A, there are nine floating homes predicted to meet or exceed the FTA noise impact criteria. With LPA Option B, the number of floating homes exceeding the FTA criteria increases to 18. All floating home impacts are in Portland, near the Jantzen Beach area. LPA Option A provides a lower number of impacts because its arterial traffic lanes would help shield floating homes from light rail operations and because of the increased distance from the light rail alignment to the floating homes. No other light rail impacts were identified in the Portland segment of the transit corridor.

4.6 Downtown Vancouver Impacts

4.6.1 Residential Units and Community Resources

With 17th Street alignment, there are seven residential and no community resource displacements within the Downtown Vancouver area, which includes the Hough, Arnada, Central Park, Esther Short, Hudson's Bay, and Columbia Way neighborhoods. Five displacements occur on 17th Street. Two additional residential *unit* displacements would occur as a result of the impacts to the Funeral Home on Broadway Street. One unit is currently vacant. The Funeral Home would lose its street access, which would undermine the business practices to the extent that the project would acquire the property, including the two upstairs apartments. After releasing the property for sale, new owners may again lease the two upstairs apartments.

The LPA will have permanent impacts that will displace portions of three recreation resources in this area. Clark College Annex and Recreation Fields, Marshall Community Park and Center, and the west end of Waterfront Park will be impacted. These community resources are valuable to all Vancouver residents and do not specifically serve EJ populations, so impacts are not considered to disproportionately affect EJ populations. For more information about impacts to these resources, refer to the Parks and Recreation Technical Report.

With 17th Street, the five houses between G Street and I-5 will be displaced for light rail right of way. In addition to these permanent displacements, the construction of light rail along Broadway and 17th Street in the Arnada neighborhood will also permanently alter access to and from many parcels, most of which will be restricted to right-in/right-out movements only. The 17th Street Alignment will require the displacement of the households in the five houses between G Street and I-5, between 17th Street and McLoughlin Boulevard. Surveys were completed for four of the

five households, and not all of the questions were answered for every survey. One house includes at least one household which has an income level below the federal poverty level. None of the households reported minority status. These displacements, based on available data, would not include disproportionate numbers of minority or low-income households.

4.6.2 Low-income Housing

As described in the Affected Environment section, there are several low-income housing facilities in Downtown Vancouver. No displacements will occur as part of the project; however, noise impacts are anticipated. See below for details. The Smith Tower will also lose access to the small number of underground parking stalls, the loss of which will be mitigated with parking stalls in the adjacent lot.

4.6.3 Traffic

The following section addresses all intersections in Vancouver, not only those in the downtown area. The analysis focuses largely on intersections located west of the I-5 corridor. I-5 divides the Vancouver local street system, with community connections limited to (from south to north) Columbia Way, Evergreen Boulevard, Mill Plain Boulevard, McLoughlin Boulevard, Fourth Plain Boulevard, 29th Street, 33rd Street, and 39th Street. Freight movements serving the Port of Vancouver are heaviest within the I-5/Mill Plain Boulevard and I-5/Fourth Plain Boulevard interchange areas.

With 2030 No-Build conditions, local street congestion is most intense near the I-5 ramps and is influenced by the travel direction and length of time that I-5 is congested each day. When I-5 is congested, major arterials that provide east/west connectivity are also congested. Of the 86 intersections evaluated for the No-Build condition, seven would not meet acceptable operational standards during the morning peak and 24 would have unacceptable impacts associated with traffic queuing (back-ups). During the afternoon/evening peak period, seven intersections would not meet acceptable operational standards, while 25 would have unacceptable impacts associated with traffic queuing.

With the LPA, the number of intersections analyzed increases to 92. During the 2030 morning peak under the LPA, 91 of these intersections would operate acceptably with improved, similar, or slightly degraded conditions. The intersection at 29th Street at Main/Broadway would degrade and operate unacceptably from No-Build conditions. With the LPA with highway phasing, 90 intersections would operate acceptably with improved, similar, or slightly degraded conditions. Two intersections would degrade from No-Build conditions and would operate unacceptably – 29th Street at Main/Broadway (identified under the LPA) plus the intersection of 39th Street at H Street.

During the 2030 afternoon/evening peak with the LPA, 89 of the 92 intersections would operate acceptably with improved, similar, or slightly degraded conditions. Three of the local intersections would degrade from No-Build conditions and would operate unacceptably. These include the intersections of Mill Plain Boulevard at C Street, 15th Street at C Street, and 39th Street at the I-5 southbound ramps. With the LPA with highway phasing, 86 of the intersections would operate acceptably with improved, similar, or slightly degraded conditions. Six intersections would degrade from No-Build conditions and would operate unacceptably: the three intersections identified under the LPA plus the intersections of 33rd Street at Main Street, 39th Street at H Street, and 40th Street at Main Street.

Overall, both the LPA and LPA with highway phasing would improve local street operations in Vancouver in comparison with 2030 No-Build conditions.

4.6.4 Noise

Three residential buildings in the Esther Short neighborhood would experience higher noise levels with the LPA than under the No-Build: Normandy Apartments, Evergreen Inn, and Fort Motel Apartments. The three-story Normandy Apartments are located at 316 East 7th Street, directly west of I-5. There are approximately 35 studio and one-bedroom apartments that rent for approximately $500 to $650 per month. Nine units currently experience noise levels that exceed FHWA's traffic noise impacts criteria. Proposed noise walls would greatly reduce noise levels for the lower six units (even from existing levels), while the impacts to the upper three units cannot be mitigated. A noise wall could not be built high enough to block these impacts.

The Evergreen Inn at 500 Main Street provides 78 assisted living units, 70 of which are publicly subsidized. Noise levels would slightly increase (by two dBA-Leq) from the No-Build, though this increase is barely perceptible, even outside the building. Lastly, the Fort Motel Apartments are located at 500 E 13th Street, directly west of I-5. There are 49 studio, one-bedroom, and two-bedroom units with rents ranging from $450 to $500 per month. Noise levels at this location currently exceed the impact criteria. As with the Normandy Apartments, the LPA's increased noise levels would be barely perceptible and cannot be mitigated.

The likelihood, based on U.S. Census data, that any impact in Arnada will disproportionately affect minority populations is very small. Highway noise will impact low-income housing sites.in Downtown Vancouver.

4.7 Upper Vancouver Impacts

The Upper Vancouver area includes the Shumway, Rose Village, Lincoln and West Minnehaha neighborhoods. Four residences along the west side of I-5 will be displaced by either Option A or B of the LPA.

4.7.1 Residential Units and Community Resources

The project will require four residential displacements, partial acquisition from multiple residential parcels for permanent right-of-way, removing outbuildings, and permanent subsurface easements from many residential parcels in the Shumway neighborhood. Some residents with partial acquisitions may experience noise impacts from the highway and visual impacts from sound walls. However, the sound walls would reduce the current noise levels near these homes.

The Shumway neighborhood has similar demographics to the county and city with respect to race and ethnicity and a slightly higher percentage of the population below the poverty level. Additionally, a demographic survey of the homes to be displaced indicated that the residents do not qualify as members of an Environmental Justice population. Given these characteristics, the residential displacements and partial acquisitions that will occur in this neighborhood do not represent disproportionate adverse impacts to EJ populations.

The Rose Village neighborhood has nearly three times the percentage of Clark County residents reporting Hispanic or Latino ethnicity (14 percent compared to 5 percent) and nearly twice the percentage of Vancouver residents reporting income levels below the poverty level (23 percent compared to 12 percent). Because no residential displacements will occur in this neighborhood, and noise mitigation sound walls will improve noise conditions, no disproportionate adverse impacts to EJ Populations are anticipated.

No residences will be displaced in the Lincoln or West Minnehaha neighborhoods. However, the LPA will require permanent subsurface easements from four residential properties and will have minor impacts on two community recreation resources. The Kiggins Bowl property will have a

permanent subsurface easement, and Leverich Park will have landscaping removed and temporary access changes. Neither resource was determined to serve predominately EJ populations, so no disproportionate impacts will occur. For further details on impacts to these properties, refer to the Parks and Recreation Technical Report.

4.7.2 Low-income Housing

In this subarea, no impacts to low-income housing properties will occur as part of the project.

4.7.3 Traffic

As was reported for Downtown Vancouver, during the 2030 afternoon/evening peak 89 of the 92 intersections in Vancouver would operate acceptably with improved, similar, or slightly degraded conditions. Three of the local intersections would degrade from No-Build conditions and would operate unacceptably. These include the intersections of Mill Plain Boulevard at C Street, 15th Street at C Street, and 39th Street at the I-5 southbound ramps. With the LPA with highway phasing, 86 of the intersections would operate acceptably with improved, similar, or slightly degraded conditions. Six intersections would degrade from No-Build conditions and would operate unacceptably – the three intersections identified under the LPA plus the intersections of 33rd Street at Main Street, 39th Street at H Street, and 40th Street at Main Street.

4.7.4 Noise

E Mill Plain to E Fourth Plain Noise Wall/West of I-5

One noise wall was evaluated to mitigate the LPA traffic noise levels that would approach or exceed the impacts thresholds at 27 residences west of I-5, between E Mill Plain and E Fourth Plain. To mitigate traffic noise impacts in this area west of I-5, a noise wall was evaluated that extends from E Mill Plain to E Fourth Plain. This wall would provide noise level reductions in the range of 3 to 8 dBA for the 27 residential equivalents that would have future noise levels that meet or exceed the NAC. In addition, the noise wall would provide a 3 to 6 dBA reduction for 19 more residences, bringing the total number of residences benefiting from the wall to 46.

E Fourth Plain to E 39th Street Noise Wall/West of I-5

Three separate noise walls were evaluated to mitigate the future LPA traffic noise levels at 62 residences west of I-5 between E Fourth Plain and E 39th Street. To mitigate traffic noise impacts in the area west of I-5 between E Fourth Plain and E 29th Street, a noise wall was evaluated that extends from E 26th Street at E Fourth Plain along the east shoulder of J Street to E 29th Street. This wall would provide noise level reductions in the range of 5 to 14 dBA for the 26 residences that would have future noise levels that meet or exceed the thresholds.

A noise wall was evaluated to mitigate traffic noise impacts in the area west of I-5 between E 29th Street and E 33rd Street. This wall would provide noise level reductions in the range of 5 to 12 dBA for the 13 residences that would have future noise level impacts. In addition, the noise wall would provide a 5 to 9 dBA reduction for six more residences, bringing the total number of residences benefiting from the wall to 19. A noise wall was also evaluated to mitigate traffic noise impacts in the area west of I-5 between E 33rd Street and E 39th Street. This wall would provide noise level reductions in the range of 4 to 14 dBA for the 23 residences that would have future noise levels that meet or exceed the thresholds. In addition, the noise wall would provide a 4 to 7 dBA reduction for 14 more residences, bringing the total number of residences benefiting from the wall to 37.

E Fourth Plain to SR 500 Noise Wall/East of I-5

Four separate noise walls were evaluated to mitigate the future LPA traffic noise levels that would approach or exceed the NAC at 87 residences and residential equivalents east of I-5 from E Fourth Plain to areas east along SR 500. A noise wall was evaluated to mitigate traffic noise impacts in the area east of I-5 between E Fourth Plain and E 29th Street. This wall would provide noise level reductions in the range of 5 to 13 dBA for the 25 residential equivalents that would have future noise impacts. Of the 25 residences that would benefit from the wall, 23 would be considered fully mitigated; two residences would continue to have noise levels exceeding the thresholds due to the required opening in the noise wall at E 29th Street.

A noise wall was evaluated to mitigate traffic noise impacts in the area east of I-5 between E 29th Street and E 33rd Street. This wall would provide noise level reductions in the range of 8 to 13 dBA for the 19 residences that would have future noise impacts. One additional residence would receive a 7-dBA reduction from the noise wall.

A noise wall was evaluated to mitigate traffic noise impacts in the area east of I-5 between E 33rd Street and NE 15th Avenue. This wall would provide noise level reductions in the range of 3 to 10 dBA for 30 residences that would have future noise impacts. In addition, the noise wall would provide a 4- to 7-dBA reduction for 13 more residences, bringing the total number of residences benefiting from the wall to 43.

To mitigate traffic noise impacts south of SR 500, a noise wall was evaluated that extends along the south side of SR 500 between R Street and V Street. This wall would provide noise level reductions in the range of 8 to 10 dBA for 13 homes.

4.8 Displacement Survey Findings

This section provides detailed findings regarding the demographic composition of impacted households. These data are presented here, rather than in the existing conditions section of this report, because these data are specific to displaced households, and are therefore, descriptive of project impacts, and not simply regional demographics. As describe in Section 2.4.2, the CRC project developed and conducted a series of location-specific surveys to further determine the characteristics of the population directly impacted by the project and whether there would be a disproportionate adverse impact on environmental justice populations.

Survey and interview responses for residential displacements reveal that 81.8 percent of survey respondents are white, and not of Hispanic or Latino ethnicity. One household, 3.1 percent, is American Indian or Alaskan Native and not of Hispanic or Latino ethnicity. Another one household, 3.1 percent, is some other race and not of Hispanic or Latino Ethnicity. Four additional households (12.5 percent) are Hispanic and of some other race. The percentage of minorities, among the residential displacements (18.8 percent) is lower than the percentage of minority households in the study area (27 percent) (Exhibit 4-2).

Exhibit 4-2. Summary of Residential Survey EJ Data Comparison

Area	Total Population	% Minority	% Low-Income
Residential Displacement Surveys	34[a]	18.8	13.3[b]
Portland Block Groups	62,264	42	17
Vancouver Block Groups	84,407	15	13
Secondary API Total	**146,671**	**27**	**15**

Source: U.S. Census 2000, Summary Tape File 3, Tables P7 and P88.

a The total residential survey population is less than the total surveys returned because not all respondents indicated race or income status.

b This percentage represents the maximum percentage of displaced residents that could be considered low-income. It is very likely that the percentage is lower (see below).

Income data were collected in the residential surveys; respondents had an option to choose household income in one of nine categories ranging from less than $10,000 to $80,000 or more, with a range of $10,000 each. Thirty of the returned surveys contained responses to this question on income. For instance, a household earning $32,000 a year would respond that their income was within the $30,000 - $39,999 range. Income data collected in the survey reflects 2008 levels. In contrast, income levels used for demographic analysis from the census reflects 1999 income levels, and the determination of low-income status for the census data uses year 2000 poverty thresholds (Section 2.3.2.1 Poverty Level Comparison: Thresholds vs. Guidelines). To determine whether any survey respondents would be considered low-income, the more recent 2008 census thresholds were used. The 2008 thresholds are shown in Exhibit 4-3 below.

Exhibit 4-3. 2008 Census Poverty Thresholds

	Poverty Thresholda
Number in Household	2008
1	$10,764
2	$14,264
3	$17,172
4	$22,130
5	$26,257

a These data are averages. The Census determination of poverty thresholds includes whether the individual is over 65 years of age and the number of children in the family.

Because the income range responses span the poverty thresholds, an exact determination of low-income status using the Census 2008 thresholds is not possible. Instead, Exhibit 4-4 shows an approximation of potential low-income status for survey respondents.

Exhibit 4-4. Demographic Survey Low-Income Analysis

Area	Number in Household	Income Range	Low-Income Status
Columbia Crossings	1	$10,000 - $19,999	Potential
Columbia Crossings	1	$10,000 - $19,999	Potential
Ruby Junction/Rockwood	6	$20,000 - $29,999	Low-Income
Ruby Junction/Rockwood	4	$10,000 - $19,000	Low-Income

Based on income and the number of people in their household, only two survey respondents are clearly below the poverty threshold. Two other households have the potential to be considered low-income, but without knowing their exact income level it cannot be determined if they are below the threshold or not. These respondents could be considered lower-income, but not strictly low-income. In the worst case scenario, if all four of these respondents were included as low-income for the purposes of EJ analysis, that would total 13.3 percent of all respondents who indicated income levels. A low-income population of 13.3 percent is less than that of the project area.

4.8.1 Business Impacts Survey

In order to assess the potential EJ implications of impacts of the commercial displacements more precisely, the businesses which are likely to be impacted were surveyed during the summer of 2009. The questions included those related to relocation, transportation needs, and the following EJ-related inquiries:

- Approximately how many employees are employed with your firm at this location?
- Tell us about your customers. Do you know if they live or work nearby? How many of your customers come from Washington (or Oregon for Vancouver businesses)?
- Do you make deliveries from your business? Do you rely on I-5 to make these deliveries? If so, how do you access I-5 from your business?
- Do you receive deliveries at your business? If so, about how many/day/week? How do deliveries access your property?
- Is yours a minority owned business?
- Describe the extent to which you employ low-income persons, minorities, or persons with special needs.
- Do you provide services or goods for which minorities or low-income customers dependent?

4.8.1.1 Business Survey Findings

Many of the businesses that were surveyed would be displaced by the LPA (Safeway, U.S. Bank, Island Pizza, Hooters, etc.). The survey was also completed for businesses that were impacted although not displaced (Norma's Kitchen, Oxford Suites, etc.).

Racial and Ethnic Composition of Employees

Many of the surveyed businesses asserted that they employed high numbers of minority employees, with higher minority compositions than the region or local area. Some other businesses did not have many minority employees. Businesses with higher percentages stated that they employed "50 percent minorities," "very high percentages of minorities," and the like.

Income Levels of Current Employees

Many of the surveyed businesses asserted that they employed high numbers of low-income employees. However, low-income was not defined to be exclusively those under the poverty level. Some of the businesses, such as Safeway, employ high numbers of part-time employees, many of which are paid the state's minimum wage. It is likely that households dependent on these part-time positions with minimum wage compensation may fall under the federal poverty level and would therefore be considered EJ households.

4.9 Regional and Other Impacts

This section is based on findings from other technical reports developed for the Columbia River Crossing project. Where these reports identified regional impacts, the CRC project team conducted subsequent analyses to determine if these impacts would also constitute high, adverse, and disproportionate impacts to EJ populations.

4.9.1 Air

The EPA has developed NAAQS for the six criteria pollutants: CO, lead, ozone, nitrogen dioxide, sulfur dioxide, and particulate matter. Air quality specialists performed an analysis to estimate CO concentrations near poorly performing intersections for the project alternatives. No violations of the NAAQS were shown for existing conditions or for the LPA. Therefore, air quality impacts would not be expected as a result of the project.

Because of improved vehicles and improved fuels, air pollutant emissions would be expected to be substantially lower in the future than under existing conditions. This is true both for the region and the subareas evaluated. Nonetheless, no air quality impacts were found as a result of the LPA.

4.9.2 Travel Demand and Traffic

Travel times vary by time of day, direction of travel and travel mode. Travel times improve for transit in the LPA compared to the 2030 No Build Alternative. More specifically, the LPA:

- Improves transit travel times region-wide,
- Improves transit travel times relative to automobile travel times, and
- Improves reliability of transit travel times.

The new crossing would provide more congestion relief than the No-Build Alternative. For the purpose of this report, traffic congestion is measured as the number of hours when average vehicle travel speed falls below 30 mph. The LPA would reduce the duration of southbound congestion in the vicinity of the I-5 crossing to 3.0 hours, compared with 7.25 hours for the No-Build Alternative. Southbound traffic queues would no longer extend beyond Fourth Plain Boulevard for multiple hours each day. The traffic congestion remaining at the bridge would result from the existing downstream constriction on I-5 just north of the I-405 split. The LPA would not exacerbate or worsen this existing capacity constriction, although the CRC improvements would enable an increase in vehicle throughput of about five percent along I-5 just north of I-405.

Northbound traffic queues would no longer extend from the Interstate Bridge to I-405 for multiple hours each day. The LPA would reduce the duration of northbound congestion at the I-5 crossing from 7.75 hours under the No-Build Alternative to minimal delay based on travel model output at the I-5 crossing.

Travel times, improved safety conditions, reduced congestion, and increased transit reliability may all provide significant benefits to members of EJ populations. This report has shown how improvements in transit may be of particular benefit to low-income communities. Furthermore, an analysis of local intersection operations shows the project improving many local streets within the study area. In the Neighborhood and Population Technical Report, there is an assessment of which intersections meet standards with the no build and with the LPA. These intersections are described for each neighborhood. There does not appear to be a correlation (suggesting disproportionately) of the changes in intersection performance and neighborhood demographics.

4.9.3 Safety and Reliability

The proposed project has several improvements to corridor safety and reliability for transit, river navigation, and freight traffic. The most critical public safety benefit would be the replacement of the existing I-5 bridges. This would dramatically improve the substandard movements and features found with the existing bridges, thereby decreasing auto accidents on or near the bridges.

4.9.4 Pedestrians and Bicyclists

Currently, bicycle and pedestrian facilities on the I-5 bridges and connections to the regional bike and pedestrian transportation network are inadequate and substandard. The pathways on the bridge are dangerously narrow. When two cyclists approach each other on the bridge, or a cyclist approaches a pedestrian, one needs to stop and get out of the way to allow the other to pass. Additionally, the circuitous bike paths connecting to the bridge (especially on Hayden Island and near the Marine Drive interchange) are poorly lit, poorly maintained, inefficient, and include an uncontrolled traffic crossing. The project would provide greatly improved facilities for pedestrians and cyclists, including EJ populations.

4.9.5 Transit Ridership

Many of the previously discussed impacts would affect EJ populations; however, the improvement in transit travel times would be particularly beneficial to low-income populations. Transportation studies have indicated that low-income individuals tend to use transit proportionally more than higher-income individuals. For example, data from the 1995 Nationwide Personal Transportation Survey (FHWA 2001) demonstrated that low-income persons traveled 4.2 percent of their total person-miles of travel on public transit, as compared with 2.1 percent of all person-miles traveled by the total population. Murakami and Young (1997), working with the same Nationwide Personal Transportation Survey dataset, demonstrated that low-income households are more than twice as likely to use transit to get to work as the general population – 5 percent compared to 2 percent. Research and data collection by the CRC project team demonstrate that this national trend is reflected in the CRC project area, with C-Tran and TriMet rider surveys supporting similar findings.

In Vancouver, the Central Park and Esther Short neighborhoods have the highest percentages of population below the poverty level and housing units with no vehicles. One-quarter of the residents in the Central Park neighborhood are below the poverty level. Additionally, one-quarter of the housing units in the Central Park neighborhood are without a vehicle. Many of these units may be occupied by Clark College students. From the 2000 Census it was found that approximately one-third of the residents in the Esther Short neighborhood are below the poverty level, while one-third of the housing units in the Esther Short neighborhood do not have vehicles. The proportion of Esther Short residents under the poverty line has likely been reduced by the construction and occupation of many new housing units, many of which are higher-end condominiums.

Among the five neighborhoods with the highest percentages of population below poverty level (Rose Village, Hough, Central Park, Esther Short, Hudson's Bay), three of those neighborhoods (Hough, Central Park, and Esther Short) also have the highest percentage of housing units with no vehicles.

Among the two neighborhoods with the lowest percentage of population below the poverty level (West Minnehaha 11 percent, Lincoln 10 percent), West Minnehaha also has the lowest percentage of housing units with no vehicle (6 percent).

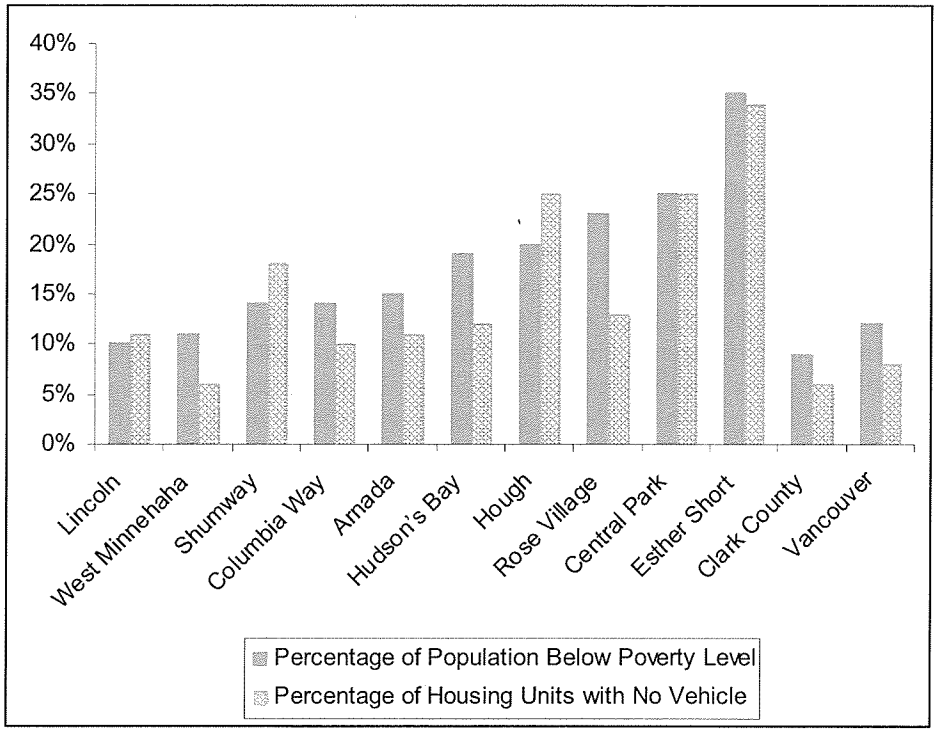
Exhibit 4-5 shows the rates of low-income population and households with no vehicle for the neighborhoods discussed above. The relationship between vehicle ownership (and consequently transit dependence) and income is shown in Exhibit 4-6, which charts the percentage of low-income households and households with no vehicle for Vancouver.

Exhibit 4-5. Correlation between Vehicle Ownership and Income in Washington Neighborhoods

	Percentage of Population Below Poverty Level	Percentage of Housing Units with No Vehicle
Lincoln	10	11
West Minnehaha	11	6
Shumway	14	18
Columbia Way	14	10
Arnada	15	11
Hudson's Bay	19	12
Hough	20	25
Rose Village	23	13
Central Park	25	25
Esther Short	35	34
Clark County	*9*	*6*
Vancouver	*12*	*8*

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Tables P7 and H44.

Exhibit 4-6. Charted Correlation between Vehicle Ownership and Income



All of these neighborhoods have a higher percentage of housing units with no vehicles than the county or city, with the exception West Minnehaha. The West Minnehaha neighborhood has the same percentage of housing units without vehicles as the county.

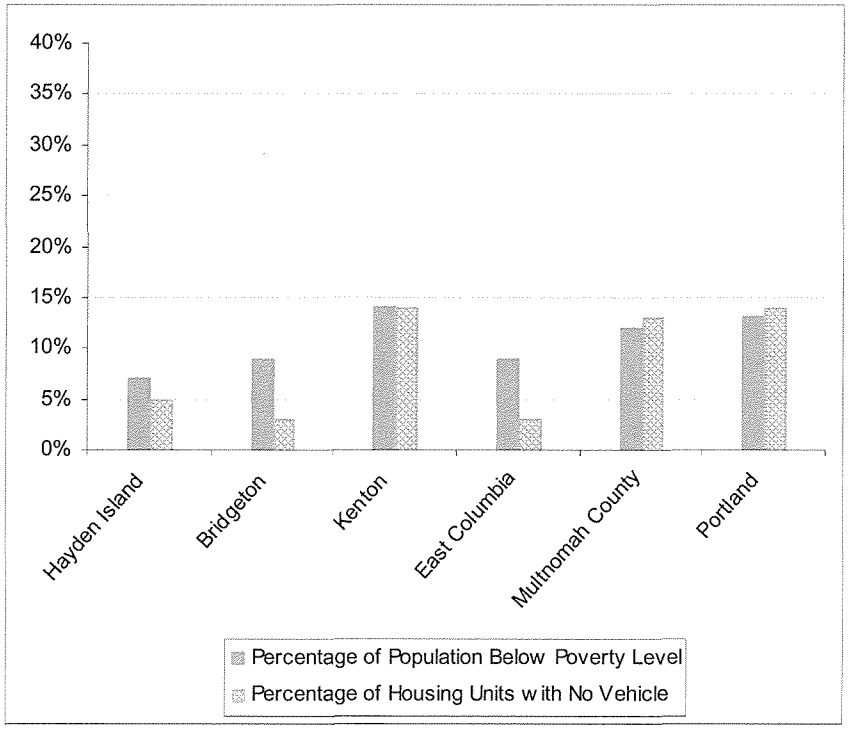
The correlation between poverty level and car ownership is similar for the neighborhoods in the Oregon portion of the API (Exhibit 4-7 and Exhibit 4-8). The Hayden Island and Bridgeton neighborhoods have a lower percentage of population below the poverty level and a lower percentage of housing units with no vehicles than either Multnomah County or Portland. The Kenton neighborhood, on the other hand, has very similar percentages compared to Portland and slightly higher than rates in Multnomah County.

Exhibit 4-7. Correlation between Vehicle Ownership and Income in Oregon Neighborhoods

	Percentage of Population Below Poverty Level	Percentage of Housing Units with No Vehicle
Hayden Island	7	5
Bridgeton	9	3
Kenton	14	14
East Columbia	9	3
Multnomah County	**12**	**13**
Portland	**13**	**14**

Source: U.S. Census Bureau, 2000. Summary Tape File 3, Tables P7 and H44.

Exhibit 4-8. Charted Correlation between Vehicle Ownership and Income, Portland



National surveys and research have found low-income populations to be, proportionately, more frequent users of transit. Data regarding vehicle ownership and income level, taken from Vancouver, Portland, and Clark County, suggests that the greater dependence on transit is also likely for this project area. Because the LPA provides a permanent light rail connection to Vancouver, it will increase transit options and availability to this population.

4.9.6 Additional Impacts

The project would also have the following beneficial impacts:

- Improved response times for emergency service vehicles where highway travel times are improved.
- Increased economic development opportunities near the Interstate and near transit stations with commercial, industrial, or mixed-use zoning, and jobs related to construction of new facilities.
- Improved noise levels over existing conditions and the No-Build Alternative.
- Improved Air Quality over existing conditions.

4.10 Transit Maintenance Base Options

The construction of light rail transit into Vancouver would require an expanded maintenance station in Gresham. TriMet's existing Ruby Junction maintenance base in Gresham would be expanded to support the extra light rail service under the LPA. The expansion of the current Ruby Junction maintenance facility would require the full acquisition of 14 parcels, and the partial acquisition of one parcel. This partial acquisition would be required for the construction of a cul-de-sac and would not displace the use on the property. In many cases there appear to be multiple uses occurring on a single property. Within the 14 displacements, nine residences and eight businesses will be displaced to make room for this expansion.

Census data for the area surrounding the site indicate that 55 percent of residents are minority and 35 percent have incomes below the poverty line. Given these data, initial observations indicated that the expansion of the Gresham maintenance facility could result in a disproportionate impact to low-income or minority populations.

The CRC project team surveyed the properties that will be displaced or partially displaced by the expansion at Ruby Junction to determine whether those impacted by the project match the demographic characteristics of population in the area. The survey shows that the nine occupied residences that will be displaced differ somewhat from the characteristics of the census tract data and more closely resemble those Multnomah County. Only three of the nine residences (or 33 percent) reported Hispanic or Latino ethnicity. One residence indicated some other race alone, and five indicated Caucasian race. Additionally, only two of the nine residences (or 22 percent) potentially earn incomes below the poverty level, based on the number of occupants in the household and the total annual income reported. The survey indicated there are six people between 0 and 18 years of age, 17 people between 19 and 64 years of age, and three people age 65 and older living in the Ruby Junction residences.

These surveys indicate fewer EJ populations will be impacted than would be expected from the Census data. However, Exhibit 4-9 shows that compared to the secondary API or Multnomah County population data, the minority composition is a little more than a third higher than the county and approximately 22 percent higher than the secondary API. The proportion of the low-income population in Rockwood is nearly double that of Multnomah County and approximately 46 percent higher than the secondary API. These findings indicate that, when assessed in

isolation, the displacements at Ruby Junction are disproportionately impacting EJ populations. However, the combined displacements for the project do not represent a disproportionate impact. With proper mitigation (Section 6.1) impacts to Ruby Junction residents are not expected to be high.

Exhibit 4-9. Minority and Low-Income Populations

Area	Rockwood	Multnomah County	Secondary API
Percent Minority	33%	24%	27%
Percent Low-Income	22%	12%	15%

4.11 Tolling

Under the build alternatives, all motor vehicle users on the I-5 crossing would pay a toll. Open road tolling (ORT) technology would be used. ORT allows the collection of tolls without the use of lane dividing barriers or tollbooths. With ORT, users are able to drive through at highway speeds without having to slow down at barriers or to physically pay a toll at the time of use. Full use of ORT eliminates the need for toll plazas.

Tolls would be collected through the use of transponders affixed to vehicles. Motorists would establish a pre-paid account for their transponder. For those vehicles without a transponder, license plate images would be scanned and users would be mailed a bill. Due to the added operational cost associated with license plate scanning and bill collection, vehicles without transponders would pay a higher toll rate than vehicles with transponders.

Exhibit 4-10 summarizes the tolling rate structure for the LPA. Tolls would be administered for both directions of travel along I-5, e.g., a vehicle with a transponder traveling southbound across the bridge at 9 a.m. and then northbound across the bridge at 5 p.m. would pay a total of $4.00 in tolls. The toll rates are based on year 2006 dollars and have been assumed to increase at 2.5 percent per year, an assumed long-term inflation rate. The decision on toll rates and system structure will be made by the two state legislatures.

Exhibit 4-10. Toll Rate Structures Used for Evaluation

		Passenger Car		Trucks with Transponders		Trucks w/o Transponders	
Start	End	w/Transp	No Transp	Med Truck	Heavy Truck	Med Truck	Heavy Truck
Midnight	5:00AM	$1.00	$2.00	$2.00	$4.00	$3.00	$5.00
5:00AM	6:00AM	$1.50	$2.50	$3.00	$6.00	$4.00	$7.00
6:00AM	10:00AM	$2.00	$3.00	$4.00	$8.00	$5.00	$9.00
10:00AM	3:00PM	$1.50	$2.50	$3.00	$6.00	$4.00	$7.00
3:00PM	7:00PM	$2.00	$3.00	$4.00	$8.00	$5.00	$9.00
7:00PM	8:00PM	$1.50	$2.50	$3.00	$6.00	$4.00	$7.00
8:00PM	Midnight	$1.00	$2.00	$2.00	$4.00	$3.00	$5.00

4.11.1 Research on Tolling and Equity Issues

Tolling could have adverse impacts and could also bring benefits to low-income populations. The CRC project team reviewed the available research to inform the environmental justice impact evaluation. Several academic studies have been conducted on equity and tolling. WSDOT also conducted research on tolling equity for various projects. This research included reviews of case

studies of tolled facilities throughout the United States that employ a variety of tolling schemes. The LPA will be used by residents of both Oregon and Washington. Commuter patterns and tax structures between the states differ, making evaluation of equity issues challenging. Some of the common findings of previous studies on equity issues in tolling are highlighted below.

Congestion on highways increases travel time for all road users. Overuse of roadways represents a collective inefficiency, as well as a loss of time and an increase in costs to those who use the congested roads. Congestion can also increase levels of air pollution and traffic accidents. Congestion pricing (variable tolling rates) creates an incentive for drivers to switch their travel times, routes, or modes in order to avoid or reduce the additional cost. The result can be reduced traffic and faster commutes for those drivers most willing to pay.

In "International Experiences with Congestion Pricing," Anthony May (1993) considers the equity component of congestion pricing. He cites older studies which argue that congestion pricing is a regressive measure that has greater impacts on lower-income drivers, but indicates this population is more likely to travel by bus or foot. May concludes that the most inequitable effects are dependent on the pricing scheme implemented and would likely impact a small percentage of lower-income drivers. He suggests that the only way to address the issue of equity is to invest some of the toll revenue in public transport rather than solely to improve the road infrastructure. With the LPA, tolling revenues will be used for transit as well as bike and pedestrian facilities.

WSDOT published the Washington State Comprehensive Tolling Study Final Report in September 2006, which included Background Paper #4 – Equity, Fairness, and Uniformity in Tolling. The tolling report included a review of national policies on equity and fairness, including the following:

- Civil Rights Act of 1964;
- National Environmental Policy Act of 1969;
- Federal Aid Highway Act of 1970;
- Civil Rights Restoration Act of 1987;
- Executive Order 12898 of 1994; and
- U.S. Department of Transportation implementation actions.

A review of these policies includes a range of concepts regarding equity and fairness and the difficult questions that arise in implementation of equitable and fair projects, particularly for toll roads. Tolling projects are usually subject to public opposition, based in part on perceptions of inequities, although there is limited technical data to support these claims.

The following types of equity issues were identified in the Washington tolling study:

- Geographic equity or distribution of improvements.
    - For the LPA, an analysis was conducted of the users of the proposed transit, roadway, and bike/ pedestrian facilities, and the demographics of these populations.
- Income equity or distribution of negative impacts on disadvantaged populations.
    - The CRC project team assesses the EJ implications of numerous project impacts throughout this report.
- Participation equity or lack of representation of disadvantaged populations in the planning and decision process.

- Please refer to Section 2.5 for an overview of the robust outreach and coordination with potential EJ communities.

- Opportunity equity or distribution of benefits based on cost recovery.
  - For the LPA, an analysis was conducted of the travelshed, bridge users, and the demographics of these populations. See Section 3.2.9 for an analysis of the distribution of benefits throughout the travelshed.

- Modal equity or the appearance that the project will have negative impacts on multi-modal transportation options.
  - Because the LPA extends light rail transit into Vancouver, greatly improves bike and pedestrian conditions, and improves roadway conditions for local buses, it can be asserted that there will not be negative impacts to multi-modal options.

The study identifies some situations that potentially may be burdensome on lower-income populations. These include the exclusive use of electronic tolling without measures to minimize financial hardships (requirement of credit cards or checking accounts), tolling an existing non-tolled roadway in such a way that requires greater out of pocket costs for lower-income populations, and allowing an "ability to pay" determination to influence the decision to provide transportation improvements in lower-income populations.

WSDOT conducted earlier research on tolling equity issues for the SR 520 Bridge Replacement and HOV project (WSDOT 2006). This research addressed equity issues surrounding HOT lanes used in conjunction with adjacent non-tolled lanes. WSDOT concluded that some of the findings from these studies could apply to equity issues pertaining to a fully tolled facility. Findings from this research are listed below:

- The Colorado Department of Transportation found that equity and income issues are not obvious and public opinion is favorable when adequate information about avoiding tolls by taking public transit or carpooling is provided (Ungemah 2004).
- Orange County, California found that drivers with higher incomes use the toll lanes on SR 91 for a proportionately greater number of trips (Sullivan 2004) possibly suggesting that cost or difficulty with purchasing transponders may inhibit or discourage lower income travelers from using the tolled facility. The study found that while income is a moderately influencing factor for using the tolled road, drivers are much more influenced by current traffic conditions on the non-tolled road and personal trip needs.
- The Puget Sound Regional Council (PSRC 2005) noted that community EJ leaders stressed that increased access to transit is critical to offset impacts of tolling on SR 520, and that electronic toll collection could represent a difficult hardship to lower-income populations.

In addition to review of these studies, the SR 520 Bridge Replacement and HOV Project Environmental Justice Report (WSDOT 2005) identified conclusions from its public outreach program, which correlated with the concerns noted by the PSRC. The report outlined how transportation improvements benefit users through safety, reliability, and mobility improvements. It also addressed improved benefits to pedestrians and bicyclists, as well as other benefits including improved response times for emergency vehicles, improved regional air quality, and improved water quality due to better stormwater treatment. The report identified alternatives to funding. It also identified likely impacts to low-income users and evaluated whether these impacts would be disproportionately high and adverse. Mitigation measures were identified, such as outreach to inform low-income users about changes they might face, subsidies or financial

assistance to purchase transponders, accessible toll collection and monitoring to ensure effectiveness of mitigation measures.

It should be noted, however, that tolling schemes to provide needed improvements to infrastructure would supplant existing revenue generation methods, which are also largely regressive. The 2009 University of Washington research cited in Section 2.4.3 agreed that the existing system of road financing is regressive. The report cited a research paper by Genevieve Giuliano which found five of the six taxes supporting the existing highway system are themselves regressive (Giuliano 1994).

Giuliano found that, when also considering the value of time, average-distance (10-mile each way) drivers, both poor and middle-income who pay the charge and keep driving, come out slightly ahead of where they would have been without the charge. Drivers who switch to another mode or choose to carpool also come out ahead, even if the carpool has to pay full congestion charges. The only category of driver found to lose heavily from congestion charges are long-distance middle-income (and presumably low-income, though these are not calculated separately) commuters who do not switch to bus or carpool. These are the drivers who would, continue to drive a crowded route during the AM or PM peak period, twice a day, every mile of it fully charged.

It should also be noted that the income from most jobs which require a five-day work week, and typical business hours, would lift a single person, or a small family, above the poverty level. In other words, few drivers who are commuting daily, during peak hours, are below the poverty level, and thereby addressed by Executive Order 12898, on Environmental Justice. For example, an employee working even minimum wage ($8.55 in Washington State), full-time, has an annual income of $17,784. This income would raise an individual above the poverty line, even if that individual was the only wage earner and had a dependent child. With two children the poverty level is slightly higher, at $18,310.[13]

More recently, WSDOT conducted in-depth review and analysis of tolling impacts to EJ populations for its Urban Partnership SR 520 Variable Tolling Project and published the Environmental Justice Discipline Report in March 2009. Some of the benefits of tolling found in that study are described below.

4.11.2 Benefits of Tolling

There are two ways in which project operation will benefit all users, including low-income, minority, and English Second Language populations:

- All I-5 bridge drivers, including low-income, minority, and LEP drivers, will benefit from increased speeds and trip reliability as a result of fewer cars on the bridge.
- All transit users who cross the I-5 bridge, including low-income, minority, and LEP riders will benefit from improved transit speeds, reliability, and accessibility.

Specifically related to EJ populations, focus group interviews of low-income drivers for the Urban Partnership SR 520 Variable Tolling Project indicated that many low-income drivers believed that a $3.50 toll would be worth it for a faster, more reliable trip. This is consistent with other studies on the equity of HOT lanes, which also found that many lower income people

[13] According to 2009 Federal Poverty Guidelines

supported congestion pricing if it ensured a faster, more reliable trip.[14] Researchers hypothesized in these studies that lower income people who worked for hourly wages or depended on child care would choose to pay a toll to avoid losing wages or paying high late fees at their child care facilities. For many lower income people who are juggling multiple jobs and child care, traffic delays may pose an even bigger burden than a toll (WSDOT 2009).

Some low-income populations drive because they live in outlying areas with lower housing costs, but insufficient transit service. Others hold jobs that are not accessible by transit. The National Household Travel Survey found that increasing numbers of low-income individuals are auto-dependent (Loveless 2006). The addition of high-capacity transit not only improves transit service and provides a much more reliable transit option, it also is accompanied by additional park and ride facilities that can be used by people who want to use transit, but are dependent on private automobiles for a portion of their trip.

4.11.3 Burden of Tolling on Low-Income, Minority, or LEP Populations

Tolling the I-5 bridge will not affect minority populations differently than the general population. However, there are two principal ways in which tolling will adversely affect low-income or LEP populations if not mitigated. Section 6 of this technical report describes recommended mitigation strategies.

- **Cost of Tolling:** The cost of the tolls could present a burden to low-income bridge users.
- **Method of Payment:** Bridge users may choose to purchase a transponder and set up an account to pay the toll, or have their license plate automatically photographed and receive by mail a bill for the toll with a surcharge added. Both options, without the recommended outreach and mitigation will present a burden to low-income and limited-English proficient bridge users.

4.11.4 The Cost of Tolling

Depending on the transportation choices made, tolling could increase a low-income household's transportation costs. The toll will be the same amount for all users, regardless of income, which means that low-income users will have to spend a higher proportion of their income on the toll. To illustrate this, consider two fictional commuters who drive alone across the CRC bridge five days a week, 50 weeks a year. The first commuter earns $65,000 a year. The second commuter earns $18,000, which is below the poverty level for a family of three. If the toll is $1.50, both commuters will spend roughly $750 a year on tolls. This represents only slightly more than 1 percent of the higher-income driver's income, but slightly more than 4 percent of the low-income driver's income.

The FHWA method of assessing such an impact, defines an EJ impact as one that is not just disproportionate, but is "appreciably more severe"[15] for EJ populations. The analysis for the LPA has concluded that there are alternatives to avoid the toll and minimize it, because of the very small numbers of impacted commuters under the poverty level, and because the toll provides

[14] Note that in most HOT lanes studies, low-income was defined as populations with household incomes under $35,000, which is 200% or more of federal poverty thresholds. Because NEPA defines low-income as populations with households at or below federal poverty thresholds, populations in the HOT lanes studies are referred to as "lower income".

[15] FHWA Actions to Address Environmental Justice in Minority Populations and Low-income Populations. December 2, 1998. 6640.23 2. G. (2).

funds for the extension of high capacity transit as well as substantial improvements to the bike and pedestrian networks.

WSDOT has studied how this cost impact is perceived by low-income drivers. In these studies, many respondents indicated that the tolls would be a burden to their families. Several social service agencies that were interviewed by the SR 520 and Tolling Implementation Committee outreach teams echoed these concerns.

For SR 520, WSDOT found that while some low-income focus group and interview participants will forgo the trip or take an un-tolled route rather than pay the toll, others will give up other expenditures to pay the toll because they do not feel that they have a better choice. Focus group and survey participants indicated transit in the SR 520 areas was not a viable alternative for them, as service is infrequent, unreliable, requires several transfers, or takes too much time. They also indicated that using an un-tolled route is not a good option, as it would add substantial time and expense.

According to WSDOT's SR 520 telephone survey, nearly 51 percent of low-income respondents said they would not use transit to avoid paying the toll. More than 53 percent of those who said they would not use transit indicated that transit service is not frequent enough on their routes. Nearly 56 percent said they live or work too far from transit. Of those low-income respondents who said they would use transit to avoid paying the toll, 63 percent said that it would greatly increase their travel time. These results for transit would likely be different for the Portland-Vancouver Metropolitan Area, especially with the introduction of light rail crossing the river. As shown in Exhibit 2-2, the Census Tract Block Group with the highest percentage of low-income residents in the project area (CT 0424, BG 001) will, with the LPA, have a new light rail transit station.

Un-tolled routes were a more desirable alternative to paying the toll for survey respondents. More than 64 percent of low-income respondents said they would use an un-tolled route if they wanted to avoid paying the toll. However, of those low-income respondents who said they would use an un-tolled route, 67 percent said it would greatly increase their travel time. Nearly 97 percent said it would greatly increase their travel distance, which would add to the cost of their trip in the form of wasted fuel and wear and tear on their vehicle.

As stated above, tolling schemes would supplant existing revenue generation methods, which are also largely regressive (Giuliano 1994). However, revenue generation schemes, such as sales tax and gasoline tax, which have become commonplace, are less subject to popular criticism than a newly proposed toll. For large public projects, such as the CRC, public opinion is critically important. The Washington State Comprehensive Tolling Study, Background paper #4 states: "Public Opposition has been the overriding factor in tolling projects that have failed to come to implementation, rather than a technical evaluation of equity." (WSTC 2006). In a study prepared for the Washington State Transportation Commission, public opinion was found to be generally supportive of tolls, even when asked about equity issues. Respondents asked about fairness to lower income groups indicated that tolls were fairer than increased gas taxes (Lawrence 2006).

4.11.4.1 Method of Payment

Highway users will either have to travel to a customer service center to set up an account or pay a surcharge on their toll when they are billed by mail. According to the telephone survey results, more than 25 percent of low-income respondents in the SR 520 project indicated that they would not be able to use a credit, debit, or checking account to prepay their account (WSDOT 2009). Similar conditions may exist for CRC.

Furthermore, coming up with $30 to put toward the pre-paid account may be difficult for low-income drivers. The system could also limit access to the new bridge for LEP populations, who may also have difficulty understanding how to purchase a transponder and set up an account.

Existing electronic toll collection systems with transponders present various hurdles for low-income users. One must normally either pay a deposit or link the account to a credit card or bank account (Parknay 2004). Some low-income populations may not be able to purchase a transponder (Parknay 2004). Not being able to purchase a transponder due to large set-up fees or lack of a credit card and bank account would potentially be an adverse impact on those low-income populations affected. A similar barrier may exist when new tolls are instituted in areas where some groups and individuals lack the English language skills to understand the complex tolling system. The impacts could be mitigated with a program established specifically to communicate with these populations and provisions to allow the use of Electronic Benefit Transfer (EBT) cards which are issued for social service program benefits.

MDX SunPass Direct

The SunPass transponder for paying tolls was first accepted on the Miami-Dade Expressway (MDX) in 1999, and currently two out of three drivers on MDX roadways pay for their tolls using a SunPass transponder. In addition to the ease of use, the SunPass transponder saves about 20 percent of the toll each time it is used. Personal Accounts can be established on-line, by phone, mail, fax, or in person at the Customer Service Center in Boca Raton. Information and forms are available in English and Spanish.

The MDX has created the SunPass Direct program to issue a limited number of free SunPass transponders to low-income Miami-Dade County residents.

Illinois Tollway, I-PASS

I-PASS transponders are sold for $50, which includes a $10 refundable deposit and $40 in pre-paid tolls. Purchasing I-PASS at 200 Jewel-Osco stores in Northern Illinois, Kenosha, Wisconsin and Northwest Indiana is the most popular and easiest way for Illinois Tollway customers to get a transponder. In addition, I-PASS is available at select Travel Mart convenience stores and seven Road Ranger Travel Centers. I-PASS transponders also can be ordered online at www.getipass.com or by calling.

The Illinois Tollway launched the I-PASS Assist program in coordination with the Illinois Secretary of State Jesse White, the Department of Aging and the Department of Public Aid. The I-PASS Assist program uses income-eligibility criteria, based on those used in the State's Circuit Breaker and Medicaid programs, to qualify people who can purchase an I-PASS at a reduced rate of $20, $10 for deposit and $10 in pre-paid tolls. Drivers with I-PASS Assist transponders are required to replenish their pre-paid toll accounts in increments of at least $20 to avoid toll violations. I-PASS Assist drivers opting to replenish manually need to maintain a $10 minimum account balance and can make cash or check payments of $20 at the Illinois Tollway headquarters, check payments through the mail, or credit or debit card payments by phone.

4.11.5 Conclusions and Implications for the LPA

This section has discussed potential impacts for tolling the bridges based on an assessment of the benefit of tolling, a travelshed/demographics analysis of benefit equity, and the specific burdens of tolling on EJ populations. For most low-income populations, the impact of tolling would not be highly adverse due to the project benefits and the options to avoid the toll (e.g. transit) or minimize the toll's impacts (e.g., carpooling). The effect would not be *predominantly borne by* an

EJ population, and has not been found to result in an *appreciably more severe* impact to these populations for the following reasons:

1. There are viable options to avoiding the toll.
2. The benefits of improvements to trip reliability and speeds will offset the burden of the tolls.[16]
3. There is no indication that the improvements funded by the toll disproportionately benefit higher income or non-minority populations.
4. Revenues from tolling will contribute to the completion of the project and each of its modal improvements. Because low-income populations tend to use transit at a higher rate than the general population, improvements in transit speeds and reliability will offset the burden of the tolls.

Tolling on the CRC project will not cause disproportionately high and adverse impacts to EJ populations. The acquisition of tolling transponders has the potential of causing an adverse and disproportionate impact, though is easily minimized or mitigated as suggested in this report.

[16] While it is important to note that many low-income people will benefit greatly from a faster, more reliable trip, environmental justice principles hold that to offset a disproportionate adverse effect to low-income populations, the benefit also needs to disproportionately affect low-income populations. In this case, the benefits of a faster, more reliable trip apply to all people and not just low-income populations.

5. Temporary Effects

Construction of any of the project alternatives would require many years, with intensive activities lasting from a few months to 1 or more years in different segments of the corridor. Construction has the potential to be very disruptive in some locations. Construction impacts especially important to EJ populations include increased congestion, reduced mobility, reduced transit service, increased response time for emergency services, and increased noise. Specific impacts in these areas are described in detail in the respective Technical Reports (Noise and Vibration, Transportation, Public Services, etc.).

Temporary congestion during construction may have an impact on the EJ populations in the project area and the organizations that serve them. These populations and organizations are heavily reliant on transit, whose service could be affected by construction-related congestion.

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6. Mitigation

Impacts to EJ populations may occur, as they will for many persons in the API. Many of the adverse impacts can be avoided, minimized, and mitigated. Discussions with service providers for EJ populations and in other public involvement forums will refine potential solutions to the identified adverse impacts.

6.1 Potential Mitigation for Long-term Impacts

The following discussion addresses potential mitigation that would be common to all build alternatives.

Some potential mitigation measures are specific, such as providing required relocation services to EJ populations. Other solutions are more general. These include maintaining access to transit, provisions for emergency services, and access for deliveries and employees. While not all impacts can likely be resolved, they can be minimized and substantially avoided. Where impacts cannot be avoided, mitigation would be developed based on the specific needs of the affected EJ population or community.

Most aspects of mitigation for property acquisition are addressed by federal and state regulations, which require that property be purchased at fair market value and that all residential displacements be provided with replacement housing and/or relocation assistance. Federal and state guidelines, such as the Uniform Relocation Act, determine the standards and procedures for providing such replacement housing, based on the characteristics of individual households. Relocation benefit packages usually include replacement housing for owners and renters, moving costs, and assistance in locating replacement housing.

Floating homes will be treated as real property unless it is determined there are sufficient replacement sites to which the floating homes can be economically relocated. If the planned Relocation Study determines that sufficient replacement sites are not available, the floating homes will be purchased at fair market value and the occupants will be provided relocation assistance which may include payments, if necessary, to acquire decent, safe and sanitary replacement housing. A search of the active listings in September 2009 showed there were approximately 120 housing units listed in the project area. Of that number, there were 40 floating homes, 6 boat houses, 38 condos, and 36 conventional homes. This does not include private listings. Considering that some of the occupants will choose to leave the project area, it appears there is a sufficient supply of replacement housing in the project area.

Relocation benefits for businesses can include moving costs, site search expenses and business reestablishment expenses. As with residential displacements, relocation packages are determined on an individual basis based on ownership or tenant status. In general, an attempt would be made to minimize relocation impacts to residences, businesses, and public facilities. Eligibility and terms of relocation assistance will be determined during future project planning. For residents with low-income or special circumstance, DOT relocation program may include housing assistance.

Displacement of residents and community resources could be mitigated by exploring relocation options within their neighborhoods. This could mitigate the impact to the residents and avoid the loss of these resources to their communities.

6.1.1 Mitigation for Displacement of EJ Populations in Rockwood

Although all relocations must follow the process and laws described above, the nature of some of the displaced residences and businesses at the Ruby Junction maintenance base expansion in the Rockwood neighborhood of Gresham may require special consideration. Several of the properties being impacted house both an industrial type business and a residence. This unique setting allows for small industrial business owners to live and work at the same location, which may not be possible after standard relocation to a new neighborhood. The project could provide commute assistance if no suitable site will allow for a similar home occupation or support for development of a new home occupation where appropriate.

6.1.2 Mitigation for Traffic Impacts

Cities of Portland and Vancouver and/or ODOT and WSDOT, would monitor traffic operations and pursue the following mitigation measures recommended under the LPA. Many of these measures would likely not be needed at project opening.

- Monitor and adjust ramp meter rates
- Prohibit on-street parking during peaks
- Add turn pockets at needed locations (e.g. a southbound right turn lane at 15th and Columbia Streets)
- Alter traffic signal timing (e.g., operate Mill Plain interchange signal timing in isolation versus coordination)

6.1.3 Mitigation for Noise

Transit noise impacts to residences can be mitigated using residential sound insulation.

Traffic-related noise impacts may be mitigated depending on whether or not the decibel level exceeds FHWA and State standards for mitigation. New sound walls or the replacement of old sound walls have been recommended near residences and other noise-sensitive locations. Since these walls through a mitigation measure are generally considered to be part of the project, the noise impacts with these proposed walls are discussed in Chapter 4 of this report.

6.1.4 Mitigation for Loss of Service Industry Jobs

The direct impacts on Hayden Island, and to a lesser extent in Vancouver, have the potential to significantly affect wage-earning opportunities for those seeking service industry employment. Some of these displaced businesses may choose to not relocate locally. The adopted Hayden Island Neighborhood Plan, as well as the expressed plans of the SuperCenter property owners, call for major redevelopment on the island, combining a regional commercial center with a "Lifestyle" mixed use shopping district. These plans will likely later materialize and provide many new service industry jobs on the island. In fact, the redevelopment of the island will be facilitated by the project's improved highway access, local street system, and light rail station.

There are measures that could be taken to assist local residents whose jobs are displaced during construction. Many large public projects in the region set goals for hiring local contractors, utilizing apprenticeships, and otherwise cooperating with job training programs. The City of Portland has requirements for City projects that pertain to both of these measures as well as the hiring of minority, women-owned, emerging, and disadvantaged businesses. The project should adopt similar goals for construction contracting. WSDOT and ODOT should include innovative

requirements in its construction contracting and contractor selection, with the intent of providing job training and a preference for local services.

Workforce practices can be used to provide experience and business for disadvantaged workers and companies. For instance, apprentices can be used for a percentage of labor during construction. Alternatively, the project could set a goal for the percentage of construction dollars contracted to DBE firms with a focus on those in within the project area.

Some of the displaced businesses on Hayden Island may choose to not relocate locally and some employees will be displaced during construction. Many large public projects in the region set goals for hiring local contractors, utilizing apprenticeships, and otherwise cooperating with job training programs. The City of Portland has requirements for City projects that pertain to both of these measures as well as the hiring of minority, women-owned, emerging, and disadvantaged businesses. The project would adopt similar goals for construction contracting. A monitoring and evaluation program will be necessary to track these measures through final design, construction, and operation for the facilities to ensure the benefits of promoting participation from minority-owned businesses are realized.

Lastly, the project would work with TriMet to maintain the existing bus service that regularly connects Hayden Island with nearby grocery and other retail services. This may include additional routing on the island to provide greater transit access during construction. WSDOT and ODOT would also work with TriMet to maintain paratransit service for qualifying, mobility impaired Hayden Island residents.

6.1.5 Mitigation for Displacement of Safeway Bottle Return Center

The displacement of the Safeway also displaces a tremendously active bottle return center. This bottle return center provides an opportunity for community members to generate a small amount of income, which may supplement other employment or may constitute some individuals' sole means of making a living. Though it may be difficult to enforce, the Safeway store has a limit of $7.20 in returns, per day per patron. The project would provide some written and posted guidance before the closure of the Safeway return center. The guidance would provide community members with alternate bottle-return locations, and directions for getting to these locations. In the event that there would be no other return center on the island, WSDOT and ODOT should work with an appropriate business site to provide such.

6.1.6 Mitigation for Impacts from Tolling

Specific measures would be considered to mitigate any adverse impacts that tolling could potentially have on EJ populations. The measures fall into the categories of outreach, assistance, accessible toll collection methods, and monitoring. Additional mitigation may be needed if I-205 is tolled or if a regional tolling system is implemented. Inclusive, early public involvement could be implemented so that people can make choices based on the knowledge that transportation costs will increase if they use the I-5 bridges. Before and after the toll facility opens, ODOT and WSDOT would provide information on how to obtain transponders, and how to receive transportation assistance.

Options for improving low-income drivers' access to the transponders include:

- Locate venues for acquiring transponders near to lower income neighborhoods. The project will partner with public agencies and public service providers to identify locations which are convenient to low or lower income neighborhoods and are accessible by multiple modes of travel.

- Enabling people without credit cards or checking accounts to obtain transponders by paying with cash or EBT (Quest) cards issued by DSHS.
- Share information with and through other public service providers.
- Include rideshare opportunities such as those in CarpoolNW.com and vanpool providers.

6.1.7 Public Outreach

In addition to mitigating specific impacts, general public outreach and involvement will continue, particularly with EJ populations. CEJG will continue to work together as the project moves towards construction (See Section 2.5 for additional information on public outreach and involvement).

6.2 Mitigation for Temporary Impacts

Temporary property acquisitions (construction easements) may occur on Hayden Island, due to construction of both the transit and highway alignments. The construction team will meet with property owners that would be affected by the temporary acquisitions to discuss details of the acquisition, such as duration of the acquisition as well as an operating schedule. For other mitigation measures for construction easements, are discussed in the Economics Technical Report.

Residents of Hayden Island are likely to experience noise and vibration impacts due to construction equipment, vibratory compaction equipment, and pile driving during bridge construction. Residents living in floating homes may be particularly susceptible to noise and vibration impacts due to their close proximity to both the highway and transit alignments. The construction team will comply with appropriate noise abatement measures. Potential measures are described in the Noise and Vibration Technical Report.

Air quality may be affected on Hayden Island due to emissions from construction equipment. Residents living in floating homes and the mobile home park may be particularly susceptible to air quality impacts due to their close proximity to both the highway and transit alignments. Construction impacts to air quality could be minimized through measures discussed in the Air Quality Technical Report.

Construction activity for the highway and interchanges is expected to result in traffic delays on I-5 during construction. Depending on schedules and phasing, such delays could have greater impact on Hayden Island residents as they have no other access to the island. Construction impacts to transportation could be minimized through measures discussed in the Transportation and Transit Technical Reports.

Construction activities may have an adverse impact on commercial and public service activities in downtown Vancouver. Construction impacts could be minimized through measures discussed in the Economics, Public Services, and Neighborhoods Technical Reports. Additionally, safe and accessible pathways could be maintained especially near public housing, senior housing, and public services.

7. Summary of Impacts and Final Determination

The preceding section has documented impacts to neighborhoods and Environmental Justice populations and has summarized the outreach related to these impacts. It can be challenging to differentiate whether a specific impact should be characterized as a social/ neighborhood impact, an impact to a protected group under Title VI, or an EJ impact. This section will differentiate among these.

Neighborhood impacts include impacts to social cohesion, neighborhood connectivity, and other issues which are not specific to any particular income, race or other group. Title VI related impacts include those impacts which are specific to a protected population under the Civil Rights Act. It has been FHWA's and FTA's longstanding policy to actively ensure nondiscrimination under Title VI of the 1964 Civil Rights Act. Under Title VI and related statutes, each Federal agency is required to ensure that no person is excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the basis of race, color, national origin, age, sex, disability, or religion. Some of these populations (such as the elderly) are not covered by the Environmental Justice Executive Order.

The Environmental Justice Executive Order specifically addresses disproportionately high and adverse effects to minorities (including minority races as well as those of Hispanic ethnicity) and low-income populations (those households whose income levels are below the federal poverty guidelines).

- Residential Displacements: For the entirety of the residential displacements, data do not suggest disproportionate/ discriminatory impacts to Title VI populations, nor to EJ populations.
    - Floating homes in North Portland Harbor: Data do not suggest disproportionate or discriminatory impacts to EJ populations.
    - Three floating homes and one multi-family residence (a duplex) on land at Brown's Marina: Data do not suggest disproportionate or discriminatory impacts to Title VI populations, nor to EJ populations.
    - Nine residences adjacent to Ruby Junction Maintenance Facility: Data suggest there to be a high number of minority households (4 out of 9) in this area. Relocation packages will include housing subsidies or other assistance, minimizing what could otherwise be a highly adverse impact.
    - Four residential displacements in the Shumway neighborhood: Data do not suggest disproportionate or discriminatory impacts to EJ populations.
    - Five single family residences in the Arnada neighborhood: Data do not suggest disproportionate or discriminatory impacts to EJ populations.
    - Two residential displacements in Esther Short (one of which is vacant at the time of this reports publication): The property owner has not allowed the collection of demographic data.
- Non-residential Displacements:

- Safeway grocery store and pharmacy on Hayden Island: Data do not suggest any disproportionate impact to EJ populations. However, people with disabilities or mobility limitations, who live near the Safeway, will be impacted as they will need to travel further for these services. However, the project is greatly improving mobility from the island (for all modes of travel). There are other nearby groceries and pharmacies, and the SuperCenter redevelopment plan calls for these services to remain on the island. The displaced bottle return center may impact individuals below the poverty level who use this resource to earn money. However this impact would not be considered highly adverse due to the alternative locations for returns and the minimal daily return-revenue that an individual may receive from this single bottle return center.
- Displacement of service industry jobs: Data suggests that these jobs may be held, disproportionately, by minorities. And though full time employment raises most households above the poverty level, there may be part time employees or employees who are heads of large households with incomes below the poverty level. However, the number of displaced jobs is greatly offset by the jobs generated by redevelopment of the commercial core on the island as well as the 20,000 jobs created by the project. With programs and goals for minority business contracting on the project, these offsets will disproportionately benefit minority contractors and offsets the job losses.

- Other Impacts
  - Increased Noise: Noise impacts at Fort Apartments, Normandy Apartments, and Evergreen Retirement Inn: Noise levels will generally improve with the LPA, but still exceed standards. Data do not suggest disproportionate/ discriminatory impacts to EJ populations as noise impacts will occur throughout the project area.
  - Traffic: There will be numerous improvements to traffic operations, I-5 throughput, the periods congestion, travel times, and transit service. Data do not suggest disproportionate/ discriminatory impacts to EJ populations.
  - Air quality: Air quality will substantially improve with the LPA. Data do not suggest disproportionate/ discriminatory impacts to EJ populations.
  - Payment of tolls: A toll is regressive, costing low-income commuters the same rate as commuters with moderate or high incomes. However, data suggest that daily river crossings are less frequent for low-income households, and that the use of toll revenues for completion of the new bridges (and consequently the extension of light rail transit) substantially offset these impacts.
  - Acquiring tolling transponders: Without mitigation, the acquisition of transponders would be disproportionately challenging for low-income commuters and those with limited English proficiency. The project will mitigate with outreach campaigns, and programs allowing the use of EBT cards for purchases.

Using the methods described in Section 2 of this report, the CRC project team determined the likelihood that the project may have disproportionately high and adverse impacts on EJ populations. Six questions based on guidance from FHWA were addressed and analyzed to help determine impacts. More detailed information on these impacts is provided in Section 4 of this report.

Question 1: Would the project, using any of the alternatives, result in disproportionately high and adverse impacts?

No, it would not. This question provides an overview of the EJ impacts, and incorporates the more specific findings related to the five questions below. The I-5 CRC project would result in a variety of environmental impacts throughout the project area, both positive and negative. This report has documented direct impacts such as property acquisitions as well as secondary impacts such as those related to noise, air quality changes, tolling, etc. For negative impacts, implementation of proposed mitigation measures will eliminate or substantially reduce the negative impacts.

Although impacts to EJ populations would occur, it appears most of them can be avoided, minimized, or mitigated. Some of the initial impacts identified in the DEIS, have already been avoided or greatly minimized. Where impacts cannot be avoided, specific mitigation will be developed and implemented based on the needs of the affected individuals or community:

1. The displacements at Ruby Junction have proportionately higher numbers of EJ households than the API, City and County. The displacements, specific to Ruby Junction, are therefore disproportionate. When project displacements are assessed in total, there is no disproportionality, as low-income or minority households are not being impacted more than other households. Furthermore, the Ruby Junction displacements will be mitigated with a dedicated Relocation Plan.
2. The tolling associated with the LPA will negatively affect some low-income individuals. While these tolls would have to be paid by all drivers using the new bridge, they would represent a proportionally greater expense burden for low-income individuals than for higher-income individuals. Options for avoiding the toll, or minimizing its impact, include traveling by transit, carpooling, or taking an alternate route. The toll will be used to fund positive project impacts to low-income populations including improvements in transit travel times; improvements in auto travel times; improvements in bicycle and pedestrian access; and improved access to regional jobs, education, housing, and services. The benefits of the high capacity transit improvements are of particular benefit to EJ populations.
3. The acquisition of tolling transponders constitutes an adverse and disproportionate impact to low-income EJ populations. However, this impact is not likely highly adverse and would not be with the recommended mitigation. It is particularly important to provide EJ populations with information on how to obtain transponders, means of doing so without bank accounts, locations for acquiring them that are proximate to EJ populations, and potentially with financial assistance.

Question 2: Does the project affect a resource that is especially important to a minority or low-income population? For instance, does the project affect a resource that serves an especially important social, religious, or cultural function for a minority or low-income population?

No, in the DEIS, there was considerable discussion of a potential displacement of the Wellness Center. The Wellness Project in Vancouver is especially important to low-income persons with needs for mental health services. Since the selection of an LPA, and the refinement of its design, the Wellness project is no longer in any danger of displacement.

Overall, low-income housing sites will experience generally improved travel conditions, noise, and air quality with the LPA. No low-income housing sites will be displaced. The displacement of Safeway's bottle return center may represents an adverse impact to low-income persons.

However, with alternate locations for returning bottles, the impact would not be considered highly adverse.

Question 3: Would the project result in disproportionately high and adverse impacts that would be predominately borne by a minority or low-income population?

No, the project will not result in disproportionately high and adverse impacts that would be predominately borne by a minority or low-income population? In Section 4, this report has broken out the residential displacements in great detail and has assessed the potential for noise, air quality and other impacts. None of which have been found to be predominantly impacting EJ households. The displacement of the Safeway also displaces a very active bottle return center. This bottle return center provides an opportunity for community members to generate a small amount of income, which may supplement other employment or may constitute some individuals' sole means of making a living. Many of these individuals could be unemployed, underemployed, transient, and potentially homeless. The bottle return center at Safeway is providing a service to the most economically disadvantaged citizens of the immediate neighborhoods. There are other locations where bottles can be returned on the island and in North Portland. Many of these smaller establishments (such as convenience marts) enforce limits on the number of returns per visit. Some locations, unlike the center at Safeway, require the patron to enter the store and interact with staff. So long as these businesses continue to operate, and that proper access to them is maintained, the displaced bottle return center at Safeway would not constitute a high degree of impact.

Question 4: Would the project result in disproportionately high and adverse impacts on a minority or low-income population that would be appreciably more severe or greater in magnitude than the impact that would be suffered by the non-minority or non-low-income population?

No, there will not be disproportionately high and adverse impacts on an EJ population that would be appreciably more severe or greater in magnitude than would be suffered by the non-EJ population. The impacts related to tolling come the closest to having an *appreciably more severe* effect on low-income households. However, as described in Section 4.11, there are significant offsets, viable toll avoidance options, and other factors to be considered.

Because project's electronic toll collection method requires users to pay large set-up fees or own a credit card or bank account, some low-income populations may not be able to purchase a transponder (Parknay 2004). Not being able to purchase a transponder would potentially be an *appreciably more severe* impact on those low-income populations. The impacts would be mitigated with a program established specifically to provide such assistance.

Question 5: Does the project propose mitigation?

Yes. Please refer to Mitigations in Section 6 of this report.

Question 6: Are there project benefits that would accrue to EJ populations?

Yes, benefits that would accrue to EJ populations include new and reliable high-capacity transit service, improved travel times on I-5, improved vehicle, bicycle and pedestrian travel, and likely improvements in air quality and noise levels (in most locations). The decrease in transit travel time and increase in transit reliability would be a key benefit for all the traveling public, but particularly for low-income people who ride transit proportionally more than those with higher incomes.

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APPENDIX A

Data by Census Block Group

Table A-1. Minority and Low-Income Populations

CT & BG Names	Total Population	Minority	% Minority	Low-Income	Low-Income
Oregon					
CT 21 BG 1	444	121	24%	216	43%
CT 21 BG 2	1,030	232	24%	208	22%
CT 22.01 BG 1	339	271	70%	119	34%
CT 22.02 BG 1	204	91	43%	65	30%
CT 23.01 BG 1	663	212	37%	78	15%
CT 23.01 BG 2	947	526	54%	303	31%
CT 23.01 BG 3	1,068	589	60%	422	43%
CT 23.02 BG 1	1,189	410	34%	202	17%
CT 24.01 BG 1	654	170	25%	12	2%
CT 24.01 BG 2	736	141	22%	52	8%
CT 24.01 BG 3	771	229	28%	109	14%
CT 24.01 BG 4	517	276	42%	9	1%
CT 24.02 BG 1	1,144	338	30%	181	16%
CT 24.02 BG 2	1,002	172	16%	70	7%
CT 24.02 BG 3	938	229	23%	109	11%
CT 25.01 BG 4	712	36	5%	8	1%
CT 25.02 BG 3	1,284	399	32%	152	12%
CT 25.02 BG 4	1,083	173	16%	149	13%
CT 33.01 BG 2	1,157	873	82%	479	45%
CT 33.01 BG 3	1,033	749	80%	262	28%
CT 33.02 BG 1	1,126	447	38%	230	20%
CT 33.02 BG 2	1,356	846	61%	277	20%
CT 34.01 BG 1	681	379	58%	95	15%
CT 34.01 BG 2	903	640	71%	215	24%
CT 34.01 BG 3	768	450	66%	102	15%
CT 34.01 BG 4	1,021	809	75%	355	34%
CT 34.02 BG 1	1,050	576	66%	241	28%
CT 34.02 BG 2	759	688	81%	301	37%
CT 34.02 BG 3	1,031	674	64%	302	29%
CT 35.01 BG 1	837	573	76%	221	29%
CT 35.01 BG 2	671	366	58%	129	21%
CT 35.01 BG 3	873	235	27%	47	5%
CT 35.01 BG 4	1,051	384	37%	37	4%
CT 35.02 BG 1	851	361	40%	159	17%
CT 35.02 BG 2	681	118	24%	41	8%
CT 35.02 BG 3	712	114	17%	9	1%
CT 36.01 BG 1	549	279	54%	38	7%
CT 36.01 BG 2	1,036	708	73%	167	17%
CT 36.01 BG 3	1,115	522	52%	244	25%
CT 36.01 BG 4	1,077	757	71%	345	33%
CT 37.01 BG 1	1,074	647	59%	179	17%
CT 37.01 BG 2	1,007	527	55%	162	17%
CT 37.01 BG 3	1,408	576	50%	148	13%

CT & BG Names	Total Population	Minority	% Minority	Low-Income	Low-Income
CT 37.01 BG 4	827	300	39%	215	28%
CT 37.02 BG 1	682	359	52%	123	18%
CT 37.02 BG 2	608	274	47%	32	6%
CT 37.02 BG 3	890	402	41%	215	23%
CT 38.01 BG 1	961	288	30%	136	14%
CT 38.01 BG 2	765	261	33%	67	9%
CT 38.01 BG 3	1,160	363	35%	100	10%
CT 38.02 BG 1	1,193	513	46%	210	19%
CT 38.02 BG 2	1,023	278	28%	196	20%
CT 38.02 BG 3	856	114	14%	55	7%
CT 38.03 BG 1	802	683	78%	289	33%
CT 38.03 BG 2	458	179	35%	80	16%
CT 38.03 BG 3	1,513	574	38%	159	11%
CT 38.03 BG 4	1,161	118	10%	75	7%
CT 39.01 BG 1	1,266	779	62%	210	17%
CT 39.01 BG 2	913	302	35%	111	13%
CT 39.01 BG 3	1,453	256	18%	177	13%
CT 39.01 BG 5	1,953	1,328	67%	581	29%
CT 39.02 BG 1	662	102	17%	16	3%
CT 39.02 BG 2	792	180	23%	124	16%
CT 39.02 BG 3	839	177	21%	51	6%
CT 44 BG 1	131	24	18%	0	0%
CT 72.01 BG 1	1,204	130	11%	118	10%
CT 72.01 BG 2	932	49	5%	58	6%
CT 72.02 BG 1	2,360	485	24%	183	9%
Washington					
CT 4.04 BG 1	1,595	69	6%	57	5%
CT 4.04 BG 2	2,341	200	9%	5	0%
CT 4.04 BG 3	2,501	211	10%	110	5%
CT 4.04 BG 4	571	80	14%	22	4%
CT 8.03 BG 1	1,646	485	32%	438	29%
CT 8.03 BG 2	2,298	95	5%	50	3%
CT 8.03 BG 3	866	30	4%	8	1%
CT 8.04 BG 1	2,699	946	41%	676	30%
CT 8.04 BG 2	3,214	207	7%	119	4%
CT 8.04 BG 4	1,067	181	24%	224	31%
CT 8.05 BG 1	2,876	164	7%	42	2%
CT 9.04 BG 1	625	23	4%	19	3%
CT 9.04 BG 2	993	95	9%	81	8%
CT 9.04 BG 3	1,834	351	19%	371	20%
CT 9.04 BG 4	2,220	230	12%	105	6%
CT 9.06 BG 1	2,303	227	12%	10	1%
CT 9.06 BG 2	5,614	417	8%	305	6%
CT 9.08 BG 3	2,166	284	14%	36	2%
CT 10.02 BG 1	1,536	95	6%	328	23%
CT 10.02 BG 2	1,927	290	15%	199	10%

CT & BG Names	Total Population	Minority	% Minority	Low-Income	Low-Income
CT 10.02 BG 3	1,860	282	16%	170	9%
CT 10.02 BG 4	1,151	196	20%	111	11%
CT 10.03 BG 1	680	60	8%	29	4%
CT 10.03 BG 2	2,004	329	16%	262	13%
CT 10.03 BG 3	721	36	5%	37	5%
CT 10.03 BG 4	575	44	8%	0	0%
CT 10.05 BG 1	1,277	230	17%	585	44%
CT 10.05 BG 2	755	129	18%	122	17%
CT 10.07 BG 1	1,017	82	8%	7	1%
CT 10.07 BG 2	1,098	124	13%	143	15%
CT 10.07 BG 3	1,140	179	16%	146	13%
CT 10.08 BG 2	1,608	241	15%	70	4%
CT 10.08 BG 3	958	77	8%	26	3%
CT 10.09 BG 1	1,562	171	11%	113	8%
CT 10.09 BG 2	1,090	142	14%	182	18%
CT 10.09 BG 3	867	111	12%	37	4%
CT 11.10 BG 3	2,147	294	16%	207	11%
CT 17 BG 1	2,188	601	26%	471	21%
CT 17 BG 2	1,785	700	39%	459	26%
CT 18 BG 1	1,504	224	15%	219	15%
CT 18 BG 2	1,163	234	19%	281	23%
CT 18 BG 3	1,286	358	29%	363	30%
CT 19 BG 1	1,134	161	13%	128	11%
CT 19 BG 2	908	111	12%	150	16%
CT 20 BG 1	705	48	7%	71	10%
CT 20 BG 2	815	50	6%	72	9%
CT 21 BG 1	868	102	11%	28	3%
CT 21 BG 2	1,715	278	17%	209	12%
CT 23 BG 1	577	88	15%	106	18%
CT 23 BG 2	979	113	12%	124	14%
CT 23 BG 3	1,259	279	22%	312	24%
CT 24 BG 1	176	29	21%	68	64%
CT 24 BG 2	356	13	4%	109	35%
CT 24 BG 3	1,003	142	14%	188	54%
CT 25 BG 1	537	19	4%	71	13%
CT 25 BG 2	164	18	12%	41	27%
CT 25 BG 3	391	13	3%	68	16%
CT 26 BG 1	2,214	384	19%	493	25%
CT 26 BG 2	892	162	21%	203	27%
CT 26 BG 3	489	108	23%	42	9%
CT 26 BG 4	1,461	188	15%	143	14%
CT 27 BG 1	1,788	580	36%	441	27%
CT 27 BG 2	2,731	532	21%	675	27%
Total/Average for Secondary API		39,373	27%	21,817	15%

Source: US Census 2000.

CT: Census Tract, BG: Block Group.

Table A-2. Race and Ethnicity

CT & BG Names	Total (persons/%)	Race							Ethnicity
		White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two or more races	Hispanic or Latino
Oregon									
CT 21 BG 1	497	376	46	0	0	0	8	67	36
	100%	76%	9%	0%	0%	0%	2%	13%	7%
CT 21 BG 2	965	801	47	25	36	0	25	31	93
	100%	83%	5%	3%	4%	0%	3%	3%	10%
CT 22.01 BG 1	387	116	187	6	12	0	15	51	39
	100%	30%	48%	2%	3%	0%	4%	13%	10%
CT 22.02 BG 1	214	134	48	0	27	0	0	5	16
	100%	63%	22%	0%	13%	0%	0%	2%	7%
CT 23.01 BG 1	566	354	162	5	5	10	5	25	0
	100%	63%	29%	1%	1%	2%	1%	4%	0%
CT 23.01 BG 2	983	491	312	0	13	10	0	157	34
	100%	50%	32%	0%	1%	1%	0%	16%	3%
CT 23.01 BG 3	984	432	377	15	47	0	39	74	116
	100%	44%	38%	2%	5%	0%	4%	8%	12%
CT 23.02 BG 1	1202	816	179	33	48	0	53	73	89
	100%	68%	15%	3%	4%	0%	4%	6%	7%
CT 24.01 BG 1	680	510	132	0	0	5	0	33	11
	100%	75%	19%	0%	0%	1%	0%	5%	2%
CT 24.01 BG 2	643	516	72	15	11	0	6	23	14
	100%	80%	11%	2%	2%	0%	1%	4%	2%
CT 24.01 BG 3	804	585	176	0	6	0	5	32	15
	100%	73%	22%	0%	1%	0%	1%	4%	2%
CT 24.01 BG 4	655	379	246	0	0	0	4	26	0
	100%	58%	38%	0%	0%	0%	1%	4%	0%
CT 24.02 BG 1	1124	824	214	19	34	0	12	21	45
	100%	73%	19%	2%	3%	0%	1%	2%	4%
CT 24.02 BG 2	1074	924	0	13	88	0	13	36	35
	100%	86%	0%	1%	8%	0%	1%	3%	3%
CT 24.02 BG 3	1003	792	99	0	0	5	26	81	72
	100%	79%	10%	0%	0%	0%	3%	8%	7%
CT 25.01 BG 4	706	670	12	16	3	0	0	5	0
	100%	95%	2%	2%	0%	0%	0%	1%	0%
CT 25.02 BG 3	1238	892	201	19	0	0	51	75	121
	100%	72%	16%	2%	0%	0%	4%	6%	10%
CT 25.02 BG 4	1106	933	100	0	0	0	0	73	22
	100%	84%	9%	0%	0%	0%	0%	7%	2%
CT 33.01 BG 2	1066	237	599	78	0	0	80	72	129
	100%	22%	56%	7%	0%	0%	8%	7%	12%

CT & BG Names	Total (persons/%)	Race							Ethnicity
		White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two or more races	Hispanic or Latino
CT 33.01 BG 3	939	202	479	0	97	64	89	8	139
	100%	22%	51%	0%	10%	7%	9%	1%	15%
CT 33.02 BG 1	1168	721	328	26	12	0	9	72	46
	100%	62%	28%	2%	1%	0%	1%	6%	4%
CT 33.02 BG 2	1391	643	534	10	19	0	69	116	179
	100%	46%	38%	1%	1%	0%	5%	8%	13%
CT 34.01 BG 1	654	295	302	10	6	0	6	35	55
	100%	45%	46%	2%	1%	0%	1%	5%	8%
CT 34.01 BG 2	896	287	409	6	44	17	48	85	107
	100%	32%	46%	1%	5%	2%	5%	9%	12%
CT 34.01 BG 3	687	244	323	55	0	0	59	6	66
	100%	36%	47%	8%	0%	0%	9%	1%	10%
CT 34.01 BG 4	1072	406	401	0	71	47	54	93	206
	100%	38%	37%	0%	7%	4%	5%	9%	19%
CT 34.02 BG 1	872	312	459	0	53	4	8	36	24
	100%	36%	53%	0%	6%	0%	1%	4%	3%
CT 34.02 BG 2	851	203	502	0	0	0	117	29	173
	100%	24%	59%	0%	0%	0%	14%	3%	20%
CT 34.02 BG 3	1047	525	296	7	8	5	65	141	264
	100%	50%	28%	1%	1%	0%	6%	13%	25%
CT 35.01 BG 1	750	195	360	0	0	0	119	76	146
	100%	26%	48%	0%	0%	0%	16%	10%	19%
CT 35.01 BG 2	629	313	73	0	38	0	121	84	165
	100%	50%	12%	0%	6%	0%	19%	13%	26%
CT 35.01 BG 3	868	633	104	20	59	0	36	16	25
	100%	73%	12%	2%	7%	0%	4%	2%	3%
CT 35.01 BG 4	1045	686	94	64	50	0	40	111	55
	100%	66%	9%	6%	5%	0%	4%	11%	5%
CT 35.02 BG 1	912	642	124	17	93	0	17	19	113
	100%	70%	14%	2%	10%	0%	2%	2%	12%
CT 35.02 BG 2	484	380	52	12	0	0	23	17	14
	100%	79%	11%	2%	0%	0%	5%	4%	3%
CT 35.02 BG 3	680	600	60	0	0	0	20	0	54
	100%	88%	9%	0%	0%	0%	3%	0%	8%
CT 36.01 BG 1	515	258	242	6	0	0	9	0	31
	100%	50%	47%	1%	0%	0%	2%	0%	6%
CT 36.01 BG 2	970	297	526	0	16	0	69	62	128
	100%	31%	54%	0%	2%	0%	7%	6%	13%
CT 36.01 BG 3	999	498	342	23	16	0	101	19	130
	100%	50%	34%	2%	2%	0%	10%	2%	13%

CT & BG Names	Total (persons/%)	Race							Ethnicity
		White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two or more races	Hispanic or Latino
CT 36.01 BG 4	1064	307	510	37	0	0	154	56	181
	100%	29%	48%	3%	0%	0%	14%	5%	17%
CT 37.01 BG 1	1101	490	451	0	89	0	0	71	36
	100%	45%	41%	0%	8%	0%	0%	6%	3%
CT 37.01 BG 2	958	431	340	4	53	0	90	40	96
	100%	45%	35%	0%	6%	0%	9%	4%	10%
CT 37.01 BG 3	1150	602	318	15	7	0	141	67	188
	100%	52%	28%	1%	1%	0%	12%	6%	16%
CT 37.01 BG 4	772	472	243	23	11	0	16	7	27
	100%	61%	31%	3%	1%	0%	2%	1%	3%
CT 37.02 BG 1	691	339	260	0	0	0	17	75	37
	100%	49%	38%	0%	0%	0%	2%	11%	5%
CT 37.02 BG 2	581	319	196	18	0	0	27	21	56
	100%	55%	34%	3%	0%	0%	5%	4%	10%
CT 37.02 BG 3	986	591	277	0	62	0	7	49	18
	100%	60%	28%	0%	6%	0%	1%	5%	2%
CT 38.01 BG 1	958	671	99	33	35	0	27	93	57
	100%	70%	10%	3%	4%	0%	3%	10%	6%
CT 38.01 BG 2	780	519	8	7	116	0	64	66	64
	100%	67%	1%	1%	15%	0%	8%	8%	8%
CT 38.01 BG 3	1038	693	128	32	11	23	8	143	96
	100%	67%	12%	3%	1%	2%	1%	14%	9%
CT 38.02 BG 1	1112	664	227	20	46	0	73	82	163
	100%	60%	20%	2%	4%	0%	7%	7%	15%
CT 38.02 BG 2	976	698	30	0	142	0	38	68	45
	100%	72%	3%	0%	15%	0%	4%	7%	5%
CT 38.02 BG 3	815	705	25	0	31	0	18	36	22
	100%	87%	3%	0%	4%	0%	2%	4%	3%
CT 38.03 BG 1	879	223	424	0	0	0	172	60	199
	100%	25%	48%	0%	0%	0%	20%	7%	23%
CT 38.03 BG 2	508	329	50	0	58	0	0	71	34
	100%	65%	10%	0%	11%	0%	0%	14%	7%
CT 38.03 BG 3	1506	937	230	26	142	0	85	86	105
	100%	62%	15%	2%	9%	0%	6%	6%	7%
CT 38.03 BG 4	1133	1018	9	0	20	0	3	83	29
	100%	90%	1%	0%	2%	0%	0%	7%	3%
CT 39.01 BG 1	1248	484	385	6	120	0	129	124	164
	100%	39%	31%	0%	10%	0%	10%	10%	13%
CT 39.01 BG 2	861	559	41	0	69	0	68	124	92
	100%	65%	5%	0%	8%	0%	8%	14%	11%

CT & BG Names	Total (persons/%)	Race							Ethnicity
		White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two or more races	Hispanic or Latino
CT 39.01 BG 3	1395	1139	72	24	0	9	36	115	42
	100%	82%	5%	2%	0%	1%	3%	8%	3%
CT 39.01 BG 5	1991	814	586	75	134	0	252	130	418
	100%	41%	29%	4%	7%	0%	13%	7%	21%
CT 39.02 BG 1	614	512	62	5	21	0	0	14	0
	100%	83%	10%	1%	3%	0%	0%	2%	0%
CT 39.02 BG 2	779	612	48	16	35	0	50	18	63
	100%	79%	6%	2%	4%	0%	6%	2%	8%
CT 39.02 BG 3	825	680	38	0	52	0	49	6	81
	100%	82%	5%	0%	6%	0%	6%	1%	10%
CT 44 BG 1	136	112	24	0	0	0	0	0	0
	100%	82%	18%	0%	0%	0%	0%	0%	0%
CT 72.01 BG 1	1135	1014	31	6	43	0	22	19	62
	100%	89%	3%	1%	4%	0%	2%	2%	5%
CT 72.01 BG 2	936	897	0	0	39	0	0	0	10
	100%	96%	0%	0%	4%	0%	0%	0%	1%
CT 72.02 BG 1	2010	1525	232	12	136	0	0	105	12
	100%	76%	12%	1%	7%	0%	0%	5%	1%
Washington									
CT 4.04 BG 1	1089	1020	38	0	24	0	0	7	0
	100%	94%	3%	0%	2%	0%	0%	1%	0%
CT 4.04 BG 2	2168	1985	0	46	38	13	0	86	24
	100%	92%	0%	2%	2%	1%	0%	4%	1%
CT 4.04 BG 3	2127	1952	17	0	65	0	33	60	78
	100%	92%	1%	0%	3%	0%	2%	3%	4%
CT 4.04 BG 4	576	520	35	10	0	0	0	11	24
	100%	90%	6%	2%	0%	0%	0%	2%	4%
CT 8.03 BG 1	1538	1366	96	48	9	0	0	19	372
	100%	89%	6%	3%	1%	0%	0%	1%	24%
CT 8.03 BG 2	1977	1899	0	7	28	0	0	43	17
	100%	96%	0%	0%	1%	0%	0%	2%	1%
CT 8.03 BG 3	700	670	0	0	0	0	0	30	0
	100%	96%	0%	0%	0%	0%	0%	4%	0%
CT 8.04 BG 1	2307	1591	84	49	17	67	417	82	701
	100%	69%	4%	2%	1%	3%	18%	4%	30%
CT 8.04 BG 2	2855	2657	0	0	119	0	13	66	22
	100%	93%	0%	0%	4%	0%	0%	2%	1%
CT 8.04 BG 4	744	600	0	16	0	0	66	62	125
	100%	81%	0%	2%	0%	0%	9%	8%	17%

CT & BG Names	Total (persons/%)	Race							Ethnicity
		White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two or more races	Hispanic or Latino
CT 8.05 BG 1	2283	2158	21	0	53	0	33	18	54
	100%	95%	1%	0%	2%	0%	1%	1%	2%
CT 9.04 BG 1	608	599	0	0	0	0	9	0	23
	100%	99%	0%	0%	0%	0%	1%	0%	4%
CT 9.04 BG 2	1042	947	0	0	19	6	33	37	33
	100%	91%	0%	0%	2%	1%	3%	4%	3%
CT 9.04 BG 3	1876	1608	50	23	69	15	26	85	109
	100%	86%	3%	1%	4%	1%	1%	5%	6%
CT 9.04 BG 4	1913	1721	58	0	90	0	17	27	38
	100%	90%	3%	0%	5%	0%	1%	1%	2%
CT 9.06 BG 1	1889	1725	0	0	48	0	22	94	96
	100%	91%	0%	0%	3%	0%	1%	5%	5%
CT 9.06 BG 2	5022	4655	11	29	215	6	5	101	74
	100%	93%	0%	1%	4%	0%	0%	2%	1%
CT 9.08 BG 3	2089	1906	0	128	0	0	17	38	130
	100%	91%	0%	6%	0%	0%	1%	2%	6%
CT 10.02 BG 1	1478	1416	43	0	0	0	0	19	33
	100%	96%	3%	0%	0%	0%	0%	1%	2%
CT 10.02 BG 2	1951	1736	50	25	35	0	42	63	145
	100%	89%	3%	1%	2%	0%	2%	3%	7%
CT 10.02 BG 3	1805	1562	58	50	21	0	57	57	107
	100%	87%	3%	3%	1%	0%	3%	3%	6%
CT 10.02 BG 4	992	839	42	0	26	4	0	81	43
	100%	85%	4%	0%	3%	0%	0%	8%	4%
CT 10.03 BG 1	715	659	9	21	0	6	5	15	31
	100%	92%	1%	3%	0%	1%	1%	2%	4%
CT 10.03 BG 2	2065	1744	64	15	17	0	121	104	136
	100%	84%	3%	1%	1%	0%	6%	5%	7%
CT 10.03 BG 3	690	677	0	7	0	0	6	0	29
	100%	98%	0%	1%	0%	0%	1%	0%	4%
CT 10.03 BG 4	557	513	0	33	11	0	0	0	0
	100%	92%	0%	6%	2%	0%	0%	0%	0%
CT 10.05 BG 1	1342	1136	12	0	22	0	56	116	112
	100%	85%	1%	0%	2%	0%	4%	9%	8%
CT 10.05 BG 2	713	584	0	5	0	0	57	67	57
	100%	82%	0%	1%	0%	0%	8%	9%	8%
CT 10.07 BG 1	977	895	7	7	17	0	20	31	20
	100%	92%	1%	1%	2%	0%	2%	3%	2%
CT 10.07 BG 2	958	852	42	10	0	0	15	39	49
	100%	89%	4%	1%	0%	0%	2%	4%	5%

CT & BG Names	Total (persons/%)	Race							Ethnicity
		White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two or more races	Hispanic or Latino
CT 10.07 BG 3	1122	973	28	0	18	4	50	49	86
	100%	87%	2%	0%	2%	0%	4%	4%	8%
CT 10.08 BG 2	1649	1463	73	0	34	7	0	72	55
	100%	89%	4%	0%	2%	0%	0%	4%	3%
CT 10.08 BG 3	954	877	0	29	24	0	0	24	0
	100%	92%	0%	3%	3%	0%	0%	3%	0%
CT 10.09 BG 1	1500	1347	0	38	68	0	47	0	65
	100%	90%	0%	3%	5%	0%	3%	0%	4%
CT 10.09 BG 2	1039	950	38	6	0	8	0	37	64
	100%	91%	4%	1%	0%	1%	0%	4%	6%
CT 10.09 BG 3	937	840	15	0	7	0	42	33	56
	100%	90%	2%	0%	1%	0%	4%	4%	6%
CT 11.10 BG 3	1840	1587	30	60	40	0	0	123	41
	100%	86%	2%	3%	2%	0%	0%	7%	2%
CT 17 BG 1	2285	1786	45	38	25	0	241	150	373
	100%	78%	2%	2%	1%	0%	11%	7%	16%
CT 17 BG 2	1788	1184	61	39	124	20	293	67	419
	100%	66%	3%	2%	7%	1%	16%	4%	23%
CT 18 BG 1	1499	1334	22	23	0	0	82	38	157
	100%	89%	1%	2%	0%	0%	5%	3%	10%
CT 18 BG 2	1234	1009	52	4	0	8	68	93	77
	100%	82%	4%	0%	0%	1%	6%	8%	6%
CT 18 BG 3	1216	972	45	41	25	0	86	47	200
	100%	80%	4%	3%	2%	0%	7%	4%	16%
CT 19 BG 1	1239	1082	54	13	0	0	0	90	17
	100%	87%	4%	1%	0%	0%	0%	7%	1%
CT 19 BG 2	943	858	0	5	0	0	33	47	81
	100%	91%	0%	1%	0%	0%	3%	5%	9%
CT 20 BG 1	702	654	13	10	7	0	18	0	18
	100%	93%	2%	1%	1%	0%	3%	0%	3%
CT 20 BG 2	822	791	0	8	0	0	0	23	19
	100%	96%	0%	1%	0%	0%	0%	3%	2%
CT 21 BG 1	936	834	0	0	25	0	68	9	77
	100%	89%	0%	0%	3%	0%	7%	1%	8%
CT 21 BG 2	1676	1409	76	14	24	8	7	138	64
	100%	84%	5%	1%	1%	0%	0%	8%	4%
CT 23 BG 1	579	538	9	17	15	0	0	0	47
	100%	93%	2%	3%	3%	0%	0%	0%	8%
CT 23 BG 2	917	833	5	0	16	0	15	48	63
	100%	91%	1%	0%	2%	0%	2%	5%	7%

CT & BG Names	Total (persons/%)	Race							Ethnicity
		White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two or more races	Hispanic or Latino
CT 23 BG 3	1286	1038	38	0	0	0	55	155	86
	100%	81%	3%	0%	0%	0%	4%	12%	7%
CT 24 BG 1	139	110	5	0	5	0	13	6	19
	100%	79%	4%	0%	4%	0%	9%	4%	14%
CT 24 BG 2	312	299	4	0	4	0	0	5	0
	100%	96%	1%	0%	1%	0%	0%	2%	0%
CT 24 BG 3	991	891	26	0	26	0	25	23	67
	100%	90%	3%	0%	3%	0%	3%	2%	7%
CT 25 BG 1	531	512	0	10	0	5	0	4	0
	100%	96%	0%	2%	0%	1%	0%	1%	0%
CT 25 BG 2	154	136	0	0	18	0	0	0	0
	100%	88%	0%	0%	12%	0%	0%	0%	0%
CT 25 BG 3	431	431	0	0	0	0	0	0	13
	100%	100%	0%	0%	0%	0%	0%	0%	3%
CT 26 BG 1	1989	1679	10	22	53	52	84	89	169
	100%	84%	1%	1%	3%	3%	4%	4%	8%
CT 26 BG 2	769	647	56	0	0	0	52	14	92
	100%	84%	7%	0%	0%	0%	7%	2%	12%
CT 26 BG 3	466	378	46	0	13	7	22	0	42
	100%	81%	10%	0%	3%	2%	5%	0%	9%
CT 26 BG 4	1262	1090	33	0	32	69	6	32	22
	100%	86%	3%	0%	3%	5%	0%	3%	2%
CT 27 BG 1	1627	1162	28	0	108	0	276	53	414
	100%	71%	2%	0%	7%	0%	17%	3%	25%
CT 27 BG 2	2527	2058	155	8	59	0	87	160	187
	100%	81%	6%	0%	2%	0%	3%	6%	7%

Source: US Census 2000.

CT: Census Tract, BG: Block Group.

Table A-3. Claritas Race and Ethnicity Population Forecast Information

CT & BG Names	2005 Population	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two o more races	Hispanic or Latino	Minority	% Minority
Oregon											
CT 21 BG 1	444	348	34	21	0	0	2	21	18	96	22%
CT 21 BG 2	1,030	808	77	10	27	1	2	48	57	222	22%
CT 22.01 BG 1	339	70	189	13	5	6	0	30	26	269	79%
CT 22.02 BG 1	204	128	37	8	8	0	2	5	16	76	37%
CT 23.01 BG 1	663	385	199	2	4	10	0	21	42	278	42%
CT 23.01 BG 2	947	506	280	7	14	1	1	52	86	441	47%
CT 23.01 BG 3	1,068	526	276	8	6	2	11	97	142	542	51%
CT 23.02 BG 1	1,189	851	178	9	40	0	3	48	60	338	28%
CT 24.01 BG 1	654	545	70	0	4	0	1	22	12	109	17%
CT 24.01 BG 2	736	606	69	2	24	3	0	22	10	130	18%
CT 24.01 BG 3	771	557	162	2	6	0	0	23	21	214	28%
CT 24.01 BG 4	517	319	142	0	9	0	0	28	19	198	38%
CT 24.02 BG 1	1,144	829	146	11	43	0	3	39	73	315	28%
CT 24.02 BG 2	1,002	837	28	7	56	0	0	37	37	165	16%
CT 24.02 BG 3	938	734	71	6	21	2	3	34	67	204	22%
CT 25.01 BG 4	712	641	14	2	16	2	0	21	16	71	10%
CT 25.02 BG 3	1,284	890	185	6	29	0	3	42	129	394	31%
CT 25.02 BG 4	1,083	887	92	2	37	2	1	28	34	196	18%
CT 33.01 BG 2	1,157	284	618	16	19	13	2	57	148	873	75%
CT 33.01 BG 3	1,033	261	457	0	12	17	2	89	195	772	75%
CT 33.02 BG 1	1,126	609	319	12	9	0	9	69	99	517	46%
CT 33.02 BG 2	1,356	505	434	20	32	23	2	93	247	851	63%
CT 34.01 BG 1	681	248	284	3	7	4	3	12	120	433	64%
CT 34.01 BG 2	903	349	309	4	16	14	6	65	140	554	61%
CT 34.01 BG 3	768	304	314	2	9	11	0	26	102	464	60%
CT 34.01 BG 4	1,021	260	437	14	27	14	2	74	193	761	75%
CT 34.02 BG 1	1,050	368	379	4	20	11	4	42	222	682	65%
CT 34.02 BG 2	759	240	315	4	9	9	5	34	143	519	68%
CT 34.02 BG 3	1,031	356	355	4	17	9	0	68	222	675	65%
CT 35.01 BG 1	837	229	352	5	59	20	2	58	112	608	73%
CT 35.01 BG 2	671	247	142	7	14	2	0	40	219	424	63%
CT 35.01 BG 3	873	664	65	5	20	3	2	44	70	209	24%
CT 35.01 BG 4	1,051	731	65	26	59	6	2	31	131	320	30%
CT 35.02 BG 1	851	428	240	3	42	11	0	40	87	423	50%
CT 35.02 BG 2	681	579	23	10	17	5	0	20	27	102	15%
CT 35.02 BG 3	712	544	48	16	46	0	6	19	33	168	24%
CT 36.01 BG 1	549	152	228	5	8	9	0	21	126	397	72%
CT 36.01 BG 2	1,036	347	423	10	13	16	2	40	185	689	67%
CT 36.01 BG 3	1,115	441	438	8	30	3	3	50	142	674	60%
CT 36.01 BG 4	1,077	398	382	21	7	5	0	58	206	679	63%
CT 37.01 BG 1	1,074	432	357	6	44	1	1	30	203	642	60%

CT & BG Names	2005 Population	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two o more races	Hispanic or Latino	Minority	% Minority
CT 37.01 BG 2	1,007	408	438	3	38	0	3	61	56	599	59%
CT 37.01 BG 3	1,408	708	370	7	77	11	1	53	181	700	50%
CT 37.01 BG 4	827	434	229	13	34	0	0	71	46	393	48%
CT 37.02 BG 1	682	378	206	6	32	0	0	44	16	304	45%
CT 37.02 BG 2	608	371	166	3	14	7	1	21	25	237	39%
CT 37.02 BG 3	890	515	266	5	11	2	1	52	38	375	42%
CT 38.01 BG 1	961	651	104	6	49	15	0	69	67	310	32%
CT 38.01 BG 2	765	455	99	1	79	16	2	49	64	310	41%
CT 38.01 BG 3	1,160	746	149	17	49	10	2	78	109	414	36%
CT 38.02 BG 1	1,193	663	205	9	47	0	9	102	158	530	44%
CT 38.02 BG 2	1,023	703	91	2	98	2	0	51	76	320	31%
CT 38.02 BG 3	856	660	32	8	43	10	0	30	73	196	23%
CT 38.03 BG 1	802	204	351	11	21	0	6	109	100	598	75%
CT 38.03 BG 2	458	228	69	6	45	8	1	46	55	230	50%
CT 38.03 BG 3	1,513	852	242	19	115	22	9	113	141	661	44%
CT 38.03 BG 4	1,161	898	65	7	41	0	1	40	109	263	23%
CT 39.01 BG 1	1,266	559	218	45	85	20	3	91	245	707	56%
CT 39.01 BG 2	913	621	71	21	36	4	2	57	101	292	32%
CT 39.01 BG 3	1,453	898	200	9	73	12	1	70	190	555	38%
CT 39.01 BG 5	1,953	605	580	31	178	17	11	123	408	1,348	69%
CT 39.02 BG 1	662	475	30	4	34	2	1	15	101	187	28%
CT 39.02 BG 2	792	596	68	10	20	6	0	42	50	196	25%
CT 39.02 BG 3	839	692	36	17	23	10	0	15	46	147	18%
CT 44 BG 1	131	106	13	0	2	0	0	3	7	25	19%
CT 72.01 BG 1	1,204	1,077	31	23	16	0	0	26	31	127	11%
CT 72.01 BG 2	932	869	9	8	5	1	0	22	18	63	7%
CT 72.02 BG 1	2,360	1,695	242	15	206	12	7	79	104	665	28%
Washington											
CT 4.04 BG 1	1,595	1,468	16	6	37	0	3	27	38	127	8%
CT 4.04 BG 2	2,341	2,163	13	6	48	3	3	45	60	178	8%
CT 4.04 BG 3	2,501	2,243	41	5	73	4	0	61	74	258	10%
CT 4.04 BG 4	571	514	4	3	11	2	3	10	24	57	10%
CT 8.03 BG 1	1,646	987	50	6	21	0	2	31	549	659	40%
CT 8.03 BG 2	2,298	2,156	16	5	41	2	0	33	45	142	6%
CT 8.03 BG 3	866	788	19	0	14	0	0	39	6	78	9%
CT 8.04 BG 1	2,699	1,305	181	16	26	19	2	86	1,064	1,394	52%
CT 8.04 BG 2	3,214	2,881	38	8	105	6	3	60	113	333	10%
CT 8.04 BG 4	1,067	827	13	10	13	1	0	52	151	240	22%
CT 8.05 BG 1	2,876	2,652	9	9	78	8	6	42	72	224	8%
CT 9.04 BG 1	625	548	2	1	11	0	2	28	33	77	12%
CT 9.04 BG 2	993	850	15	17	3	0	0	57	51	143	14%
CT 9.04 BG 3	1,834	1,493	47	15	47	5	8	83	136	341	19%
CT 9.04 BG 4	2,220	1,980	28	7	75	7	1	58	64	240	11%

CT & BG Names	2005 Population	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two o more races	Hispanic or Latino	Minority	% Minority
CT 9.06 BG 1	2,303	2,096	33	11	21	0	0	61	81	207	9%
CT 9.06 BG 2	5,614	5,019	71	14	187	9	3	142	169	595	11%
CT 9.08 BG 3	2,166	1,955	26	19	32	2	1	52	79	211	10%
CT 10.02 BG 1	1,536	1,291	73	19	16	0	2	49	86	245	16%
CT 10.02 BG 2	1,927	1,540	110	23	34	6	0	84	130	387	20%
CT 10.02 BG 3	1,860	1,572	48	35	34	8	3	60	100	288	15%
CT 10.02 BG 4	1,151	992	12	4	32	9	0	41	61	159	14%
CT 10.03 BG 1	680	601	6	7	6	2	0	18	40	79	12%
CT 10.03 BG 2	2,004	1,619	71	20	28	4	0	93	169	385	19%
CT 10.03 BG 3	721	656	2	3	6	0	1	18	35	65	9%
CT 10.03 BG 4	575	515	6	4	22	0	0	11	17	60	10%
CT 10.05 BG 1	1,277	993	31	25	11	2	1	56	158	284	22%
CT 10.05 BG 2	755	614	8	0	2	0	0	33	98	141	19%
CT 10.07 BG 1	1,017	921	8	4	16	2	0	24	42	96	9%
CT 10.07 BG 2	1,098	934	28	6	37	2	2	31	58	164	15%
CT 10.07 BG 3	1,140	919	67	4	14	0	2	39	95	221	19%
CT 10.08 BG 2	1,608	1,466	12	9	15	2	8	55	41	142	9%
CT 10.08 BG 3	958	832	22	1	51	0	0	22	30	126	13%
CT 10.09 BG 1	1,562	1,346	46	10	44	5	2	31	78	216	14%
CT 10.09 BG 2	1,090	889	20	7	13	5	3	42	111	201	18%
CT 10.09 BG 3	867	781	15	1	7	1	0	21	41	86	10%
CT 11.10 BG 3	2,147	1,762	56	26	60	33	0	75	135	385	18%
CT 17 BG 1	2,188	1,361	86	49	62	5	13	97	515	827	38%
CT 17 BG 2	1,785	1,061	56	19	62	6	2	77	502	724	41%
CT 18 BG 1	1,504	1,179	41	18	15	1	0	61	189	325	22%
CT 18 BG 2	1,163	929	47	6	10	0	1	35	135	234	20%
CT 18 BG 3	1,286	928	38	17	22	4	0	47	230	358	28%
CT 19 BG 1	1,134	988	34	4	20	1	0	27	60	146	13%
CT 19 BG 2	908	813	23	4	12	2	2	28	24	95	10%
CT 20 BG 1	705	607	20	8	8	0	3	13	46	98	14%
CT 20 BG 2	815	736	4	5	5	5	3	25	32	79	10%
CT 21 BG 1	868	794	9	1	18	2	0	16	28	74	9%
CT 21 BG 2	1,715	1,442	47	26	16	8	3	73	100	273	16%
CT 23 BG 1	577	488	12	11	11	2	0	10	43	89	15%
CT 23 BG 2	979	853	11	21	6	0	0	37	51	126	13%
CT 23 BG 3	1,259	961	15	15	1	0	0	68	199	298	24%
CT 24 BG 1	176	156	7	0	4	2	0	0	7	20	11%
CT 24 BG 2	356	322	10	3	7	0	0	8	6	34	10%
CT 24 BG 3	1,003	796	97	10	21	2	0	7	70	207	21%
CT 25 BG 1	537	456	7	2	4	15	0	7	46	81	15%
CT 25 BG 2	164	128	5	0	4	0	0	5	22	36	22%
CT 25 BG 3	391	340	2	2	6	1	0	22	18	51	13%
CT 26 BG 1	2,214	1,782	96	30	17	13	0	69	207	432	20%

CT & BG Names	2005 Population	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and other Pacific Islander alone	Some other race alone	Two o more races	Hispanic or Latino	Minority	% Minority
CT 26 BG 2	892	689	47	9	18	1	2	29	97	203	23%
CT 26 BG 3	489	387	30	0	10	3	0	15	44	102	21%
CT 26 BG 4	1,461	1,207	61	15	46	24	0	49	59	254	17%
CT 27 BG 1	1,788	1,068	44	10	50	11	0	78	527	720	40%
CT 27 BG 2	2,731	2,028	148	42	36	13	24	147	293	703	26%
Total/Average	154,446	111,177	16,073	1,320	4,138	692	260	6,050	14,736	43,269	28%

Source: Claritas 2005.

CT: Census Tract, BG: Block Group.

Table A-4. Means of Transportation to Work

CT & BG Names	Public Transportation	% Public Transportation
Oregon		
CT 21 BG 1	72	14%
CT 21 BG 2	160	17%
CT 22.01 BG 1	25	6%
CT 22.02 BG 1	27	13%
CT 23.01 BG 1	47	8%
CT 23.01 BG 2	116	12%
CT 23.01 BG 3	101	10%
CT 23.02 BG 1	68	6%
CT 24.01 BG 1	30	4%
CT 24.01 BG 2	36	6%
CT 24.01 BG 3	69	9%
CT 24.01 BG 4	49	7%
CT 24.02 BG 1	157	14%
CT 24.02 BG 2	187	17%
CT 24.02 BG 3	150	15%
CT 25.01 BG 4	14	2%
CT 25.02 BG 3	186	15%
CT 25.02 BG 4	84	8%
CT 33.01 BG 2	32	3%
CT 33.01 BG 3	79	8%
CT 33.02 BG 1	88	8%
CT 33.02 BG 2	131	9%
CT 34.01 BG 1	89	14%
CT 34.01 BG 2	61	7%
CT 34.01 BG 3	37	5%
CT 34.01 BG 4	90	8%
CT 34.02 BG 1	75	9%
CT 34.02 BG 2	67	8%
CT 34.02 BG 3	101	10%
CT 35.01 BG 1	92	12%
CT 35.01 BG 2	72	11%
CT 35.01 BG 3	112	13%
CT 35.01 BG 4	39	4%
CT 35.02 BG 1	42	5%
CT 35.02 BG 2	6	1%
CT 35.02 BG 3	27	4%
CT 36.01 BG 1	35	7%
CT 36.01 BG 2	46	5%
CT 36.01 BG 3	34	3%
CT 36.01 BG 4	36	3%
CT 37.01 BG 1	19	2%
CT 37.01 BG 2	62	6%
CT 37.01 BG 3	142	12%
CT 37.01 BG 4	32	4%

CT & BG Names	Public Transportation	% Public Transportation
CT 37.02 BG 1	6	1%
CT 37.02 BG 2	52	9%
CT 37.02 BG 3	63	6%
CT 38.01 BG 1	63	7%
CT 38.01 BG 2	80	10%
CT 38.01 BG 3	115	11%
CT 38.02 BG 1	69	6%
CT 38.02 BG 2	42	4%
CT 38.02 BG 3	53	7%
CT 38.03 BG 1	89	10%
CT 38.03 BG 2	29	6%
CT 38.03 BG 3	121	8%
CT 38.03 BG 4	59	5%
CT 39.01 BG 1	72	6%
CT 39.01 BG 2	39	5%
CT 39.01 BG 3	44	3%
CT 39.01 BG 5	171	9%
CT 39.02 BG 1	46	7%
CT 39.02 BG 2	53	7%
CT 39.02 BG 3	46	6%
CT 44 BG 1	9	7%
CT 72.01 BG 1	36	3%
CT 72.01 BG 2	6	1%
CT 72.02 BG 1	72	4%
Washington		
CT 4.04 BG 1	10	1%
CT 4.04 BG 2	9	0%
CT 4.04 BG 3	55	3%
CT 4.04 BG 4	28	5%
CT 8.03 BG 1	67	4%
CT 8.03 BG 2	28	1%
CT 8.03 BG 3	10	1%
CT 8.04 BG 1	28	1%
CT 8.04 BG 2	56	2%
CT 8.04 BG 4	23	3%
CT 8.05 BG 1	16	1%
CT 9.04 BG 1	0	0%
CT 9.04 BG 2	14	1%
CT 9.04 BG 3	56	3%
CT 9.04 BG 4	18	1%
CT 9.06 BG 1	22	1%
CT 9.06 BG 2	68	1%
CT 9.08 BG 3	36	2%
CT 10.02 BG 1	18	1%
CT 10.02 BG 2	19	1%
CT 10.02 BG 3	29	2%

CT & BG Names	Public Transportation	% Public Transportation
CT 10.02 BG 4	7	1%
CT 10.03 BG 1	0	0%
CT 10.03 BG 2	76	4%
CT 10.03 BG 3	18	3%
CT 10.03 BG 4	4	1%
CT 10.05 BG 1	41	3%
CT 10.05 BG 2	0	0%
CT 10.07 BG 1	17	2%
CT 10.07 BG 2	28	3%
CT 10.07 BG 3	33	3%
CT 10.08 BG 2	24	1%
CT 10.08 BG 3	0	0%
CT 10.09 BG 1	29	2%
CT 10.09 BG 2	0	0%
CT 10.09 BG 3	27	3%
CT 11.10 BG 3	0	0%
CT 17 BG 1	91	4%
CT 17 BG 2	108	6%
CT 18 BG 1	18	1%
CT 18 BG 2	21	2%
CT 18 BG 3	40	3%
CT 19 BG 1	53	4%
CT 19 BG 2	18	2%
CT 20 BG 1	16	2%
CT 20 BG 2	11	1%
CT 21 BG 1	6	1%
CT 21 BG 2	35	2%
CT 23 BG 1	19	3%
CT 23 BG 2	37	4%
CT 23 BG 3	32	2%
CT 24 BG 1	24	17%
CT 24 BG 2	0	0%
CT 24 BG 3	0	0%
CT 25 BG 1	13	2%
CT 25 BG 2	0	0%
CT 25 BG 3	0	0%
CT 26 BG 1	55	3%
CT 26 BG 2	16	2%
CT 26 BG 3	5	1%
CT 26 BG 4	0	0%
CT 27 BG 1	80	5%
CT 27 BG 2	113	4%
Total	6384	4%

Source: US Census 2000.

CT: Census Tract, BG: Block Group.

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PRELIMINARY

INTERSTATE 5 COLUMBIA RIVER CROSSING

Economics Technical Report for the Final Environmental Impact Statement

Columbia River CROSSING

May 2011

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Cover Sheet

Interstate 5 Columbia River Crossing

Economics Technical Report for the Final Environmental Impact Statement:

Submitted By:

Dan Pitzler

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ACRONYMS

BNSF	Burlington Northern Santa Fe Railroad
CD	collector-distributor
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CRC	Columbia River Crossing
C-TRAN	Clark County Public Transportation
CTR	Commute Trip Reduction (Washington)
DEIS	Draft Environmental Impact Statement
DLCD	Department of Land Conservation and Development
DOT	United States Department of Transportation
ECO	Employee Commute Options (Oregon)
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FTE	full-time equivalent
GTEC	Growth and Transportation Efficiency Center
I-5	Interstate 5
IAMP	Interchange Area Management Plan
LOS	level-of-service
LPA	Locally Preferred Alternative
LRV	light rail vehicle
MAX	Metropolitan Area Express
mph	miles per hour
MPO	Metropolitan Planning Organization
MSA	metropolitan statistical area
MTP	Metropolitan Transportation Plan
NAVD88	North American Vertical Datum 1988
NEPA	National Environmental Policy Act of 1969
NRM	natural resources and mining
ODOT	Oregon Department of Transportation
OTC	Oregon Transportation Commission
PDC	Portland Development Commission
PMSA	primary metropolitan statistical area
ROD	Record of Decision

RTC	Regional Transportation Council
RTP	Regional Transportation Plan
SPUI	single-point urban interchange
SR	state route
SWRTC	Southwest Washington Regional Transportation Council
TAZ	traffic analysis zone
TDM	transportation demand management
TOD	Transit-oriented development
TriMet	Tri-County Metropolitan Transportation District
TSM	transportation system management
TSP	Transportation System Plan
UGB	urban growth boundary
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
v/c	volume-to-capacity ratio
VCCV	Vancouver City Center Vision
WSDOT	Washington State Department of Transportation
WTC	Washington Transportation Commission
WTU	wholesale trade, transportation, and utilities

1. Summary

1.1 Introduction

This technical report evaluates the CRC project's locally preferred alternative (LPA) and the No-Build Alternative. If funding availability does not allow the entire LPA to be constructed in one phase, then some roadway elements of the project would be deferred to a future date. This technical report identifies several elements that could be deferred, and refers to that possible initial investment as Phase I of the LPA. The LPA Phase I option would build most of the LPA in the first phase, but would defer construction of specific elements of the project. The LPA and the No-Build Alternative are described in this section.

1.2 Description of Alternatives

This technical report evaluates the CRC project's locally preferred alternative (LPA) and the No-Build Alternative. The LPA includes two design options: The preferred option, LPA Option A, which includes local vehicular access between Marine Drive and Hayden Island on an arterial bridge; and LPA Option B, which does not have arterial lanes on the light rail/multi-use path bridge, but instead provides direct access between Marine Drive and the island with collector-distributor (CD) lanes on the two new bridges that would be built adjacent to I-5. In addition to the design options, if funding availability does not allow the entire LPA to be constructed in one phase, some roadway elements of the project would be deferred to a future date. This technical report identifies several elements that could be deferred, and refers to that possible initial investment as LPA with highway phasing. The LPA with highway phasing option would build most of the LPA in the first phase, but would defer construction of specific elements of the project. The LPA and the No-Build Alternative are described in this section.

1.2.1 Adoption of a Locally Preferred Alternative

Following the publication of the Draft Environmental Impact Statement (DEIS) on May 2, 2008, the project actively solicited public and stakeholder feedback on the DEIS during a 60-day comment period. During this time, the project received over 1,600 public comments.

During and following the public comment period, the elected and appointed boards and councils of the local agencies sponsoring the CRC project held hearings and workshops to gather further public input on and discuss the DEIS alternatives as part of their efforts to determine and adopt a locally preferred alternative. The LPA represents the alternative preferred by the local and regional agencies sponsoring the CRC project. Local agency-elected boards and councils determined their preference based on the results of the evaluation in the DEIS and on the public and agency comments received both before and following its publication.

In the summer of 2008, the local agencies sponsoring the CRC project adopted the following key elements of CRC as the LPA:

- A replacement bridge as the preferred river crossing,
- Light rail as the preferred high-capacity transit mode, and
- Clark College as the preferred northern terminus for the light rail extension.

The preferences for a replacement crossing and for light rail transit were identified by all six local agencies. Only the agencies in Vancouver – the Clark County Public Transit Benefit Area Authority (C-TRAN), the City of Vancouver, and the Regional Transportation Council (RTC) – preferred the Vancouver light rail terminus. The adoption of the LPA by these local agencies does not represent a formal decision by the federal agencies leading this project – the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) – or any federal funding commitment. A formal decision by FHWA and FTA about whether and how this project should be constructed will follow the FEIS in a Record of Decision (ROD).

1.2.2 Description of the LPA

The LPA includes an array of transportation improvements, which are described below. When the LPA differs between Option A and Option B, it is described in the associated section. For a more detailed description of the LPA, including graphics, please see Chapter 2 of the FEIS.

1.2.2.1 Multimodal River Crossing

Columbia River Bridges

The parallel bridges that form the existing I-5 crossing over the Columbia River would be replaced by two new parallel bridges. The eastern structure would accommodate northbound highway traffic on the bridge deck, with a bicycle and pedestrian path underneath; the western structure would carry southbound traffic, with a two-way light rail guideway below. Whereas the existing bridges have only three lanes each with virtually no shoulders, each of the new bridges would be wide enough to accommodate three through-lanes and two add/drop lanes. Lanes and shoulders would be built to full design standards.

The new bridges would be high enough to provide approximately 95 feet of vertical clearance for river traffic beneath, but not so high as to impede the take-offs and landings by aircraft using Pearson Field or Portland International Airport to the east. The new bridge structures over the Columbia River would not include lift spans, and both of the new bridges would each be supported by six piers in the water and two piers on land.

North Portland Harbor Bridges

The existing highway structures over North Portland Harbor would not be replaced; instead, they would be retained to accommodate all mainline I-5 traffic. As discussed at the beginning of this chapter, two design options have emerged for the Hayden Island and Marine Drive interchanges. The preferred option, LPA Option A, includes local vehicular access between Marine Drive and Hayden Island on an arterial bridge. LPA Option B does not have arterial lanes on the light rail/multi-use path bridge, but instead provides direct access between Marine Drive and the island with collector-distributor lanes on the two new bridges that would be built adjacent to I-5.

LPA Option A: Four new, narrower parallel structures would be built across the waterway, three on the west side and one on the east side of the existing North Portland Harbor bridges. Three of the new structures would carry on- and off-ramps to mainline I-5. Two structures west of the existing bridges would carry traffic merging onto or exiting off of I-5 southbound. The new structure on the east side of I-5 would serve as an on-ramp for traffic merging onto I-5 northbound.

The fourth new structure would be built slightly farther west and would include a two-lane arterial bridge for local traffic to and from Hayden Island, light rail transit, and a multi-use path

for pedestrians and bicyclists. All of the new structures would have at least as much vertical clearance over the river as the existing North Portland Harbor bridges.

LPA Option B: This option would build the same number of structures over North Portland Harbor as Option A, although the locations and functions on those bridges would differ, as described below. The existing bridge over North Portland Harbor would be widened and would receive seismic upgrades.

LPA Option B does not have arterial lanes on the light rail/multi-use path bridge. Direct access between Marine Drive and the island would be provided with collector-distributor lanes. The structures adjacent to the highway bridge would carry traffic merging onto or exiting off of mainline I-5 between the Marine Drive and Hayden Island interchanges.

1.2.2.2 Interchange Improvements

The LPA includes improvements to seven interchanges along a 5-mile segment of I-5 between Victory Boulevard in Portland and SR 500 in Vancouver. These improvements include some reconfiguration of adjacent local streets to complement the new interchange designs, as well as new facilities for bicyclists and pedestrians along this corridor.

Victory Boulevard Interchange

The southern extent of the I-5 project improvements would be two ramps associated with the Victory Boulevard interchange in Portland. The Marine Drive to I-5 southbound on-ramp would be braided over the I-5 southbound to the Victory Boulevard/Denver Avenue off-ramp. The other ramp improvement would lengthen the merge distance for northbound traffic entering I-5 from Denver Avenue. The current merging ramp would be extended to become an add/drop (auxiliary) lane which would continue across the river crossing.

***Potential phased construction option*:** The aforementioned southbound ramp improvements to the Victory Boulevard interchange may not be included with the CRC project. Instead, the existing connections between I-5 southbound and Victory Boulevard could be retained. The braided ramp connection could be constructed separately in the future as funding becomes available.

Marine Drive Interchange

All movements within this interchange would be reconfigured to reduce congestion for motorists entering and exiting I-5 at this location. The interchange configuration would be a single-point urban interchange (SPUI) with a flyover ramp serving the east to north movement. With this configuration, three legs of the interchange would converge at a point on Marine Drive, over the I-5 mainline. This configuration would allow the highest volume movements to move freely without being impeded by stop signs or traffic lights.

The Marine Drive eastbound to I-5 northbound flyover ramp would provide motorists with access to I-5 northbound without stopping. Motorists from Marine Drive eastbound would access I-5 southbound without stopping. Motorists traveling on Martin Luther King Jr. Boulevard westbound to I-5 northbound would access I-5 without stopping at the intersection.

The new interchange configuration changes the westbound Marine Drive and westbound Vancouver Way connections to Martin Luther King Jr. Boulevard and to northbound I-5. These two streets would access westbound Martin Luther King Jr. Boulevard farther east. Martin Luther King Jr. Boulevard would have a new direct connection to I-5 northbound.

In the new configuration, the connections from Vancouver Way and Marine Drive would be served, improving the existing connection to Martin Luther King Jr. Boulevard east of the interchange. The improvements to this connection would allow traffic to turn right from Vancouver Way and accelerate onto Martin Luther King Jr. Boulevard. On the south side of Martin Luther King Jr. Boulevard, the existing loop connection would be replaced with a new connection farther east.

A new multi-use path would extend from the Bridgeton neighborhood to the existing Expo Center light rail station and from the station to Hayden Island along the new light rail line over North Portland Harbor.

LPA Option A: Local traffic between Martin Luther King Jr. Boulevard/Marine Drive and Hayden Island would travel via an arterial bridge over North Portland Harbor. There would be some variation in the alignment of local streets in the area of the interchange between Option A and Option B. The most prominent differences are the alignments of Vancouver Way and Union Court.

LPA Option B: With this design option, there would be no arterial traffic lanes on the light rail/multi-use path bridge over North Portland Harbor. Instead, vehicles traveling between Martin Luther King Jr. Boulevard/ Marine Drive and Hayden Island would travel on the collector-distributor bridges that would parallel each side of I-5 over North Portland Harbor. Traffic would not need to merge onto mainline I-5 to travel between the island and Martin Luther King Jr. Boulevard/Marine Drive.

***Potential phased construction option*:** The aforementioned flyover ramp could be deferred and not constructed as part of the CRC project. In this case, rather than providing a direct eastbound Marine Drive to I-5 northbound connection by a flyover ramp, the project improvements to the interchange would instead provide this connection through the signal-controlled SPUI. The flyover ramp could be constructed separately in the future as funding becomes available.

Hayden Island Interchange

All movements for this interchange would be reconfigured. The new configuration would be a split tight diamond interchange. Ramps parallel to the highway would be built, lengthening the ramps and improving merging speeds. Improvements to Jantzen Drive and Hayden Island Drive would include additional through, left-turn, and right-turn lanes. A new local road, Tomahawk Island Drive, would travel east-west through the middle of Hayden Island and under the I-5 interchange, improving connectivity across I-5 on the island. Additionally, a new multi-use path would be provided along the elevated light rail line on the west side of the Hayden Island interchange.

LPA Option A: A proposed arterial bridge with two lanes of traffic, one in each direction, would allow vehicles to travel between Martin Luther King Jr. Boulevard/ Marine Drive and Hayden Island without accessing I-5.

LPA Option B: With this design option there would be no arterial traffic lanes on the light rail/multi-use path bridge over North Portland Harbor. Instead, vehicles traveling between Martin Luther King Jr. Boulevard/Marine Drive and Hayden Island would travel on the collector-distributor bridges that parallel each side of I-5 over North Portland Harbor.

SR 14 Interchange

The function of this interchange would remain largely the same. Direct connections between I-5 and SR 14 would be rebuilt. Access to and from downtown Vancouver would be provided as it is today, but the connection points would be relocated. Downtown Vancouver I-5 access to and from the south would be at C Street rather than Washington Street, while downtown connections to and from SR 14 would be made by way of Columbia Street at 4th Street.

The multi-use bicycle and pedestrian path in the northbound (eastern) I-5 bridge would exit the structure at the SR 14 interchange, and then loop down to connect into Columbia Way.

Mill Plain Interchange

This interchange would be reconfigured into a SPUI. The existing "diamond" configuration requires two traffic signals to move vehicles through the interchange. The SPUI would use one efficient intersection and allow opposing left turns simultaneously. This would improve the capacity of the interchange by reducing delay for traffic entering or exiting the highway.

This interchange would also receive several improvements for bicyclists and pedestrians. These include bike lanes and sidewalks, clear delineation and signing, short perpendicular crossings at the ramp terminals, and ramp orientations that would make pedestrians highly visible.

Fourth Plain Interchange

The improvements to this interchange would be made to better accommodate freight mobility and access to the new park and ride at Clark College. Northbound I-5 traffic exiting to Fourth Plain would continue to use the off-ramp just north of the SR 14 interchange. The southbound I-5 exit to Fourth Plain would be braided with the SR 500 connection to I-5, which would eliminate the non-standard weave between the SR 500 connection and the off-ramp to Fourth Plain as well as the westbound SR 500 to Fourth Plain Boulevard connection.

Additionally, several improvements would be made to provide better bicycle and pedestrian mobility and accessibility, including bike lanes, neighborhood connections, and access to the park and ride.

SR 500 Interchange

Improvements would be made to the SR 500 interchange to add direct connections to and from I-5. On- and off-ramps would be built to directly connect SR 500 and I-5 to and from the north, connections that are currently made by way of 39th Street. I-5 southbound traffic would connect to SR 500 via a new tunnel underneath I-5. SR 500 eastbound traffic would connect to I-5 northbound on a new on-ramp. The 39th Street connections with I-5 to and from the north would be eliminated. Travelers would instead use the connections at Main Street to connect to and from 39th Street.

Additionally, several improvements would be made to provide better bicycle and pedestrian mobility and accessibility, including sidewalks on both sides of 39th Street, bike lanes, and neighborhood connections.

***Potential phased construction option*:** The northern half of the existing SR 500 interchange would be retained, rather than building new connections between I-5 southbound to SR 500 eastbound and from SR 500 westbound to I-5 northbound. The ramps connecting SR 500 and I-5 to and from the north could be constructed separately in the future as funding becomes available.

1.2.2.3 Transit

The primary transit element of the LPA is a 2.9-mile extension of the current Metropolitan Area Express (MAX) Yellow Line light rail from the Expo Center in North Portland, where it currently ends, to Clark College in Vancouver. The transit element would not differ between LPA and LPA with highway phasing. To accommodate and complement this major addition to the region's transit system, a variety of additional improvements are also included in the LPA:

- Three park and ride facilities in Vancouver near the new light rail stations.
- Expansion of Tri-County Metropolitan Transportation District's (TriMet's) Ruby Junction light rail maintenance base in Gresham, Oregon.
- Changes to C-TRAN local bus routes.
- Upgrades to the existing light rail crossing over the Willamette River via the Steel Bridge.

Operating Characteristics

Nineteen new light rail vehicles (LRV) would be purchased as part of the CRC project to operate this extension of the MAX Yellow Line. These vehicles would be similar to those currently used by TriMet's MAX system. With the LPA, LRVs in the new guideway and in the existing Yellow Line alignment are planned to operate with 7.5-minute headways during the "peak of the peak" (the two-hour period within the 4-hour morning and afternoon/evening peak periods where demand for transit is the highest) and 15-minute headways during off-peak periods.

Light Rail Alignment and Stations

Oregon Light Rail Alignment and Station

A two-way light rail alignment for northbound and southbound trains would be constructed to extend from the existing Expo Center MAX station over North Portland Harbor to Hayden Island. Immediately north of the Expo Center, the alignment would curve eastward toward I-5, pass beneath Marine Drive, then rise over a flood wall onto a light rail/multi-use path bridge to cross North Portland Harbor. The two-way guideway over Hayden Island would be elevated at approximately the height of the rebuilt mainline of I-5, as would a new station immediately west of I-5. The alignment would extend northward on Hayden Island along the western edge of I-5, until it transitions into the hollow support structure of the new western bridge over the Columbia River.

Downtown Vancouver Light Rail Alignment and Stations

After crossing the Columbia River, the light rail alignment would curve slightly west off of the highway bridge and onto its own smaller structure over the Burlington Northern Santa Fe (BNSF) rail line. The double-track guideway would descend on structure and touch down on Washington Street south of 5th Street, continuing north on Washington Street to 7th Street. The elevation of 5th Street would be raised to allow for an at-grade crossing of the tracks on Washington Street. Between 5th and 7th Streets, the two-way guideway would run down the center of the street. Traffic would not be allowed on Washington between 5th and 6th Streets and would be two-way between 6th and 7th Streets. There would be a station on each side of the street on Washington between 5th and 6th Streets.

At 7th Street, the light rail alignment would form a couplet. The single-track northbound guideway would turn east for two blocks, then turn north onto Broadway Street, while the single-track southbound guideway would continue on Washington Street. Seventh Street will be converted to one-way traffic eastbound between Washington and Broadway with light rail operating on the north side of 7th Street. This couplet would extend north to 17th Street, where the two guideways would join and turn east.

The light rail guideway would run on the east side of Washington Street and the west side of Broadway Street, with one-way traffic southbound on Washington Street and one-way traffic northbound on Broadway Street. On station blocks, the station platform would be on the side of the street at the sidewalk. There would be two stations on the Washington-Broadway couplet, one pair of platforms near Evergreen Boulevard, and one pair near 15th Street.

East-west Light Rail Alignment and Terminus Station

The single-track southbound guideway would run in the center of 17th Street between Washington and Broadway Streets. At Broadway Street, the northbound and southbound alignments of the couplet would become a two-way center-running guideway traveling east-west on 17th Street. The guideway on 17th Street would run until G Street, then connect with McLoughlin Boulevard and cross under I-5. Both alignments would end at a station east of I-5 on the western boundary of Clark College.

Park and Ride Stations

Three park and ride stations would be built in Vancouver along the light rail alignment:

- Within the block surrounded by Columbia, Washington 4th and 5th Streets, with five floors above ground that include space for retail on the first floor and 570 parking stalls.
- Between Broadway and Main Streets next to the stations between 15th and 16th Streets, with space for retail on the first floor, and four floors above ground that include 420 parking stalls.
- At Clark College, just north of the terminus station, with space for retail or C-TRAN services on the first floor, and five floors that include approximately 1,910 parking stalls.

Ruby Junction Maintenance Facility Expansion

The Ruby Junction Maintenance Facility in Gresham, Oregon, would need to be expanded to accommodate the additional LRVs associated with the CRC project. Improvements include additional storage for LRVs and other maintenance material, expansion of LRV maintenance bays, and expanded parking for additional personnel. A new operations command center would also be required, and would be located at the TriMet Center Street location in Southeast Portland.

Local Bus Route Changes

As part of the CRC project, several C-TRAN bus routes would be changed in order to better complement the new light rail system. Most of these changes would re-route bus lines to downtown Vancouver where riders could transfer to light rail. Express routes, other than those listed below, are expected to continue service between Clark County and downtown Portland. The following table (Exhibit 1-1) shows anticipated future changes to C-TRAN bus routes.

Exhibit 1-1. Proposed C-TRAN Bus Routes Comparison

C-TRAN Bus Route	Route Changes
#4 - Fourth Plain	Route truncated in downtown Vancouver
#41 - Camas / Washougal Limited	Route truncated in downtown Vancouver
#44 - Fourth Plain Limited	Route truncated in downtown Vancouver
#47 - Battle Ground Limited	Route truncated in downtown Vancouver
#105 - I-5 Express	Route truncated in downtown Vancouver
#105S - I-5 Express Shortline	Route eliminated in LPA (The No-Build runs articulated buses between downtown Portland and downtown Vancouver on this route)

Steel Bridge Improvements

Currently, all light rail lines within the regional TriMet MAX system cross over the Willamette River via the Steel Bridge. By 2030, the number of LRVs that cross the Steel Bridge during the 4-hour PM peak period would increase from 152 to 176. To accommodate these additional trains, the project would retrofit the existing rails on the Steel Bridge to increase the allowed light rail speed over the bridge from 10 to 15 mph. To accomplish this, additional work along the Steel Bridge lift spans would be needed.

1.2.2.4 Tolling

Tolling cars and trucks that use the I-5 river crossing is proposed as a method to help fund the CRC project and to encourage the use of alternative modes of transportation. The authority to toll the I-5 crossing is set by federal and state laws. Federal statutes permit a toll-free bridge on an interstate highway to be converted to a tolled facility following the reconstruction or replacement of the bridge. Prior to imposing tolls on I-5, Washington and Oregon Departments of Transportation (WSDOT and ODOT) would have to enter into a toll agreement with U.S. Department of Transportation (DOT). Recently passed state legislation in Washington permits WSDOT to toll I-5 provided that the tolling of the facility is first authorized by the Washington legislature. Once authorized by the legislature, the Washington Transportation Commission (WTC) has the authority to set the toll rates. In Oregon, the Oregon Transportation Commission (OTC) has the authority to toll a facility and to set the toll rate. It is anticipated that prior to tolling I-5, ODOT and WSDOT would enter into a bi-state tolling agreement to establish a cooperative process for setting toll rates and guiding the use of toll revenues.

Tolls would be collected using an electronic toll collection system: toll collection booths would not be required. Instead, motorists could obtain a transponder that would automatically bill the vehicle owner each time the vehicle crossed the bridge, while 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.

The LPA proposes to apply a variable toll on vehicles using the I-5 crossing. Tolls would vary by time of day, with higher rates during peak travel periods and lower rates during off-peak periods. Medium and heavy trucks would be charged a higher toll than passenger vehicles. The traffic-related impact analysis in this FEIS is based on toll rates that, for passenger cars with transponders, would range from $1.00 during the off-peak to $2.00 during the peak travel times (in 2006 dollars).

1.2.2.5 Transportation System and Demand Management Measures

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

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

- Major new light rail line in exclusive right-of-way, as well as express bus and feeder routes;
- Modern bicycle and pedestrian facilities that accommodate more bicyclists and pedestrians, and improve connectivity, safety, and travel time;
- Park and ride lots and garages; and
- A variable toll on the highway crossing.

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

- Replacement or expanded variable message signs or other traveler information systems in the CRC project area;
- Expanded incident response capabilities;
- Queue jumps or bypass lanes for transit vehicles where multi-lane approaches are provided at ramp signals for entrance ramps;
- Expanded traveler information systems with additional traffic monitoring equipment and cameras, and
- Active traffic management.

1.2.3 LPA Construction

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

1.2.3.1 Construction Activities Sequence and Duration

The following table (Exhibit 1-2) displays the expected duration and major details of each element of the project. Due to construction sequencing requirements, the timeline to complete the initial phase of the LPA with highway phasing is the same as the full LPA.

Exhibit 1-2. Construction Activities and Estimated Duration

Element	Estimated Duration	Details
Columbia River bridges	4 years	• Construction is likely to begin with the bridges. • General sequence includes initial preparation, installation of foundation piles, shaft caps, pier columns, superstructure, and deck.
Hayden Island and SR 14 interchanges	1.5 - 4 years for each interchange	• Each interchange must be partially constructed before any traffic can be transferred to the new structure. • Each interchange needs to be completed at the same time.
Marine Drive interchange	3 years	• Construction would need to be coordinated with construction of the southbound lanes coming from Vancouver.
Demolition of the existing bridges	1.5 years	• Demolition of the existing bridges can begin only after traffic is rerouted to the new bridges.
Three interchanges north of SR 14	4 years for all three	• Construction of these interchanges could be independent from each other or from the southern half of the project. • More aggressive and costly staging could shorten this timeframe.
Light rail	4 years	• The river crossing for the light rail would be built with the bridges. • Any bridge structure work would be separate from the actual light rail construction activities and must be completed first.
Total Construction Timeline	6.3 years	• Funding, as well as contractor schedules, regulatory restrictions on in-water work, weather, materials, and equipment, could all influence construction duration. • This is also the same time required to complete the smallest usable segment of roadway – Hayden Island through SR 14 interchanges.

1.2.3.2 Major Staging Sites and Casting Yards

Staging of equipment and materials would occur in many areas along the project corridor throughout construction, generally within existing or newly purchased right-of-way or on nearby vacant parcels. However, at least one large site would be required for construction offices, to stage the larger equipment such as cranes, and to store materials such as rebar and aggregate. Suitable sites must be large and open to provide for heavy machinery and material storage, must have waterfront access for barges (either a slip or a dock capable of handling heavy equipment and material) to convey material to the construction zone, and must have roadway or rail access for landside transportation of materials by truck or train.

Three sites have been identified as possible major staging areas:

1. Port of Vancouver (Parcel 1A) site in Vancouver: This 52-acre site is located along SR 501 and near the Port of Vancouver's Terminal 3 North facility.

2. Red Lion at the Quay hotel site in Vancouver: This site would be partially acquired for construction of the Columbia River crossing, which would require the demolition of the building on this site, leaving approximately 2.6 acres for possible staging.
3. Vacant Thunderbird hotel site on Hayden Island: This 5.6-acre site is much like the Red Lion hotel site in that a large portion of the parcel is already required for new right-of-way necessary for the LPA.

A casting/staging yard could be required for construction of the over-water bridges if a precast concrete segmental bridge design is used. A casting yard would require access to the river for barges, including either a slip or a dock capable of handling heavy equipment and material; a large area suitable for a concrete batch plant and associated heavy machinery and equipment; and access to a highway and/or railway for delivery of materials.

Two sites have been identified as possible casting/staging yards:

1. Port of Vancouver Alcoa/Evergreen West site: This 95-acre site was previously home to an aluminum factory and is currently undergoing environmental remediation, which should be completed before construction of the CRC project begins (2012). The western portion of this site is best suited for a casting yard.
2. Sundial site: This 50-acre site is located between Fairview and Troutdale, just north of the Troutdale Airport, and has direct access to the Columbia River. There is an existing barge slip at this location that would not have to undergo substantial improvements.

1.2.4 The No-Build Alternative

The No-Build Alternative illustrates how transportation and environmental conditions would likely change by the year 2030 if the 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. The No-Build Alternative also includes several major land use changes that are planned within the project area, such as the Riverwest development just south of Evergreen Boulevard and west of I-5, the Columbia West Renaissance project along the western waterfront in downtown Vancouver, and redevelopment of 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 No-Build and build alternatives. Additionally, the No-Build Alternative assumes bridge repair and continuing maintenance costs to the existing bridge that are not anticipated with the replacement bridge option.

1.3 Summary of Long-term Direct Effects

1.3.1 Locally Preferred Alternative

This section summarizes the impacts of a new, 10-lane I-5 bridge crossing of the Columbia River, with a variable tolling structure based on time of day with a light rail transit alignment operating between Expo Center in Portland and Clark College in Vancouver. Exhibit 1-3 provides a side-by-side comparison of the corridor-wide impacts of the No-Build Alternative, the LPA Option A, the LPA Option A with highway phasing, the LPA Option B, and the LPA Option B with highway phasing.

Exhibit 1-3. Summary of Economic Effects (Corridor-Wide)

Type of Impact	No-Build Alternative	Locally Preferred Alternative			
		Option A (Full Build)	Option A with highway phasing	Option B (Full Build)	Option B with highway phasing
Number of Businesses Displaced - LPA	0	52 in Oregon 17 in Washington 69 Total	Same as Full Build	53 in Oregon 17 in Washington 70 Total	Same as Full Build
Number of Employees Impacted by Displacements - LPA	0	747 in Oregon 169 in Washington 916 Total	Same as Full Build	768 in Oregon 169 in Washington 937 Total	Same as Full Build
Annual Sales Impacts from Displacements - LPA	0	$85.6 Million in Oregon $18.1 Million in Washington $103.7 Million Total	Same as Full Build	$86.4 Million in Oregon $18.1 Million in Washington $104.5 Million Total	Same as Full Build
Property Tax Impacts	0	$262,000 in Oregon (0.12% total) $15,000 in Vancouver (<0.01% total)	Same as Full Build	$294,000 in Oregon (0.14% total) $15,000 in Vancouver (<0.01% total)	Same as Full Build
Parking Impacts	0	Parking at the Expo Center and the Jantzen Beach SuperCenter would be reduced due to extension of light rail transit to the north. Large amount of parking available, impact of parking loss not substantial. On-street parking and some off-street parking in downtown Vancouver would be removed due to the new light rail transit alignment. However, current parking is underutilized and ample on- and off-street parking exists downtown. Three park and rides with 3,108 parking stalls would be added to accommodate parking near transit.	Same as Full Build	Parking at the Expo Center and the Jantzen Beach SuperCenter would be reduced due to extension of light rail transit to the north. Large amount of parking available, impact of parking loss not substantial. On-street parking and some off-street parking in downtown Vancouver would be removed due to the new light rail transit alignment. However, current parking is underutilized and ample on- and off-street parking exists downtown. Three park and rides with 3,108 parking stalls would be added to accommodate parking near transit.	Same as Full Build

Type of Impact	No-Build Alternative	Locally Preferred Alternative			
		Option A (Full Build)	Option A with highway phasing	Option B (Full Build)	Option B with highway phasing
Access/Circulation Impacts	Access and Circulation same as existing.	Access and circulation greatly improved for majority of freight traffic in vicinity of Marine Drive interchange. Some out-of-direction travel required to access a small number of businesses located between Marine Drive and North Portland Harbor. Access to Hayden Island would be improved by the local arterial bridge over the North Portland Harbor. In Vancouver, access modifications would occur along the new light rail transit alignment, most prominently along Washington and Broadway Streets, where accesses directly adjacent to light rail transit are closed, and along 17th Street, where accesses are modified to right-in/right out. Businesses could see an increase of "pass-by" business due to the addition of transit.	Access and circulation would be similar to the LPA Full Build. However, movement eastbound on Marine Drive to northbound I-5 would not be free flow as in the full build LPA. This would make it less direct for freight to access I-5. The existing Victory Boulevard on-ramp would be retained forcing a short weave for freight accessing I-5 from Marine Drive.	Access and circulation greatly improved for majority of freight traffic in vicinity of Marine Drive interchange. Some out-of-direction travel required to access a small number of businesses located between Marine Drive and North Portland Harbor. In Vancouver, access modifications would occur along the new light rail transit alignment, most prominently along Washington and Broadway Streets, where accesses directly adjacent to light rail transit are closed, and along 17th Street, where accesses are modified to right-in/right out. Businesses could see an increase of "pass-by" business due to the addition of transit.	Access and circulation would be similar to the LPA Option B Full Build. However, movement eastbound on Marine Drive to northbound I-5 would not be free flow as in the full build LPA. This would make it less direct for freight to access I-5. The existing Victory Boulevard on-ramp would be retained forcing a short weave for freight accessing I-5 from Marine Drive.
Travel Patterns/Volumes Impacts	Duration of congestion increases over current levels. Travel time reliability is worse than current levels.	Travel time reliability for freight is improved, in particular from the improvements at Marine Drive due to interchange design focus on addressing freight needs. More direct access for freight along Martin Luther King Jr. Boulevard, Marine Drive, and from both the Rivergate and Airport industrial areas.	The flyovers at Marine Drive and Victory Boulevard are the main highway phasing components. Without the Marine Drive flyover, the configuration of the interchange is a full four-legged SPUI. All intersections near the interchange operate within the congestion standards for the City of Portland.	Travel time reliability for freight is improved, in particular from the improvements at Marine Drive due to interchange design focus on addressing freight needs. More direct access for freight along Martin Luther King Jr. Boulevard, Marine Drive, and from both the Rivergate and Airport industrial areas.	The flyovers at Marine Drive and Victory Boulevard are the main highway phasing components. Without the Marine Drive flyover, the configuration of the interchange is a full four-legged SPUI. All intersections near the interchange operate within the congestion standards for the City of Portland.

Note: CRC Acquisitions Technical Report, InfoUSA Data, 2009, Clark and Multnomah County Tax Assessor Data.

The loss of parking on both sides of the river is not anticipated to significantly affect the existing businesses. In Downtown Vancouver, there is adequate on- and off-street parking available to accommodate those who choose to drive and park in downtown. The addition of light rail transit could also decrease the demand for parking as it is anticipated that some trips could shift to transit. Parking losses on the Oregon side would be mainly to large existing parking lots, and the loss represents a small fraction of existing parking.

The LPA Option A and Option A with highway phasing would increase connectivity and mobility for the API by providing local connections, and would reduce some of the congestion that currently exists on the I-5 corridor by providing local access on an arterial bridge over north Portland Harbor to Hayden Island. This would benefit existing businesses within the region by reducing the travel time for freight and providing more travel time reliability, thus reducing the cost of transportation.

1.3.1.1 Oregon Impacts

In the Marine Drive interchange area, four marine related businesses would be displaced by the LPA that are dependent upon a location close to the river. Finding an adequate location for boat sales and a boat dock and repair may be difficult as much of the Columbia River area in the vicinity of freeway access is built up for either residential or industrial/commercial use. However, the Oregon Department of Transportation (ODOT) would provide relocation assistance to these businesses.

ODOT land leased to Diversified Marine would be acquired for the project to construct the proposed Expo Center Drive, a stormwater retention pond, and to realign the existing Marine Drive. This parcel is currently used by Diversified Marine for vehicle storage. Both Options A and B would modify the connection between Martin Luther King Jr. Drive and Vancouver Way, and both would provide a new connection to N Marine Drive east, west, and to the highway.

In the Hayden Island interchange area over three dozen businesses would be displaced by the project. Most important from an economic standpoint would be the displacement of businesses that serve mainly local clientele. ODOT would work with affected business owners to provide relocation assistance, although relocation on the island may be difficult for Safeway, the only grocery store on the island. It is located on a parcel that is 4.66 acres in size with 300 parking stalls. The CRC project may suggest replacement sites for the relocation of Safeway, but it is entirely up to the store owners to choose their replacement location, if any. Officials representing the Jantzen Beach SuperCenter initiated a site plan review with the City Portland. The SuperCenter plans a significant rebuilding effort that will include an expansion of the Target store. Early indications suggest the SuperCenter will include a pharmacy and drugstore in a new location.. Groceries in North Portland could be more accessible under the LPA Option A, with the local arterial bridge providing access to North Portland. The LPA Option B would require Hayden Island residents to use the I-5 Collector Distributor lanes to travel off the island to access a grocery store.

The Ruby Junction Maintenance Facility expansion would require full acquisition of eight businesses with estimated annual sales of approximately $12.2 million and employing an estimated 79 people. The business uses are a mixture of service and industrial, and some parcels appear to be a unique live/work arrangement with both residences and businesses located on one parcel. There are other industrial and commercial lands that could accommodate these businesses within the Portland Metro area, as the displaced businesses do not have special requirements or

overly large area needs. However, finding areas with zoning that would allow for the live/work situation may be more difficult than simply finding comparable industrially zoned parcels.

1.3.1.2 Washington Impacts

In Vancouver, access to businesses along 17th Street would be modified to right-in/right-out only with the construction of light rail transit. This means that customers looking to reach a business may need to go out of direction or around a block to access the location. Left turns would be allowed at intersections west of C Street (at Washington Street, Main Street, Broadway Street, and C Street) but would not be allowed east of C Street (at D Street, E Street, F Street, or G Street).

Construction of light rail transit along 17th Street would limit accesses between Washington and I-5 to right-in, right-out only for the residential parcels with access currently onto 17th Street, however, since 17th Street is mainly residential, few economic impacts are associated with the alignment.

1.3.2 Transit-Oriented Development Potential

Transit-oriented development (TOD) potential by station is summarized in Exhibit 1-4 below.

Exhibit 1-4. Summary of TOD by Station

Station	Rating of TOD Potential
Oregon	
Expo Center Station	Low
Hayden Island Station	High
Washington	
5th Street Station	Moderate
9th Street Stations	Moderate to High
15th Street Stations	High
Clark College Station (Terminus)	Low to Moderate

The potential for TOD at the proposed Hayden Island station is rated as high, because the long-range plan for the area is to increase housing, create a walkable grid system, and provide commercial development closer to the proposed transit station.

The stations north of 15th Street on both Broadway and Washington Streets have zoning which is very conducive to TOD. Mixed use, commercial (the predominant land use), and high-density residential developments already exist in the vicinity of the station. There are many vacant parcels and lower valued buildings in the vicinity. The area immediately east of the station on Washington Street is currently used informally as a surface parking lot, and would be developed as a park and ride.

1.3.3 Marine Impacts

Most impacts to marine commerce are positive: the LPA would allow most vessels currently using the river to pass beneath the bridges without requiring bridge lifts, and would eliminate some of the zig-zag movements that some barges currently make between the I-5 bridges and the downstream BNSF railroad swing span bridge. However, the vertical clearance of the LPA bridges would be lower than the raised lift span clearance on the current bridges. A study of river

users, conducted in coordination with the Army Corps of Engineers (USACE), showed that a very small number of vessels would be affected by the change in vertical clearance.

1.3.4 Tolling

The proposed toll options would have a variable toll structure, charging different toll amounts for peak and the non-peak periods. Variable priced tolling schemes have the potential to reduce overall congestion and regulate traffic flows. This is because, in part, persons with greater schedule flexibility and more sensitivity to out-of-pocket costs would choose to travel during the non-peak period to pay a lower toll, and persons with less flexible schedules, and/or are carrying valuable or time-sensitive goods, would be less sensitive to the out-of-pocket cost of the toll and would travel during whatever period is dictated by their schedules. Depending on specific tolling schemes and transit fare structures, some persons most sensitive to out-of-pocket costs may shift to transit.

Variable tolls would likely be beneficial for freight-dependent businesses and businesses that rely on just-in-time deliveries, because the predictability of travel would also increase. However, the greater the variable toll, the higher the operating costs for truck movements during peak-charge periods, although the peak truck hour is the noon hour. Truck volumes are highest between the hours of 9 a.m. and 3 p.m. meaning 42 percent of daily truck traffic on the bridge occurs during this period because truck drivers prefer to travel during uncongested conditions.

1.3.5 Impacts of LPA with Highway Phasing

Phasing of the LPA would defer construction of the Marine Drive flyover, and construction of the Victory Braid. Deferring the Marine Drive flyover would require traffic travelling eastbound on Marine Drive to I-5 northbound to travel through the signalized SPUI intersection instead of having free-flow movement provided by the flyover. This is a reduced benefit to freight traffic from the Rivergate Industrial Area, but still provides a benefit over the No-Build Alternative. Phasing would also retain the existing Victory Boulevard configuration, with the short weaving distance for the Marine Drive eastbound to I-5 southbound movement. The deferral of this improvement reduces the safety and efficiency benefits for freight vehicles accessing I-5 southbound, and results in a movement not very different from the No-Build Alternative. Mobility benefits from the I-5 improvements would be retained for freight under the highway phasing option.

1.3.6 No-Build Alternative

Under the No-Build Alternative, no businesses within Oregon or Washington would be displaced by right-of-way acquisition and there would be no resulting decrease in property or sales tax revenues or jobs lost. There would be no additional employment or added sales tax associated with project construction. Economic development planned for this area may occur more slowly as business owners may be more reluctant to locate in an area with poor access and mobility for employees and customers. Freight reliability would decrease as congestion spreads beyond the peak hour, into times when trucks tend to travel. Customers may elect to shop in other areas with easier access and mobility.

1.4 Temporary Effects

Construction of the LPA has the potential to cause negative economic effects by blocking visibility and access to businesses, causing traffic delays, and rerouting traffic on detours that increase travel times and make access to some locations difficult. Traffic congestion is already a

common occurrence within the corridor during peak hours and adjacent construction activities and temporary detours could extend the peak duration, negatively impacting businesses whose employees commute using the corridor. Likewise, freight, goods, and services travel could be negatively affected if construction activities make travel times more difficult to determine.

Construction temporary effects in Downtown Vancouver associated with the construction of light rail along city streets will impact on-street parking and/or access to businesses along Washington Street, Broadway Street, and 17th Street. There would be a loss of approximately 300 on street parking spaces associated with light rail. Increased levels of noise, dust and vibrations in downtown is also expected due to construction. Construction of the LPA is expected to require some temporary detours, and is expected to relocate some on-street parking. This reduced visibility and access to downtown businesses could result in temporary reduced sales for affected businesses. Mitigation and coordination with affected businesses throughout construction would lessen these impacts.

Construction of the LPA is also expected to result in increased employment and spending in the project area during construction. The extent of these effects depends on the source of project funding and the makeup of work crews used during project construction. Funds from local or regional sources are transfers, meaning money spent on the project that would otherwise be spent by residents and businesses on other economic activities within the region. Federal or state funds that are new to a region can have a measurable economic effect on employment and income gains resulting from project construction. The federal government and the states of Oregon and Washington would provide the funds for the CRC project, thus resulting in some income and job benefits in the region that would otherwise not occur.

Estimated employment impacts due to project expenditures are shown in Exhibit 1-5.

Exhibit 1-5. Employment Impacts of Project Construction (2014 dollars)

	Full-Time Equivalent Employment				
	Direct Jobs	Indirect Jobs	Induced Jobs	Total Regional Jobs	Ave Annual Regional Jobs
FEIS	151	101	80	332	30
ROW	0	0	0	0	0
Highway Construction and Bridge Removal	9,687	2,089	4,319	16,095	1,463
Transit Construction[a]	2,583	775	1,190	4,548	413
Total In-region Construction	**12,421**	**2,964**	**5,589**	**20,975**	**1,907**

a 2014 Transit construction cost is 80% of $885 million, which excludes estimated out-of-region purchases of light rail vehicles and track, and less $30 million for ROW and $12 million for design through preliminary engineering.

As shown, approximately 20,975 total person-year jobs would be expected for design and construction of the LPA. These estimates are based on 2009 CRC project cost estimates, expenditure per employee estimates from FHWA (2003) and CH2M HILL (2009), and employment multipliers from the Minnesota IMPLAN Group, Inc. (2007).

1.4.1 Marine Impacts

Construction of the proposed crossing is expected to occur over a 4-year period. Some likely effects to marine commerce during construction include the following:

- Various navigation channels would be closed throughout the construction of the proposed I-5 bridges, but it is assumed that at least one navigable channel would remain open for marine traffic at all times.
- Commercial vessels may be provided with towing assistance at times when navigation is difficult due to construction activities.
- A vertical clearance restriction may be put in place on the primary navigation channel for up to 6 months. This would limit navigation under the bridges for commercial vessels with heights greater than 60 feet.
- Temporary river travel restrictions are anticipated as barges are used to ferry materials to and from work sites.

1.5 Proposed Mitigation

The LPA would result in positive economic impacts in the API by reducing congestion on I-5 and facilitating the movement of traffic, particularly freight truck traffic, between the Marine Drive corridor and I-5. The bulk of potential negative economic impacts identified in this report result from business displacements, losses in parking, or changes in access to businesses. This section identifies several measures that could be considered to avoid or mitigate the potential impacts.

Business displacements from right-of-way, losses in parking, and changes in access identified in this report are based on preliminary engineering level design. More detailed design will seek to reduce the amount of land that must be acquired for right-of-way and to avoid acquiring businesses where possible. For those businesses displaced by the project, ODOT and Washington State Department of Transportation (WSDOT) would provide a relocation assistance program. The federal "Uniform Relocation Assistance and Real Property Acquisition Polices Act of 1970" and the "Uniform Relocation Assistance Amendments of 1987" ensure the fair and equitable relocation and reestablishment of persons, businesses, farms, and nonprofit organizations displaced as a result of federal or federally assisted programs. This is done so that displaced persons would not suffer disproportionate impacts as a result of projects designed for the benefit of the public as a whole.

Construction of the project would be carefully planned to phase construction of project components in a way that reduces or avoids complete closure of affected roadways and access points to nearby businesses. Detours would be carefully routed to minimize impacts to overall travel times, and would be signed to avoid or reduce confusion. Final staging plans would provide for the following, to the greatest extent practicable:

- Minimizing traffic delays and disruptions by scheduling lane and road closures during the evening and weekend periods.
- Providing continued access to properties during construction.
- Constructing new elements outside of the existing road system to minimize closures and disruptions.
- Minimizing construction-related impacts such as traffic, noise, and decreased air quality on neighborhoods.
- Clear signage to available parking areas that customers can use to access downtown businesses.

Mitigation strategies to minimize impacts to businesses during light rail construction would include, to the greatest extent possible: coordinating the schedule, pace, and order of construction to minimize its impacts to nearby businesses; staging construction so that it does not disrupt any single area for an extended period of time; maintaining access for motorists, delivery and service vehicles, cyclists, and pedestrians during business hours; providing visible, temporary, easy-to-read signage to alert customers that businesses are open during construction; a "buy local" campaign that encourages potential customers to patronize local businesses along the corridor during construction; and a 24-hour, 7-days-a-week emergency construction hotline for businesses and property owners/managers to resolve issues during an emergency.

The provision of alternate access in the vicinity of the Marine Drive interchange would be important to keep freight moving during construction. Outreach to the businesses to determine access and site circulation needs would be helpful. Without the provision of alternate access, loss of access to Marine Drive may prevent the firms from doing business.

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2. Methods

2.1 Introduction

This section describes the methods used to collect data and evaluate economic impacts of the CRC project. The economics evaluation identified potential significant adverse impacts and beneficial effects on the local and regional economy. The local economy was defined as businesses located within the API while the regional economy is defined as the Portland-Vancouver Primary Metropolitan Statistical Area (PMSA), which includes the counties of Clackamas, Columbia, Multnomah, Washington, and Yamhill in Oregon, and Clark County in Washington. The impact analysis included a discussion of construction-related impacts, operational impacts, and cumulative and indirect impacts associated with the LPA. The analysis was developed to comply with the National Environmental Policy Act of 1969 (NEPA), applicable state environmental policy legislation, and local and state planning policies.

The economic impacts evaluation employed two study areas for environmental effects: the primary and secondary APIs. These are described below.

2.1.1 Primary API

The primary API (Exhibit 2-1) addressed direct economic impacts associated with the LPA, including business displacements as well as impacts to business access, parking, and visibility. The primary API is defined as a 0.25-mile buffer along I-5, and extends approximately 5 miles from north to south. It starts north of the I-5/SR 500 interchange in Washington, and runs south towards the I-5/Columbia Boulevard interchange in Oregon. North of the river, the API expands west into downtown Vancouver, and east near Clark College to include the footprint of a light rail transit alignment, stations, and park and ride locations. Around the actual river crossing, the eastern and western sides each extend 0.25 mile from the I-5 right-of-way.

The primary API is the area most likely to experience direct impacts from construction and operation of the LPA. Most physical project changes were determined to occur in this area.

2.1.2 Secondary API

The secondary API represents the area where indirect impacts, including traffic and construction staging, are expected to occur from the LPA (Exhibit 2-2).

The secondary API is comprised of the six-county Portland-Vancouver PMSA. This larger region was analyzed because the project is expected have far-reaching economic effects outside the immediate project area.

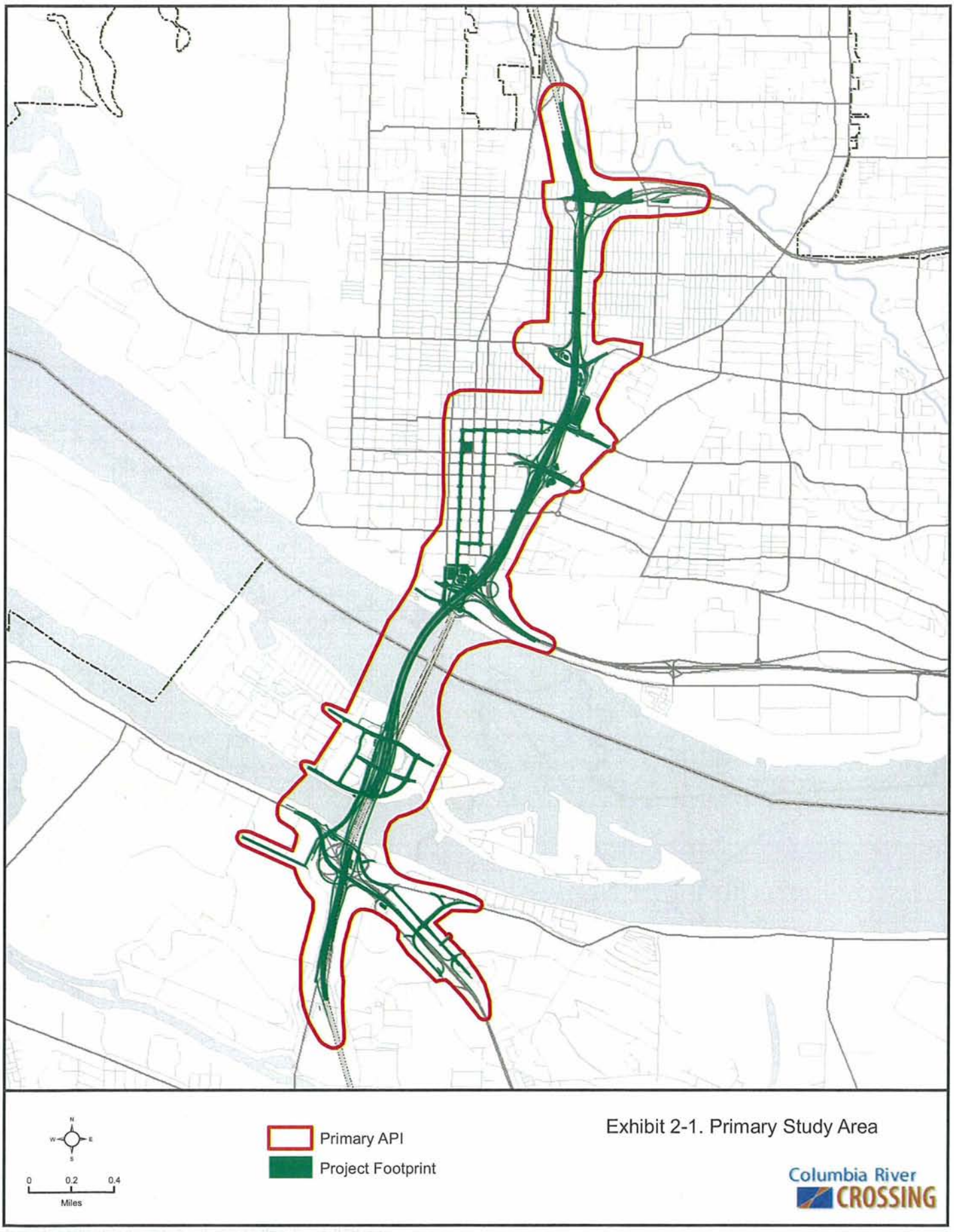

Exhibit 2-1. Primary Study Area

PRELIMINARY

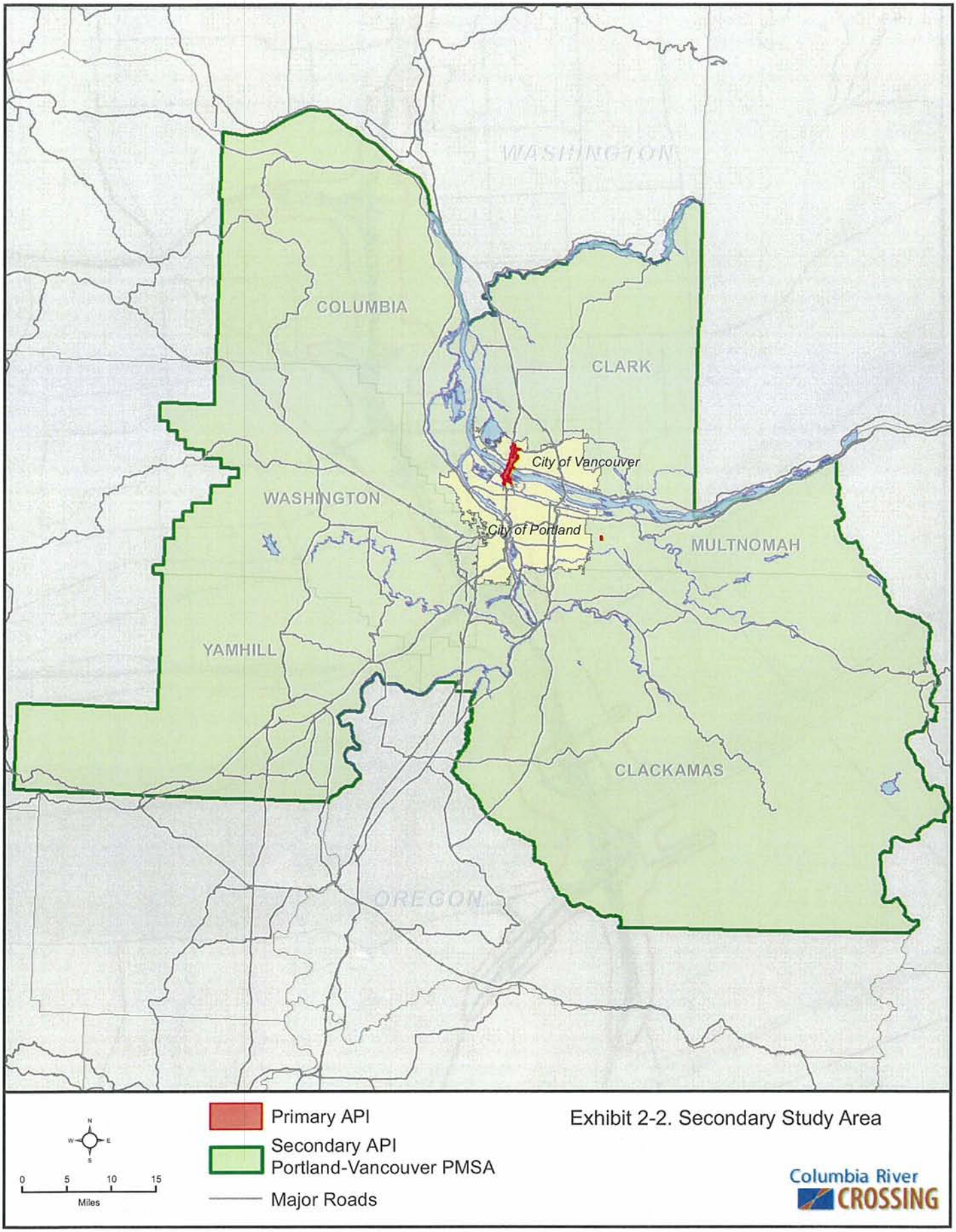

Exhibit 2-2. Secondary Study Area

Columbia River CROSSING