

INDEPENDENT REVIEW PANEL
Columbia River Crossing



PO Box 11351
Olympia, WA 98508

July 27, 2010

Governor Christine O. Gregoire
Office of the Governor
PO Box 40002
Olympia, WA 98504-0002

Governor Theodore R. Kulongoski
160 State Capitol
900 Court Street
Salem, Oregon 97301-4047

Columbia River Crossing Independent Review Panel Final Report

Dear Governors Gregoire and Kulongoski:

In accordance with your charge to the Independent Review Panel (IRP) the final report documenting our findings and recommendations is transmitted for your consideration. The IRP has examined a large volume of information, heard from project owners, project sponsors, key stakeholders and the public and conducted independent research.

The IRP is unanimous in assessing that the Columbia River Crossing Project (CRC) must move forward with a new crossing to be built at the earliest possible date. In addition, the IRP affirms that the CRC has made significant progress in preliminary engineering and environmental studies.

This report outlines the IRP findings regarding the work to date and offers recommendations to serve as a “road map” for Oregon and Washington toward project completion. Complying with these recommendations will be the most expeditious path for the CRC and bring substantial long-term benefit to the region.

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We appreciate the opportunity to assist you and the citizens of your respective states in this important initiative. The IRP would be pleased to provide further clarification on any part of the report as needed.

Sincerely,

Thomas R. Warne, PE

Chair

Enclosure

I-5 Columbia River Crossing Project Independent Review Panel

Final Report

July 27, 2010



PO Box 11351
Olympia, WA 98508

Contact: Tom Warne
twarne@tomwarne.com
801.302.8300



Submitted by:

Thomas R. Warne, PE
Chair

Rodney L. Brown, JD

Mike Meyer, PhD, PE

E. Robert Ferguson

Timothy R. Neuman, PE

Patricia D. Galloway, PhD, PE

Mary Lou Ralls, PE

Diana C. Mendes, AICP



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Terminology

An understanding of the following terms is necessary to have appropriate context for this document:

Table 1 - Terminology

Acronym	Meaning
AASHTO	American Association of State Highway and Transportation Officials
AACEI	Association for the Advancement of Cost Engineering International
ADS	UDAG Aesthetic Design Subcommittee
BA	Biological Assessment
BIA	Bridge Influence Area
CEJG	Community and Environmental Justice Group
CEQ	Council on Environmental Quality
CEVP	Cost Estimate Validation Process
CFR	Code of Federal Regulations
CRA	Cost Risk Assessment
CPM	Critical Path Method
CRC	Columbia River Crossing Project / Project Team
CSS / CSD	Context Sensitive Solutions / Context Sensitive Design
CRITFC	Columbia River Inter Tribal Fish Commission
C-TRAN	Clark County Transit Agency
DEQ	Department of Environmental Quality

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Acronym	Meaning
DOI	US Department of the Interior
DOTs	Departments of Transportation
EIS	Environmental Impact Statement (Draft, Supplemental, or Final)
EJ	Environmental Justice
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FFGA	Full Funding Grant Agreement
FHWA	Federal Highway Administration
FTA	Federal Transit Authority
FWG	Freight Working Group
FY	Fiscal Year
GHG	Green House Gasses
HSM	AASHTO's Highway Safety Manual
IGA	Intergovernmental Agreement
InterCEP	Interstate Collaborative Environmental Process
IPS	Integrated Project Staff
IRP	Independent Review Panel
I-5	Interstate 5
LPA	Locally Preferred Alternative

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Acronym	Meaning
LRT	Light Rail Transit
MAX	Metropolitan Area Express
MDSG	Marine Drive Stakeholder Group
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
NHS	National Highway System
NMFS	National Marine Fisheries Service
NPS	National Park Service
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NRHP	National Register of Historic Places
ODOT	Oregon Department of Transportation
ODOT HQ	Oregon Department of Transportation Headquarters
O&M	Operations and Maintenance
PAC	Portland Pedestrian Advisory Committee
PBAC	Pedestrian Bicycle Advisory Committee
PMAG	Performance Measures Advisory Group
PSC	Project Sponsors Council
PWG	Portland Working Group
ROD	Record of Decision

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Acronym	Meaning
RTC	Regional Transportation Council
SAFETEA-LU	The Safe, Accountable, Flexible Transportation Equity Act: A Legacy for Users
STHB	Stacked Transit Highway Bridge
SWG	Sustainability Working Group
TDM	Transportation Demand Management
THUD	Transportation, Housing, and Urban Development Appropriations Act
TriMet	Portland, Oregon Metropolitan Area Transit Agency
TS&L	Type, Size and Location
UDAG	Urban Design Advisory Group
URS	URS Corporation
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
VWG	Vancouver Working Group
VNHR and FVNHR	Vancouver National Historic Reserve (and Fort Vancouver National Historic Reserve)
WSDOT	Washington State Department of Transportation
WSDOT HQ	Washington State Department of Transportation Headquarters
WSU	Washington State University



1 Executive Summary

The Columbia River Crossing Project (CRC) represents one of the most ambitious and complex transportation initiatives in the nation. This multi-partner, multi-modal project is aimed at improving travel efficiency and safety for cars, trucks, transit and pedestrians; strengthening the regional economy through transportation solutions, and supporting community livability. Although only five miles in length, this transportation corridor presents many engineering, environmental, social, commercial, and community challenges. If handled correctly, it will be an invaluable asset to the cities of Vancouver and Portland and their respective states. On the other hand, if poorly conceived and executed it will fail to serve mobility and other community needs and values of the region in the years to come. It is the type of project where the owners/sponsors have only one chance to get it right.

Work on the CRC has been ongoing for a decade with a strong local consensus behind the need for action. Many of those living in the region are anxious to move the project forward to construction. The current project schedule shows a Final Environmental Impact Statement (Final EIS) as ready to distribute in the near future with a Record of Decision (ROD) by early 2011.

Now, however, the project is at a critical juncture. Amidst design constraints that complicate an already complex river crossing, unresolved issues have caused concern among elected officials and stakeholders about the state of the project and its approach. On April 13, 2010 Governors Christine Gregoire and Theodore Kulongoski announced the appointment of an Independent Review Panel (IRP) composed of eight national experts with extensive credentials in large project delivery and the issues facing the CRC. The governors convened the panel to ensure that:

- Key project assumptions and methods are reasonable.
- CRC embraces a modern way of thinking in improving local, regional and national transportation infrastructures that integrate light rail, pedestrians, bicycles, and highway needs into a single solution.

The panel is chaired by Thomas R. Warne, PE. Other members include:

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- Rodney L. Brown, Jr.; JD
- E. Robert Ferguson
- Patricia D. Galloway, PhD, PE
- Diana C. Mendes, AICP
- Michael D. Meyer, PhD, PE
- Timothy R. Neuman, PE
- Mary Lou Ralls, PE

Recognizing the need to maintain momentum by the CRC, the Governors charged the IRP to do the following:

- Review the project implementation plan
- Review the project finance plan
- Review project performance measures

Their efforts consisted of extensive public briefings, community comment sessions and independent research conducted by members on specific topic areas. The IRP held six public meetings where relevant project presentations were made by the Washington State Department of Transportation (WSDOT), the Oregon Department of Transportation (ODOT), TriMet, C-Tran, project sponsors, key stakeholders and the public. In addition, community comment sessions were held on three separate evenings. All of these meetings occurred in Vancouver and Portland. In addition, the IRP attempted to communicate with other interested parties, undertook their own original research into project issues and otherwise sought to understand the CRC. This report reflects the findings and recommendations of the IRP concerning the CRC.

Two overall comments should be highlighted relative to the IRP's findings and conclusions. First, a new river crossing must be built; the "no-build" option is not a viable alternative. Merely retrofitting the existing bridge does not address the fundamental purpose and need. The IRP recognizes a strong regional consensus on the type, severity and nature of the problems associated with I-5 and the project plus the need for action to address those

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problems. The IRP does not endorse a specific option other than to emphasize something must be done—sooner than later.

Second, the IRP found that much of the work conducted by the CRC and their counterparts in the other sponsoring organizations is good, sound, and reflects appropriate practice for such a project. Of particular note is the effectiveness of the Integrated Project Staff (IPS) and their efforts to advance critical issues to the Project Sponsors Council (PSC) for consideration.

Findings

During the course of their work the IRP identified findings among the topic areas assigned by the governors. The recommendations included in this IRP report reflect conclusions on how the CRC can address these areas of concern. Major findings are presented in the table 2 below.

Table 2 – IRP Findings

Finding	Description
Public outreach has lost momentum.	The original aggressive, comprehensive public outreach effort and efficient coordination that characterized the Draft EIS preparation has not been continued in the same manner during the preparation of the Final EIS and thus lost its effectiveness and momentum.
LPA caveats reflect a low level of agreement, which contributed to current project status.	The Locally Preferred Alternative (LPA) adopted in 2008 indicated agreement on the need for a replacement bridge and provision of high capacity transit with light rail transit as the preferred mode. However, caveats indentified by the various project sponsor resolutions showed a number of project design issues outstanding and requiring additional coordination, thus making the LPA susceptible to individual interpretations and disagreements later. The apparent consensus reached in 2008 actually reflected a very low level of agreement between the parties that contributed to the current project status.

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<p>Much NEPA work remains.</p>	<p>Much work remains to complete the NEPA process for this project. Work to be completed includes the following:</p> <ul style="list-style-type: none">▪ Addressing the nature of modifications to the Draft EIS to be included in the Final EIS.▪ The need to complete key Section 106 requirements.▪ The need to complete important 4(f) requirements.▪ Issues relating to the Native American tribes and fishing rights.▪ Environmental justice concerns.
<p>The current river crossing structure type is unique and presents risk to both the cost and the schedule of the CRC.</p>	<p>Since the publication of the Draft EIS the LPA has been modified considerably. Most significant is the change in structure type for the main bridges across the Columbia River. This change from a closed box segmental design to the open-web Stacked Transit/Highway Bridge (STHB) approach is substantial. It reflects a departure from a standard structure type used across the nation to one that has never been built anywhere in the world, requiring extensive testing and engineering to determine viability. The STHB accommodates light rail transit within one of the bridges and the open-web design eliminates the confined attributes of segmental box configuration. The IRP determined several key things about the open-web STHB including:</p> <ul style="list-style-type: none">▪ No Cost Estimate Validation Process (CEVP) has been done on the current design. Past CEVP efforts were conducted on a version of the bridge no longer under consideration.▪ The earlier Constructability Workshop reviewed a previous version of the bridge as well.▪ Current cost estimates are for a previous bridge type and may not reflect the actual cost of the STHB.▪ FHWA and others will require substantial testing and evaluation of the open-web STHB prior to final approval.

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<p>Clearance issues present a challenge.</p>	<p>Clearance issues linked to the river traffic and aviation associated with Pearson Field and Portland International Airport present constraints that make reasonable bridge solutions difficult.</p>
<p>Consensus on a specific plan regarding land use, commercial development, and community concerns on Hayden Island must be in place before the right transportation solution can be developed.</p>	<p>Completing the Final EIS requires consensus behind a specific plan. The controversy at Hayden Island has been a contentious issue for the CRC. The interchange design for Hayden Island, the number of lanes crossing the island and the river in that area each affect the future of the island in terms of land use and development. The CRC will be unable to provide the right transportation solution for the island until these issues are resolved. Once the City of Portland and the island residents have resolved their issues and are unified so that decisions can be made, a transportation solution will emerge.</p>
<p>Light rail transit is essential.</p>	<p>The IRP finds that light rail transit (LRT) is an essential component of the successful CRC and that LRT and the CRC Bridge are co-joined; one won't be built without the other. The systemic value of extending the LRT from EXPO Center to downtown Vancouver seems obvious to the IRP as it contributes to the long-term mobility needs of the region.</p>
<p>Tolling issues require attention.</p>	<p>The finance plan contains typical revenue sources including New Starts funding for the light rail project, grants from the Projects of National Significance program, funds from the respective legislatures, and revenues from tolls. The certainty of each revenue source is unique although some are more predictable than others. For example, the IRP is unable to judge whether or not the state legislatures will provide the \$750-850 million shown in the project finance plan. Tolling is seen by the IRP as essential to the viability of the suggested plan. However, many tolling issues remain including overall philosophy, how and when tolls are imposed, and whether their purpose is project finance, travel demand management or some of both.</p>
<p>Discussion of project phasing is not in the Draft EIS.</p>	<p>No provision was presented to the IRP about project phasing. The IRP finds this to be unrealistic given the final cost of the CRC as well as the need to address cash flow demands and construction sequencing. Phasing is not part of the Draft EIS currently under review but should be included in the Final EIS.</p>

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<p>Cost/benefit analysis is reasonable.</p>	<p>The project has many uncertainties, such as the number of lanes and cost of improvements. The IRP found the general approach to the cost/benefit analysis to be reasonable regarding the relative benefits and costs for the project segments conducive to monetization. However, while the CRC approach was procedurally correct, many project changes have not been addressed and the IRP cannot assess the validity of the conclusion until that happens. As a result, the cost-benefit ratio calculation is not useful in the overall decision-making process.</p>
<p>IRP is unable to assess the accuracy of the cost estimate due to change in bridge type and Hayden Island issues.</p>	<p>The IRP is unable to assess the accuracy of the cost estimate for the project. Past efforts to determine an accurate cost have been largely negated due to the change in bridge type and the continuing controversy regarding Hayden Island. Until a resolution to these two issues is achieved and the NEPA process is closer to completion, the total cost of the project is unknown with any certainty. Conducting a new CEVP and other cost estimation activities are necessary to rectify this situation.</p>
<p>Due to change in bridge type and Hayden Island Issues, project risks may not be fully understood.</p>	<p>Project risk management has received attention from the project staff. The process followed is typical of other large projects and netted useful information. Unfortunately, with the change in bridge type and the prevailing issues at Hayden Island, the project will have to conduct new risk assessments using CEVP and other tools in order to fully understand and manage the substantial risks associated with a project of this nature.</p>
<p>2030 design year presents concern.</p>	<p>The IRP found the current efforts to reconcile the number of lanes on the CRC to be encouraging. This level of cooperation among the staff through the IPS and within the individual organizations is commendable. In resolving lane numbers the IRP does have some concerns about the on-going dialogue. The design year for this project is 2030 and the opening of the new facility could be as late as 2018 or 2020. Only 10 or 12 years will pass before the design year is reached.</p>

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<p>Current number-of-lane discussions present risk of inadequate capacity for a 100-year bridge.</p>	<p>The risk of not seeing far enough into the future on this project is a concern; the new CRC bridges will last for 100 years or more. This is not simply a street widening project where a community can widen again in ten years. Traffic patterns; land use strategies, freight growth and other key inputs into existing models do not provide a dynamic vision of the future when thinking in terms of a 100-year facility. The desirability of living in the Portland/Vancouver region is not going to diminish, so populations will continue to grow. Freight growth is planned for and desired by that industry and policy makers on both sides of the river. These and many others factors will influence mobility needs for 90 years beyond the project design year. In the context of the current 10 lane versus 12 lane discussion, the IRP believes the greatest risk in the decision-making process is not over-sizing the bridges but not building enough capacity for the next 100 years.</p>
<p>Decision-making appears cumbersome.</p>	<p>CRC governance and management has been difficult to date due to the bi-state nature of the project and the diverse ownership and sponsorship relationships. The current structure of the PSC and IPS appear to be working to some degree of effectiveness. However, decision-making appears to be cumbersome due to management, in effect, “by committee.” Although this structure may serve the project through the NEPA process, it is not the kind of management and governance structure that should exist during construction and for long-term facility management once it opens. A number of ideas have emerged around the concept of a bi-state commission, interstate compact, a bridge authority or mobility council as the model that should be implemented to address this critical need. In spite of much discussion, no consensus exists among the sponsors about the membership, role, or authority of such an entity, yet time is of the essence for establishing this project element.</p>
<p>Difficult decisions are pushed to the future.</p>	<p>The IRP has observed a pattern of decision-making where difficult issues often are not dealt with immediately, but are more likely to be pushed into the future. The future governance structure appears to be one example. The adoption of the LPA in 2008 with resolution caveats to be resolved at some future date is another.</p>

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<p>Performance measurement is an important strategy.</p>	<p>The CRC started a process for identifying and following performance measures during the life of the project and into the future. This is an important long-term strategy that deserves attention from all parties. Much work remains to be done so it is too soon to render judgment concerning any particular measure or its management.</p>
<p>CRC refinements which may differ from the LPA presented in the Draft EIS may present the potential for incidence of environmental impacts that are significantly different from those previously disclosed to the public in the Draft EIS.</p>	<p>Given the remaining uncertainties and unresolved issues, it is incumbent upon the CRC to immediately advise the FHWA and FTA of any potential environmental impact differing significantly from those previously publically disclosed to the Draft EIS. They must also consult on appropriate modifications to the environmental review process needed to accommodate such changes. These changes could result from design refinements/modifications, from analyzing phasing impacts, or from additional consideration of cumulative, induced growth, or environmental justice issues.</p>

If left unaddressed, potential consequences to the CRC associated with these findings may include:

- Emergence of new alternatives not previously considered.
- Identification of previously undisclosed consequences to the human and natural environment requiring additional agency review and public comment.
- Increases in project costs associated with unforeseen design features, mitigation requirements or schedule delays.
- Lack of flexibility in project implementation, including ability to respond to uncertainties in project funding.
- Project delays resulting from public controversy, the need to undertake additional environmental reviews, or legal challenges.

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While all these concerns can be addressed between the Draft EIS and the Final EIS, management commitment and dedication of appropriate resources will be required to do so effectively and efficiently.

Recommendations

The IRP has developed 30 recommendations to address the findings listed above. These recommendations will allow the project to move forward to completion and achieve the stated purpose and need. The recommendations are grouped by topic, as discussed in the report and are not listed in any particular order or priority; the IRP considers all recommendations to be of equal weight and importance. Having considered the CRC implementation plan, finance plan, and performance measures, the IRP offers the following recommendations:

Context Sensitive Solutions (CSS)

1. The CRC should more aggressively adopt CSS principles in the on-going project development process.

NEPA Process

2. Finalize and define the Locally Preferred Alternative to reduce ambiguity and address all related caveats.
3. Evaluate and offer public review of phasing options.
4. Educate communities about environmental justice versus general community impacts.
5. Increase detail levels associated with mitigation measures to provide decision makers with better information related to environmental benefits.
6. Consult with FHWA and FTA about whether additional environmental analyses are required, and if so, the appropriate timing of that work in light of outstanding issues including: river crossing bridge design, phasing considerations, and Hayden Island redesign.



Endangered Species Act (ESA)

7. Advance ESA consultation immediately.

Clean Water Act

8. Continue to monitor storm water requirements at the federal, state and local levels.

Clean Air Act

- 9: Assign risk and resources to monitoring greenhouse gas requirements.
- 10: Finalize outstanding issues related to impact assessment.

Section 106

- 11: Immediately provide the additional resources necessary to expedite the Section 106 Consultation process, before the schedule is further impacted.
- 12: Immediately bring the NPS, Trust and City of Vancouver into the Memorandum of Agreement (MOA) process, and actively engage in resolving concerns about necessary mitigation measures.

4 (f) [cultural/historical protection]

- 13: Accelerate the resolution of Section 106 and 4(f) issues.

Executive Order 12898 –Environmental Justice

- 14: Separate the environmental justice discussion in the Final EIS from other impact assessment categories, and limit debate to only those areas related to the federal definition of environmental justice.

Public Outreach

- 15: Re-invigorate public involvement and re-engage with respective working groups. Review with these groups how their respective input and recommendations have been incorporated into the current design.

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16: Bring the tribes and the Columbia Fishing Commission into the MOA process immediately, and actively engage them to resolve concerns regarding the mitigation measures to be undertaken.

Interchange Design – Oregon

17: The CRC should perform sensitivity analyses using a range of growth rate assumptions for traffic volume, then estimate I-5 performance for time periods beyond 2030, including sensitivity of different traffic volume levels associated with Hayden Island and Marine Drive. Comparison for 8, 10, and 12-lane sections should also be done.

18: The IRP encourages ODOT to work with the City of Portland and fully develop a solution for I-5 from I-405 to I-84.

19: The Marine Drive Interchange issue needs to be resolved without delay.

Hayden Island

20: The City of Portland and the CRC must commit to timely resolution of the design and transportation issues at Hayden Island.

Interchange Design – Washington

21: The CRC should consider developing one or more phased construction plans reflecting the potential for a significant funding shortfall.

Columbia River Bridge Replacement

22: Revisit the bridge type selection for the river crossing given the risks: reconsider the June 2008 UDAG recommendations concerning the possibility of a concrete segmental or steel box-girder shape for the Columbia River Bridge and an iconic shape for the North Portland Harbor Bridge.

Light Rail Transit

23: Prior to the Final EIS, immediately develop a plan for resolving the LRT issues surrounding Hayden Island and operation and maintenance costs.



Constructability

24: Reconvene a panel of experts to conduct a constructability review of the bridge type once it has been determined.

Long-Term Management Structure

25: Establish a Long-Term Project Management/Governance Structure; consider retaining legal expertise to assist in determining the best option and how to structure it between the two states.

Schedule

26: Update immediately the Critical Path Method (CPM) Project Schedule to reflect activities and events that have occurred to date as well as projecting future activities which may not currently be included in the schedule and maintain an updated CPM schedule, distributing it to the PSC on a regular (typically monthly) basis.

Cost Estimate

27: Prepare new updated cost estimates with better control of realistic financial needs once the actual bridge type and design have been determined.

Risk Management

28: Re-do the CEVP by the end of December 2010 and before submitting the Final EIS, using the selected river crossing bridge option and including any other assumptions that changed since February 2009, thus allowing information to be acquired regarding realistic schedule and cost information needed for state appropriations.

Finance

29: Accelerate receipt of FTA concurrence to the revised Baseline prior to tendering the FY2012 New Starts submission. Recalculate the cost effectiveness and user benefits associated with the project so the revised figures can be disclosed in the Final EIS as is FTA

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practice and the project's competitiveness in the New Starts process can be properly assessed.

Performance Measures

30: Consider a performance-oriented, system management approach to manage corridor performance over the long term based on performance measures that reflect stakeholders' desires, including developing a mobility council to establish, review and monitor performance measures.

By addressing these recommendations, the states of Oregon and Washington will be able to advance a Columbia River Crossing Project that meets the stated purpose and need and which will bring ultimate value to the communities affected for many decades.



2 Introduction

The Columbia River Crossing Project (CRC) is a multi-partner, multi-modal project aimed at improving the travel efficiency and safety for cars, trucks, transit, bikes and pedestrians; strengthening the regional economy through transportation solutions; and supporting community livability.

Project owners include the Oregon Department of Transportation (ODOT), the Washington State Department of Transportation (WSDOT), as well as the two area transit agencies – TriMet and C-TRAN. Ultimately, the CRC is a partnership involving two federal oversight agencies; two states; two cities; two metropolitan planning organizations; and over 30 other Federal, State, Tribal and local agencies. The Ports of Portland and Vancouver, the community of Hayden Island, various local and regional advisory groups, and the public at large also has a vested interest in the success of the Project.

The CRC has national, regional and local importance. As the project moves toward submitting the Final EIS, the Governors of Oregon and Washington convened an Independent Review Panel (IRP) of nationally recognized experts to ascertain whether the key assumptions and actions to date will move the project forward to construction.

2.1 Project Description

The existing crossing consists of two side-by-side bridges that have lift spans. The northbound bridge was built in 1917. The southbound bridge was built in 1958. The CRC spans a five-mile area of Interstate 5 (I-5) between State Road 500 in Vancouver, Washington to approximately Victory Boulevard in Portland, Oregon. It connects with four major state highways and five major arterial roadways. As the only continuous north-south Interstate on the West Coast connecting the Canadian and Mexican borders, I-5 is vital to the local, regional, and national economies. At the Columbia River, I-5 provides a critical economic connection to two major ports, deep-water shipping, upriver barging, two transcontinental rail lines, and much of the region's industrial land. Truck-hauled freight

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movements onto, off of, and over the I-5 Columbia River crossing are critical for these industrial centers, for regional employment and to the regional and national economies.

The discussion regarding a potential project began in 1999-2000 when the two states' Departments of Transportation convened business leaders in Oregon and Washington, who developed a Strategic Plan identifying I-5 as critical to the regional economy. From 2001-2002 a 26-member I-5 Transportation and Trade partnership, appointed by the Governors of Oregon and Washington, studied I-5 between I-84 in Oregon and I-205 in Washington and identified the CRC as one of three needed projects for I-5 in the region. From 2005-2008 the states' Departments of Transportation formed a 39-member task force. This task force met for three years to identify problems, develop evaluation criteria and select a locally preferred alternative (LPA) for the CRC. The task force also identified six needs in the project corridor of local, bi-state and national significance:

- Safety
- Congestion
- Freight mobility
- Transit
- Bicyclists and pedestrians
- Earthquake Risk

Safety is a major concern. Collisions on the corridor occur at a rate nearly two times higher than similar highways in Oregon and Washington. Travel demands exceed capacity. Both transit and freight are limited by the same congestion faced by cars. Congestion currently lasts six hours a day and is expected to increase. Vancouver is currently disconnected from the light rail system in Portland; and the bicycle and pedestrian facilities are currently inadequate. In addition to safety, congestion and mobility issues, the bridges were not built to handle area seismic activity. Ultimately, a significant earthquake could cause collapse of the bridge, risking the lives and livelihood of those who depend on the bridge crossing.

Design constraints complicate an already complex river crossing. These constraints include:

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- Restrictions in bridge design height to meet Federal Aviation Administration (FAA) airspace regulations for both Portland International Airport and Pearson Airpark in Vancouver.
- Navigational restrictions to meet Coast Guard regulations and to accommodate navigational issues with barge channels and other vessel movements around the bridge.
- Federal and state regulations in regard to safety and security issues.
- In-water construction work restrictions due to environmental concerns and endangered species regulations.
- Project boundary limits due to Historic Reserve and National Park lands.
- Freight access requirements throughout the construction period.
- Geological constraints including liquefying soils.
- National Environmental Policy Act (NEPA) mitigation requirements including archeological and environmental justice issues.

Further important considerations for the CRC design include issues relating to:

- Reduction of greenhouse gas emissions.
- Potential impact of possible induced growth.
- Project financing.
- Traffic demand management.
- Community visions.

All of the above needs, design restrictions and other considerations create a challenging project. However, in light of the agreement and consensus amongst the owners, partners and interested groups' that a "no-build" scenario is not acceptable, they must be addressed.



2.2 *Independent Review Panel Formation*

The IRP is composed of experts with national and international experience from around the country who have been selected based on their long years of experience and specific expertise in:

- Mitigation planning
- Transit project planning
- Context sensitive design
- Bridge design and construction
- Constructability considerations
- Cost estimation
- Schedule development
- Project financing and delivery
- Environmental law and land use
- Risk assessment and management
- Large urban transportation project management
- Mega project management in general

A list of over 300 experts was compiled through recommendations from a variety of sources, including the Project Sponsors Council (PSC). Specific areas of expertise were identified, and individuals were then matched with the different skill sets required. Those with any CRC involvement were removed from the list. As the list narrowed, potential panel members were contacted regarding their interest and availability.

On April 13, 2010, Oregon Governor Theodore (Ted) Kulongoski and Washington Governor Christine (Chris) Gregoire announced the appointment of eight nationally recognized transportation experts to the Independent Review Panel to review key aspects of the CRC. The governors convened the panel to ensure that key project assumptions and methods are reasonable, and that the project embraces a modern way of thinking about

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improving the local, regional and national transportation infrastructure by integrating light rail, pedestrian/bicycle, and highway needs into a single solution.

The IRP was chaired by **Thomas R. Warne**, a civil engineer and with expertise in transportation project financing, project delivery and context sensitive design. Mr. Warne has over 30 years of experience funding and delivering highway infrastructure and light rail projects. The full list of panel members, along with their areas of expertise, are presented in the table below. Detailed bios are included in Appendix A.

Table 3 - IRP Members

Panel Member	Area of Expertise
Thomas R. Warne; PE, IRP Chair	Transportation project financing, delivery and context sensitive design.
Rodney L. Brown, Jr.; JD.	Northwest environmental issues; environmental law; land use; NEPA
E. Robert Ferguson	Bridge construction and contracting methods
Patricia D. Galloway; PhD, PE	Project and risk management; mega-project planning and delivery; performance measures
Diana C. Mendes; AICP	Federally-funded transit project planning; environmental analysis/management
Michael D. Meyer; PhD, PE	Transportation engineering; public works economics and finance; environmental impact assessments and greenhouse gas analysis
Timothy R. Neuman; PE	Context sensitive design and solutions; urban transportation design
Mary Lou Ralls; PE	Bridge design and construction



2.3 *Independent Review Panel Charge*

The IRP has been directed by the Governors to ensure that key project study assumptions and methods are reasonable for the CRC. The Panel was tasked with three main objectives as articulated in a letter to local project sponsors and their press release (Appendix B).

- Review the project implementation plan.
- Review the project financial plan.
- Review project performance measures.

Implementation Plan

One focus of the IRP was to assess the soundness and thoroughness of the project implementation plan. This included recommendations for successful delivery of the project by identifying any potential risks, and ways to maximize the opportunities for successful delivery. Specific items that the IRP reviewed, included the project:

- Planning, environmental and permitting process.
- Design, including urban and context sensitive design.
- Schedule.
- Cost estimate.
- Traffic analysis and operations.
- Construction readiness.
- Project management plan.
- Decision-making process and governance structure.
- Cost-benefit analysis.
- Risk assessment.

The IRP decided that a review of the project implementation plan required an assessment of the project management and decision-making process, governance, NEPA process, project design, project schedule, cost-benefit analysis, project cost estimate, and results of the risk assessment efforts and value engineering workshops.

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Financial Plan

The IRP was also tasked with reviewing the financial plan for the CRC to ensure that the plan, or work in process to define the plan, clearly identifies funding sources and is feasible and sufficient. To determine the sufficiency of the funding plan to support project implementation, the IRP was requested to review key assumptions for all funding sources assumed in the finance plan, and review the processes used to identify project costs and risks, the tolling plan and cash flow requirements. The purpose of this review was for the IRP to develop an independent assessment of the soundness of the financial plan.

Performance Measures

Finally, the IRP was tasked with reviewing and evaluating post construction operational performance measures for consistency with key project objectives.

2.4 *Process Followed by the Independent Review Panel*

Immediately following the announcement of its formation, the IRP began its work by conducting background briefings and reviewing relevant project information in order to familiarize members with the history and events leading up to the locally preferred alternative (LPA) and current project status. Several tours of the Project area were conducted providing context to the background material.

The format for the work of the IRP was left to the chair and the panel members. The IRP believed strongly that their work should be open and transparent, and should provide for opportunities for public input and direct comments to the panel. To accomplish this end, six public meetings were held by the IRP in both Oregon and Washington to obtain project information and to meet with and receive in-progress briefings by WSDOT, ODOT, key stakeholders and the public. The meeting dates and subjects covered are presented in Table 4 below, (See Appendix C for panel meeting agendas and meeting summaries):



Table 4 – IRP Public Meetings

Panel Meeting	Topics Addressed
May 19, 2010	Project overview Agency presentations Community outreach
May 20, 2010	Design Context Sensitive Design Light rail to Vancouver Urban design Traffic modeling
June 1, 2010	Permitting process Communications and outreach Background Purpose and need Alternatives considered Selection criteria
June 2, 2010	Permitting process Key environmental regulatory compliance
June 17, 2010	Project delivery Scheduling Sequencing Constructability



Panel Meeting	Topics Addressed
	Organization Project management plan Traffic management Financing plan and assumptions Cost estimate/risk review Operational performance measures Sustainability strategy
July 7, 2010	Agency views Tribal coordination Freight/mobility

Summaries of the presentations made to the IRP during their meetings can be found in Appendix C. In addition to the public meetings in which the IRP listened, obtained information and posed questions regarding the material being presented, the panel held through three community comment sessions on May 19, June 1 and June 17, 2010 to hear concerns and comments from the public at large (See Appendix C for a list of individuals and their comments presented to the IRP at these community meetings). While not specifically required in the governor’s charge, the IRP felt these sessions were informative and useful. In addition, the IRP received and reviewed over 200 public comments posted to its website, www.crcreview.org.

In addition to the panel meetings, the IRP members went beyond what was formally provided by the project staff and stakeholders and independently researched material concerning the CRC. The IRP held discussions with Federal Transit Administration (FTA), Federal Highway Administration (FHWA), National Parks Service, Fort Vancouver Historical Trust, ODOT, WSDOT, participants in prior CRC risk and expert panel reviews, and individual engineers and contractors with knowledge about the project. The IRP

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reviewed and analyzed a vast array of material including responses to questions the panel submitted to the CRC. Based on the information received and reviewed, the presentations made to the IRP, the community comment sessions, and the panel's experience and expertise, the IRP has prepared this independent report of its observations, findings, conclusions and recommendations. The report represents the panel's independent view of this very complex project and those activities that have brought it to this point in time.

2.5 *IRP Recommendations*

The IRP's report is divided into three main sections corresponding to the IRP's charge from the Governors:

- Implementation Plan
- Finance Plan
- Performance Measures

Within each section are subsections that detail the topic areas reviewed in the public meetings described earlier, along with project accomplishments, issue identification, potential consequences, and the IRP's recommendations.

The IRP has no vested interest in the outcome of its independent report or the Project and are contractually precluded from other engagements on the project. The IRP desires that its recommendations be seriously reviewed and considered by the Governors in a manner that will allow a project to move ahead and achieve its goals as envisioned by all who will benefit from the project at the local, regional and national levels.

The IRP concurs that a new crossing should be built-that doing nothing is not an option.

Quite simply, the IRP unanimously believes that not improving the I-5 Corridor in the project boundaries is not an option.



3 Implementation

3.1 Context Sensitive Solutions

The complexity and nature of the CRC demand an approach to transportation implementation that has emerged in recent years. Referred to as *context sensitive design* or *context sensitive solutions* (CSD/CSS), it is a project development process that focuses on four critical success factors¹:

- Committing to effective decision-making;
- Reflecting community values;
- Achieving environmental sensitivity; and
- Implementing safe and feasible solutions

The IRP notes that implementing the CRC clearly demands all four success factors be met. Much of the efforts demonstrated by the CRC show recognition of these success factors and the team has strived to address each of them. During the course of this review, the IRP has observed issues that have, as their origin, a departure from one or more of these factors. It will be noted that many of recommendations in this report bring the project back to basic CSS foundation as described above. In addition, specific recommendations on effective decision-making are presented to document actions that would assist with the delivery of the project.

CSD/CSS initially requires engagement of the community in defining the problem, developing an evaluation framework that reflects all important objectives and issues, and involving stakeholders in the generation of alternatives. The IRP is satisfied that the CRC thoroughly engaged stakeholders in defining the problems for which the project was intended to address. It is clear that there is a strong understanding of the nature and severity

¹ A Guide to Best Practices for Achieving Context Sensitive Solutions, National Cooperative Highway Research Program Report 480, Transportation Research Board, Washington, DC, 2002.

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of the problems and an equally strong consensus behind the project's purpose and need statement.

It also appears as if the evaluation and study framework was properly developed in advance of alternatives generation, and that stakeholders with diverse interests were involved in defining and screening alternatives, at least conceptually. The community values in the region reflect great interest in transportation choice and having a multi-modal approach, and these themes clearly emerged in the screening and identification of alternatives that were described in the (Draft EIS).

The IRP acknowledges that the complexity of the CRC and varying and sometimes competing interests of stakeholders present special challenges. Such challenges are not unique to this project or Portland and Vancouver but commonplace on projects of such magnitude. The current status of the project, however, causes the IRP concern that additional work remains in moving the project from the Draft EIS through Final EIS and Record of Decision (ROD), which is the *first* major implementation milestone.

There are several issues concerning the development of the CRC (alternatives, design details, roles of stakeholders in project decisions and activities that are meaningful, addressing of numerous environmental regulatory and legal requirements, and overall communications) that raise concerns to the IRP. This report presents the issues that the IRP believes represent the greatest risk to the project progressing to a ROD. Some relate to completing necessary, critical work on environmental issues, which are fully discussed below in the sections on NEPA. Others relate to project ownership and decision-making going forward. Still others concern the issue of 'feasibility' and more specifically, financial feasibility, funding and schedule. The IRP has specific observations and recommendations about each of these that are covered in subsequent sections.

The fundamental objective of the ongoing effort is a project that is completed (constructed) within the agreed upon schedule and budget, that delivers the transportation mobility valued and sought by all stakeholders, and that does so within the boundaries of environmental acceptability. A ROD signed by the FHWA and FTA is a means to that end. The measure of success of the project will ultimately be the completed CRC as envisioned or promised by

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the ROD. The ROD must not be seen as an end of this process but an important milestone to meeting the projects ultimate goals and objectives.

3.1.1 Recommendation

Recommendation related to CSS

Recommendation 1: The CRC should more aggressively adopt CSS principles in its on-going project development process. The IRP is confident that the fundamental project is not only reasonable in its scope and overall make-up, but is essential to the economic and social well-being of all stakeholders who use and are influenced by I-5 and the crossing of the Columbia River. To reach the point where construction can occur there are many tasks to be completed, ‘loose ends’ to be tied up, and communications with multiple external groups to be initiated. The IRP urges the CRC and both state Departments of Transportation (DOTs) to use the CSD/CSS success factor framework and address all the issues raised by the IRP.

3.2 Project Planning, Environmental Review and Coordination

The CRC has evolved as a result of numerous planning studies and initiatives over the last decade. These relate to both highway and transit system needs and improvements to enhance the movement of people and goods through the I-5 Corridor. Most recently, these initiatives have culminated in the publication of a Draft EIS in May 2008, and subsequent adoption of a Locally Preferred Alternative (LPA) by Metro Council (Metro) into the Regional Transportation Plan and by Southwest Washington Regional Transportation Council (RTC) into the Metropolitan Transportation Plan in the late summer of 2008. The delivery of these two major milestones in the federal project development process by the CRC represents a significant accomplishment by the Project Sponsors and the region.

The LPA advanced by the Project Sponsors (ODOT, WSDOT, Tri-Met, RTC, Metro, the City of Portland, and the City of Vancouver) following the public review of the Draft EIS consisted of transit and highway transportation system improvements in a 5-mile segment of the I-5 Corridor from State Route 500 in Vancouver vicinity of Columbia Boulevard in Portland including:

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- A new replacement bridge over the Columbia River and I-5 highway improvements associated with the river crossing, including interchange improvements north and south of the river
- Extension of light rail transit service, including associated facilities, from its existing terminus at the EXPO Center in Portland to Clark College in Vancouver

This section summarizes the IRP review of three components of the federal project development process that are critical to the future refinement and disposition of the LPA and the delivery of needed transportation system improvements in the region:

- NEPA process and documentation
- Agency coordination and permitting
- Stakeholder outreach/public involvement

For each of these components, the IRP has identified recommendations for the CRC based on consideration of background and issues/open items remaining based on the IRP review of materials provided by the CRC to support the IRP review, public and agency comments made on the record during the course of the IRP review, and independent research conducted by IRP panel members between mid April 2010 and July 23, 2010.

3.2.1 NEPA Process and Documentation

Environmental review under the National Environmental Policy Act (NEPA) is one of the project development steps required in the delivery of federally funded transportation improvements. NEPA requires that federal agencies consider consequences to the human and natural environment prior to taking action. This consideration of potential outcomes and choices is to be accomplished through an inter-disciplinary approach in planning and decision-making to understand the problem at hand, identify and evaluate alternatives, analyze likely outcomes, and promote public discussion and coordination on available choices.

As many different federal laws, rules, and regulations govern environmental review of federally assisted transportation projects, NEPA establishes an umbrella process for coordinating compliance with each law through the environmental review process and the

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preparation of environmental documentation such as an EIS. Other special purpose statutes and procedures may apply as well, depending on specific circumstances, such as protective measures for historic properties, wetlands, floodplains, for example. If special purpose statutes trigger related environmental review requirements, the United States Department of Transportation (FHWA and FTA projects address) these requirements as part of the NEPA compliance process. The application of NEPA to transportation projects is reinforced in the federal surface transportation statutes (23 U.S.C. Highways and 49 U.S.C. Transportation), that require the Secretary of Transportation to ensure NEPA mandates have been met before approving applications for federal financial assistance.

The process for complying with the NEPA and federal surface transportation statutes is defined in the joint FHWA/FTA Environmental Impact and Related Procedures (23 CFR 771). The regulation outlines the agencies' policy of combining all environmental analyses and reviews into a single process, and defines the roles and responsibilities of FHWA and FTA in preparing documents, and in managing the environmental process within the various project development phases.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) authorizes the federal surface transportation programs for highways, highway safety, and transit for the 5-year period from 2005 through 2009. Congress extended SAFETEA-LU through 2010 after the bill's authorization expired. Section 6002 of SAFETEA-LU outlines the environmental review process that must be followed by FTA and FHWA when undertaking environmental review under NEPA. Section 6002 requires a cooperative process to promote the early identification and resolution of environmental issues which could delay completion of the environmental review process, or result in denial of approvals that are needed for the project.

Section 6002 requires, among other things, that when serving as lead agencies in preparing an EIS, FHWA and FTA:

- Identify and engage participating agencies
- Provide “an opportunity for involvement” by participating agencies and the public in defining the project’s purpose and need “as early as practicable” in the environmental review process

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- Provide “an opportunity for involvement” by participating agencies and the public in determining the range of alternatives to be considered for the project “as early as practicable” in the environmental review process.
- Determine, “in collaboration with participating agencies at appropriate times in the study process,” the “methodologies to be used and the level of detail required” in the analysis of alternatives

SAFETEA-LU 6002 allows for FHWA and FTA to develop the Preferred Alternative, once identified, at a higher level of detail. The purpose of developing the Preferred Alternative at a higher level of detail is to “facilitate the development of mitigation measures or concurrent compliance with other applicable laws,” provided the lead agency determines that doing so “will not prevent the lead agency from making an impartial decision” among the alternatives. In keeping with this provision of SAFETEA-LU, the CRC has continued to advance the development of the Locally Preferred Alternative between the Draft and the Final EIS to support informed federal decision-making.

In addition to the consideration of environmental factors under NEPA inclusive of the provisions of SAFETEA-LU 6002, because the CRC is requesting the use of Section 5309 New Starts funding from the FTA, the project is subject to evaluation and rating under this competitive, discretionary funding program. The New Starts program is the primary means under which the FTA funds fixed guideway, high capacity transit improvements, such as light rail. While the NEPA process provides the basis for the federal environmental decision, the New Starts process informs FTA’s financial decision regarding the advancement of the project to a Full Funding Grant Agreement (FFGA). The New Starts program is a discretionary funding program, and relies on the rating and comparison of projects based on Congressionally mandated criteria in order to determine which projects are recommended for funding. As a result, projects across the country need to “compete” for New Starts funding based on the relative merits of project justification and financial criteria, including cost effectiveness. Because the New Starts rating and evaluation process takes into account project operating and capital costs as part of the determination of project cost effectiveness, it is important to coordinate the NEPA and New Starts process as design decisions made during NEPA have the ability to negatively or positively affect the project’s

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ability to secure New Starts funding. In addition, since the New Starts process considers such factors as land use, economic development and environmental benefits, addressing these considerations in the project planning during the NEPA process can enhance the project's ability to secure more favorable New Starts ratings.

The NEPA process for multi-modal megaprojects such as the CRC is by its very nature complex, and requires working across a broad range of interests and disciplines to identify solutions that respect the human and natural environment while responding to transportation challenges and needs. The conduct of New Starts evaluation in concert with the NEPA process adds an additional layer of complexity. This is particularly true in the case of multi-modal projects that involve both highway and transit elements. While all FTA major capital improvements seeking section 5309 New Starts funding are subject to evaluation for funding under the Section 5309 project evaluation criteria in order to compete for this discretionary funding source, FHWA improvements are not subject to evaluation and analysis under the same process and criteria. Consequently, while State DOTs are well experienced in delivery of mega-projects, management of New Starts requirements is not as much of a “standard procedure” for State DOTs as it is for transit agencies experienced in the delivery of major capital investments under the New Starts program. As a result state Departments of Transportation typically need to modify their approach to project development when New Starts are involved, requiring an additional time and effort. That said, state DOTs like those found in Washington and Oregon have extensive experience and the resources to manage the NEPA efforts of a project like the CRC. The CRC is to be commended for recognition of this need at the project outset, and for their efforts to develop a fully integrated, multi-modal approach to project development and delivery, incorporating both FTA and FHWA requirements.

On August 5, 2008, President Bush designated the Columbia River Crossing, also known as the Interstate 5 Bridge between Portland, OR, and Vancouver, WA, as a priority project under E.O. 13274. Executive Order 13274, Environmental Stewardship and Transportation Infrastructure Project Reviews, signed by President Bush in September 2002, was issued to promote environmental stewardship in the nation's transportation system and to streamline the environmental review and development of transportation infrastructure projects. An

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interagency Task Force oversees the implementation of the Executive Order and monitors the environmental reviews of certain high-priority projects. Executive Order 13274 requires the Secretary of Transportation to designate high-priority transportation infrastructure projects to undergo expedited environmental reviews. For these projects the Executive Order asks agencies to accelerate their reviews for permits and other approvals. The Department accepted nominations from Governors, metropolitan planning organizations, airport authorities, and other governmental agencies. The Department's core criteria for selecting priority projects were:

- National or regional significance.
- High level of support among local transportation authorities and elected officials.
- Undue delays resulting from slow Federal agency review or lack of coordination.

Since the inception of the Task Force, out of over seventy projects considered, the Secretary of Transportation has selected 19 projects nationwide to undergo expedited environmental reviews. These priority projects consist of 15 highway or bridge projects, 3 airport projects, and 1 transit project. That the CRC would be selected from among so many worthy projects is a reflection of the significant nature of this initiative.

The CRC was one of the first in the nation to be initiated under the provisions of SAFETEA-LU 6002. To date, the CRC has been conducted in accordance with FHWA and FTA regulations, policies and procedures for both NEPA and New Starts. The CRC has done a good job of identifying a wide range of resource issues during the development of the Draft EIS. As part of the NEPA process, the CRC employed some innovative techniques to the preparation of the Draft EIS. Notable among these are the establishment of the Interstate Collaborative Environmental Process (InterCEP) group, and the use of reader-friendly documentation. In addition, the consideration of Green House Gas emissions and climate change impacts had not been typically addressed during environmental review under NEPA, and did not emerge as an issue as part of the EIS Scoping Process, the CRC elected to address these considerations in response to State initiatives and public interest.

The InterCEP group consists of a comprehensive body of state and federal agencies that are likely to have permitting authority or approval authority over one or more elements of the

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CRC. On January 25, 2006 WSDOT; ODOT; FHWA; FTA; and 12 resource agencies from Oregon, Washington, and the federal government signed the InterCEP agreement. The agreement formally established the InterCEP group, defined obligations of the signatory agencies and the CRC, and described the process for communication and collaboration within this group. The InterCEP group represents the type of coordination envisioned by SAFETEA-LU 6002, and has assisted the project in many ways, including the early surfacing of critical environmental issues and the engagement of technical expertise from appropriate agencies.

The Draft EIS documents consequences to the human and natural environment in a reader-friendly format, presenting complex information in a manner that can be understood by decision-makers and the general population, while providing detailed appendices and technical reports to provide more detailed information of interest to regulatory and resource agency audiences. The use of graphics and tabular information provides the reader with the ability to understand the trade-offs inherent in the alternatives evaluated so that environmental factors can be considered during decision-making.

The Columbia River Crossing is the recipient of a National Association of Environmental Professionals 2009 Environmental Excellence Award in the category of NEPA Excellence. The National Association of Environmental Professionals is comprised of about 1,750 members nationwide. The organization's mission is to be the interdisciplinary organization dedicated to developing the highest standards of ethics and proficiency in the environmental professions. Members are public and private sector professionals who promote excellence in decision-making in light of the environmental, social, and economic impacts of those decisions. The CRC was selected for this award because the project "demonstrates a novel method to assess the impacts of greenhouse gas emissions and through the environmental review process identify a less overall impacting alternative for a complex transportation project," according to the letter received from the organization's president, Jim Melton. The award honors the project's approach to greenhouse gas emissions and climate change evaluation in the May 2008 Draft EIS.

The Draft EIS for the CRC evaluated a range of alternatives that included transit, highway, bicycle and pedestrian improvements. Some of these elements required physical

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improvements, while others were operational in nature. The Draft EIS addressed four build alternatives, and a No-Build Alternative. The multi-modal alternative involved different combinations of components including:

- Supplemental and/or new river crossing elements related to transit, roadways, bicycle and pedestrian facilities
- Transit, roadway, bicycle and pedestrian facilities north and south of the river
- Tolling
- Transportation system and demand management measures

The alternatives retained for evaluation in the Draft EIS included:

- No-Build Alternative
- Replacement crossing with bus rapid transit
- Replacement crossing with light rail
- Supplemental crossing with bus rapid transit
- Supplemental crossing with light rail

The CRC is to be commended for convening a travel demand review panel to evaluate the travel demand model and its inputs. A travel demand model is an important tool for estimating the likely traffic volume using new or expanded facilities, and thus provides substantive input into such decisions as what capacity is needed (e.g., number of lanes), potential impact of travel demand management strategies, and impact of pricing on travel demand. The travel demand review panel found the CRC demand analysis to be “valid and comprehensive.” The panel also found that the overall evaluation of induced growth impacts was “thorough and robust.”

The CRC is also commended for applying best practices in traffic operational analysis. The use of microsimulation over extended time periods is considered essential to understanding impacts of traffic operating at or near congestion on the freeway. The project team appropriately modeled traffic flow over extended lengths of the freeway well beyond the bridge influence area.

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As a basis for identifying and evaluating alternatives, and preparing the Draft EIS, the coordinated with a wide range of interests, including the general public, elected officials, interest groups, and affected federal, state and local agencies. The Draft EIS was published on May 2, 2008. During the 60-day comment period on the Draft EIS, over 1,500 written public comments were received.

Subsequent to the circulation of the Draft EIS, the following entities took the following actions to advance a LPA for the CRC:

- CRC Task Force met June 24, 2008, to hear public testimony and vote on a LPA.
- Portland City Council voted on their LPA resolution on July 9, 2008, after hearing public testimony.
- Metro Council held a public work session on May 27, 2008, a public hearing on June 5, 2008, and voted on July 17, 2008 on a LPA resolution.
- Vancouver City Council held a work session on June 23, 2008, a public hearing on June 30, 2008, and voted on July 7, 2008 on their LPA resolution.
- The C-Tran Board held a public hearing on June 10, 2008 and a public hearing and vote on July 8, 2008, on their LPA resolution.
- The TriMet Board conducted a public work session on May 28, 2008 and voted on July 9, 2008 recommending confirmation of the LPA for the CRC.
- Southwest Washington Regional Transportation Council held a public work session on June 3, 2008, and a public hearing on July 9, 2008 on their LPA resolution.

While the adoption of the LPA transportation system improvements indicated agreement on the need for a replacement bridge and provision of high-capacity transit with light rail transit as the preferred mode, the actions undertaken by the project sponsors recognized that a number of project design issues were still outstanding and required additional coordination. Examples of such acknowledgements are reflected in Table 5 below, which provides language from the adopted resolutions:

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Table 5 – Acknowledgement of Additional Actions Needed Post-LPA

Entity	Action	Acknowledgement
CRC Task Force	Final Resolution: 6/24/08	<p>“The CRC Task Force understands that several project elements have not been finalized at the time of this resolution. These elements will need to be satisfactorily resolved through a process that includes public involvement, recommendations from governing bodies of the sponsor agencies, and recommendations by a local advisory committee. The CRC Task Force supports the consideration of the attached list of Supplemental Positions for Future Project and Regional Consideration.”</p>
City of Portland	Resolution No. 36618; July 9, 2008	<p>“BE IT FURTHER RESOLVED, this resolution shall not be interpreted as the City of Portland’s final input or acceptance on the design and construction of the project.</p> <p>“Further technical analysis and public involvement is needed to determine the “appropriately sized” bridge for all multi-modal components. The City of Portland understands that the size bridge analyzed in the DEIS is a maximum-impact design for the purpose of NEPA and not a commitment on bridge size. The City of Portland recommends that the next phase focus on the smallest bridge possible to meet project needs.”</p>
City of Vancouver	Resolution No. M-3663; July 7, 2008	<p>“WHEREAS, the City of Vancouver has identified issues requiring further study and cumulative project impacts that exceed those identified in the DEIS and presents, in Attachment A to this Resolution, a framework for mitigations and enhancements to address those impacts;”</p> <p>“The City recognizes that many project elements have not been finalized at the time of LPA adoption, yet believes it is in the community’s interest to move this process into the next design and financial planning phase.”</p>
METRO Council	Resolution No. 08-3938B; June 5, 2008	<p>“WHEREAS, the task force’s endorsement of an LPA is one “narrowing” step in a multi-step process and an important opportunity for the Metro Council to articulate its concerns which</p>

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Entity	Action	Acknowledgement
		<p>will be weighed at this and subsequent steps; and,</p> <p>“WHEREAS, the Metro Council will vote directly on several subsequent steps in a multi-step process including the LPA itself and amendment of the Regional Transportation Plan, and therefore wished to signal now what its considerations will be as the project proposal evolves;”</p> <p>“The Metro Council recognizes that significant project elements will not have been finalized at the time of the LPA adoption, including many of the issues described in Appendix A. The Council believes it is appropriate to move this process into the next design and financial analysis phase so that those issues can be satisfactorily resolved prior to a final “build/no build” decision point being presented to the involved governing bodies including the Metro Council.”</p>
C-TRAN	Board Resolution BR-08-019; July 8, 2008	<p>“WHEREAS, the endorsement of an LPA is one “narrowing” step in a multi-step process and an important opportunity for the C-TRAN Board of Directors to articulate both support for the project and concerns and consideration for future decision making, which will be weighed at this and subsequent steps; and</p> <p>WHEREAS, the C-TRAN Board of Directors will vote directly on several subsequent steps in this multi-step process as the project evolves.”</p>
TriMet	Background Memorandum from Fred Hansen, General Manager, to TriMet Board on Resolution 08-07-58; July 9, 2008	<p>“Issues to still be addressed by the CRC Project include:</p> <ul style="list-style-type: none"> ▪ Oversight Committee... ▪ LPA Refinement... ▪ Downtown Vancouver alignment... ▪ Park and Rides... ▪ Downtown alignment design and treatments... ▪ Station Locations...”
SW Regional Transportation	Resolution 07-08-10; July 22,	“FURTHERMORE, as the project moves forward through the EIS process and to a Record of Decision, the following policy issues

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Entity	Action	Acknowledgement
Council	2008	<p>need to be addressed.</p> <p>The sum of the CRC project elements need to be interwoven to produce a balanced multi-modal project that includes highway, high capacity transit, freight movement, transportation demand management, and bicycle and pedestrian improvements.</p> <p>Creation of a formal oversight committee that works as equal partners, striving for consensus and providing for a public process of review, deliberation and decision-making for outstanding major project issues and decisions. ...”</p>

Even though each of the project sponsors took the actions noted above, they noted at least 134 conditions or exceptions, which remained to be resolved. Open issues following project sponsor actions on the LPA included:

- Project oversight and management
- Interstate and arterial capacity and design, including number of through lanes and auxiliary lanes
- Bridge design, including aesthetics
- Marine Drive Interchange design
- Hayden Island Interchange design
- Light rail design, including location, stations and park and rides
- Ensuring adequate freight capacity
- Incorporation of TDM measures
- Bicycle and pedestrian facilities design
- Incorporation of sustainable and context sensitive design principles
- Urban design considerations
- Potential for environmental justice impacts
- Air quality impacts, including greenhouse gasses

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- Mitigation requirements
- Tolling
- Funding sources and financial planning commitments

During the transition from the Draft EIS to the Final EIS, the CRC has been working with the project sponsors, affected agencies, and the public to address outstanding issues related to the LPA. The need for this type of coordination following the Draft EIS is common for complex, multi-modal projects such as the CRC. Indeed, surfacing of issues related to effects on the human and natural environment is at the core of the NEPA process, and is encouraged by the federal lead agencies as a critical element of the federal environmental review process.

While the Draft EIS typically contains conceptual information regarding the project elements and functionality, specifics related to design, mitigation and funding continue to evolve once a LPA has been selected until submission of a Final EIS. The process of responding to the comments received on the Draft EIS, in combination with completion of more detailed design on the LPA to support the development of a Final EIS and ultimately the ROD, often results in modifications to the Proposed Action as impacts and design implications are better understood, including but not limited to:

- Sizing and capacity of facilities
- Locational shifts in facilities
- Project phasing
- Addition of mitigation features

The CRC is currently addressing these modifications through design and coordination activities, many of which were suggested in written comments received on the Draft EIS, or in the actions adopted by the PSC relative to the selection and advancement of the LPA. From the language contained in the actions taken on the LPA by the PSC, it is apparent that this refinement was both expected, as well as encouraged.

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As of the IRP review of the project, the CRC has engaged in the following actions to respond to the comments on the Draft EIS and advance closure on specifics related to the LPA: including:

- Formation of the PSC to advise on the following issues:
- Completion of the EIS
- Project design
- Project timeline
- Sustainable construction methods
- Compliance with greenhouse gas emission reduction goals
- Financial plan
- Independent Travel Demand Model Review Panel and Report
- Columbia River Crossing Greenhouse Gas Emission Analysis Expert Review Panel and Report
- Coordination to advance a decision on the number of lanes on the replacement bridge
- Development of a CRC Mobility Council Concept
- Refinement of the light rail location and facilities
- Refinement of the Hayden Island interchange design
- Refinement of the Marine Drive interchange design
- Refinement of the replacement bridge structure, design and appearance
- Completion of more detailed tolling studies
- Refinement of the financial plan
- Approval for the FTA for entry into Preliminary Engineering in the New Starts Program
- Creation of the Performance Measures Advisory Group and development of interim recommendations

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Issues/Open Items

IRP review of the overall status of the NEPA Process has surfaced the following considerations that require resolution for the CRC to advance successfully:

- Deferral of detailed information from the Draft EIS to the Final EIS, particularly related to the Locally Preferred Alternative, which has resulted in some uncertainty regarding project definition, including such elements as number of lanes on the crossing, Hayden Island facilities, the Marine Drive interchange, incorporation of bicycle and pedestrian facilities, and the role of tolling.
- The current definition of the LPA has been refined from that evaluated in the Draft EIS, and more information on the LPA has become available, increasing the number of detailed issues that need to be addressed as part of project development.
- As more information regarding the design of the LPA has become available, project sponsors have raised concerns regarding the ability to fully assess cumulative effects and induced growth consequences, and if additional technical analysis to understand these consequences is required.
- There is a lack of broad based understanding relating to environmental justice, what populations meet environmental justice criteria, and if there are disproportionate adverse impacts to qualifying populations.
- Discussion of potential project phasing options and disclosure of impacts associated with phasing has been limited.
- The robust coordination that characterized the Draft EIS preparation has not been continued in the manner a manner as during preparation of the Final EIS.

The potential consequences to the CRC associated with these considerations may include:

- Emergence of new alternatives that were previously not considered.
- Identification of previously undisclosed consequences to the human and natural environment that require additional agency review and public comment.
- Increases in project costs associated with unforeseen design features, mitigation requirements or schedule delays.

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- Lack of flexibility in project implementation, including ability to respond to uncertainties in project funding.
- Project delays resulting from public controversy, the need to undertake additional environmental reviews, or legal challenges.

While all of these concerns can be addressed in the transition from the Draft EIS to the Final EIS, management commitment and dedication of appropriate resources will be required to do so effectively and efficiently. The IRP finds that the CRC has made significant accomplishments and is moving ahead rapidly given the conclusion that the CRC is critical for the economic viability of the local area, the region and the nation and that a no-build scenario is not acceptable. However, the schedule for the completion of the NEPA review process may need to be extended beyond December 2010 to adequately complete additional technical analyses, further advance agency coordination and afford the public additional opportunity to comment on those aspects of the project which have further developed since issuance of the Draft EIS. Finally, given the remaining uncertainties and unresolved issues, it is incumbent upon the CRC to advise FHWA and FTA of any potential for the incidence of environmental impacts that are significantly different from those previously disclosed to the public in the Draft EIS, and consult on the appropriate modifications to the environmental review process needed to accommodate such potential changes. These changes in environmental impact could result from design refinements/modifications, or from the analysis of phasing impacts, or from the impacts emanating from additional consideration of cumulative, induced growth, or environmental justice issues.

Recommendations

By its very nature, the NEPA process is designed to encourage early consideration of impacts to the natural and human environment. As a result, the Draft EIS is based on preliminary, conceptual information, which then becomes more detailed as the project progresses through the NEPA process to the Final EIS and Record of Decision. As encouraged by SAFETEA-LU 6002, the level of detail associated with the LPA has been increased since publication of the Draft EIS. This was done to enable enhanced understanding and resolution of potential environmental consequences, and accurately assess

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the extent of mitigation required. It is inevitable that as the project evolves, additional questions will surface. It is important to recognize that this progression does not indicate a failure in the NEPA process, but instead is characteristic of a NEPA process that is working as intended to support public understanding and project owner decision-making. Absence of such discussion at this juncture would be troubling, indicating a project environment where opinions are not surfaced or respected, contrary to the overall intent of the NEPA process.

However, as important as it is to recognize the transitional nature of the NEPA process, it is equally important to recognize that appropriate resources must be committed to address outstanding issues as they emerge, as well as proactively anticipating and resolving issues before they become “problems.” In addition, an informed decision must be made as to the extent and timing of the additional resources to be committed. This is not easy, and requires extensive consultation commensurate with the activities undertaken as a basis to prepare the Draft EIS.

Recommendations related to the NEPA Process

With respect to the NEPA process, documentation and unresolved issues for the CRC, the IRP offers the following key recommendations:

- **Recommendation 2: Finalize and define the Locally Preferred Alternative to reduce ambiguity and address all related caveats.** Finalize and define the LPA, including size of the bridge and interchanging at Hayden Island and Marine Drive, and update understanding of impacts and effects of such significant design decisions. Address all caveats and concerns of agencies that passed resolutions in support of the Locally Preferred Alternative.
- **Recommendation 3: Evaluate and offer public review of phasing options.** Evaluate the feasibility of phasing options for the LPA, including the incremental assessment of impacts based on phased scenarios, potential for funding availability and provide the opportunity for public review and comment on the phasing options.
- **Recommendation 4: Educate communities about environmental justice versus general community impacts.** Undertake public outreach necessary to assist affected

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communities in understanding how environmental justice populations are defined, and what constitutes a disproportionate adverse impact to qualifying populations, as opposed to more general community impacts.

- **Recommendation 5: Increase detail levels associated with mitigation measures to provide decision makers with better information related to environmental benefits.** Increase the level of detail associated with mitigation measures beyond that included in the Draft EIS to enable decision-makers, agencies and the public to understand in a comprehensive manner the level of environmental benefits associated with project implementation, as well as those impacts for which mitigation may be difficult.
- **Recommendation 6: Consult with FHWA and FTA about whether additional environmental analyses are required, and if so, the appropriate timing of that work in light of outstanding issues including: river crossing bridge design, phasing considerations, and Hayden Island redesign.** Consult with the FHWA and the FTA at the earliest possible time regarding the need for preparation of a potential supplemental environmental analyses, and the appropriate timing for the such additional review either prior to the completion of the Final EIS, or subsequent to the issuance of the ROD, dependent upon when it becomes clear that such supplemental environmental review would become beneficial.

While the Draft EIS is successful in communicating the overall project concept, detailed information and specifics on the design of the LPA and associated impacts than is sometimes contained in the Draft EIS has been deferred to the Final EIS. The actions and resolutions adopted by the project sponsors clearly reflect that although the design specifics were to be further refined in subsequent phases of environmental review and project development, there was basic agreement on the concept of a replacement bridge and extension of light rail service to Vancouver. It is also clear that the project sponsors expected that the LPA and project definition would undergo continued refinement. While the deferral of specific design details in and of itself is not a problem per se and is not uncommon in complex projects, the absence of specific design detail and closure on outstanding issues affecting the project definition at this juncture does merit discussion of

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the need for supplemental environmental work as the design process progresses, and as the specifics become known and are “digested” by the communities, elected officials, resource, and regulatory agencies.

A good example of how uncertainty in design resolution at the time of Draft EIS is affecting project development, refinement of the LPA, and completion of the Final EIS is illustrated by the recent revisiting of solutions at Hayden Island. The lack of consensus on the appropriate scale and placement of facilities has required additional technical analysis, design work, and targeted public discussions and stakeholder coordination. Other examples of areas requiring additional discussion include refinements of the LPA in terms of the incorporation of bicycle and pedestrian facilities, use of tolling, and the design of the bridge structure. In response to these open issues, and as part of responding to the comments received on the Draft EIS, the CRC has engaged with various interests to work through potential project modifications. Such evolutions are expected progressions in project development from the Draft EIS to the Final EIS, and are fully encouraged under NEPA, Council on Environmental Quality (CEQ) regulations and USDOT environmental regulations and guidance.

Recent coordination and technical efforts by the CRC have shown it is possible to address these refinements through additional technical analysis, public outreach and agency coordination. Conversely, if the CRC were to hold the LPA “static” as defined at the time of the Draft EIS circulation, the basic tenets of an inclusive and responsive NEPA process would clearly be unfulfilled. However, if this trend of incremental modifications continues, or if the significance of the impacts changes from those previously disclosed during circulation of the Draft EIS, the CRC should consult with the FHWA and FTA at the earliest possible time to assess if a revaluation and/or supplemental NEPA work is necessary.

One open area that merits consultation with the FHWA and FTA regarding the need for supplemental environmental work relates to project phasing. The Draft EIS does not specifically address the potential phasing or incremental construction of the LPA. The FTA rating of the capital finance plan in the most recent New Starts submittal (FY2011) indicated that while the interest rates and financing terms used “were reasonable when the submittal

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was prepared,” “given current market conditions, the assumptions are now optimistic”. In its rating of the operating plan in the same report, the FTA stated that “Several assumptions supporting the operating and maintenance cost estimates and revenue forecasts are optimistic relative to historical experience, especially in the short term.” These observations, taken in combination with the increase in anticipated need for New Starts funding from the \$750 million identified in the FY2011 submission to the \$ 850 million currently contemplated by the CRC point to a very real potential for incremental implementation of the total project.

Should anticipated funding sources be delayed or made available at a slower pace than initially contemplated, it would be advantageous to have the ability to phase the implementation of various project components. Due to the complexity of the project it would be difficult to phase construction, and constructing the facilities at one time could be more efficient and create fewer environmental impacts. However, availability of project finances may require a phased solution or deferral of specific project elements. From a project management and delivery perspective, it would be advantageous to have the flexibility to implement the CRC in phases should that necessity arise.

The decision whether additional environmental work, including a Supplemental EIS, is required will be made by the federal lead agencies. The conditions under which a Supplemental Draft EIS would be necessary are addressed in 23 CFR 771.130. According to these regulations:

- A Draft EIS, Final EIS, or Supplemental EIS may be supplemented at any time. An EIS shall be supplemented whenever the Administration determines that:
 - Changes to the proposed action would result in significant environmental impacts that were not evaluated in the EIS; or
 - New information or circumstances relevant to environmental concerns and bearings on the proposed action or its impacts would result in significant environmental impacts not evaluated in the EIS.
- However, a Supplemental EIS will not be necessary where:

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- The changes to the proposed action, new information, or new circumstances result in a lessening of adverse environmental impacts evaluated in the EIS without causing other environmental impacts that are significant and were not evaluated in the EIS; or
- The Administration decides to approve an alternative fully evaluated in an approved final EIS but not identified as the preferred alternative. In such a case, a revised ROD shall be prepared and circulated in accordance with 771.127(b).
- Where the Administration is uncertain of the significance of the new impacts, the applicant will develop appropriate environmental studies or, if the Administration deems appropriate, an EA to assess the impacts of the changes, new information, or new circumstances. If, based upon the studies, the Administration determines that a supplemental EIS is not necessary, the Administration shall so indicate in the project file.
- A supplement is to be developed using the same process and format (i.e., Draft EIS, Final EIS, and ROD) as an original EIS, except that scoping is not required.
- A supplemental Draft EIS may be necessary for major new fixed guideway capital projects proposed for FTA funding if there is a substantial change in the level of detail on project impacts during project planning and development.
- In some cases, a Supplemental EIS may be required to address issues of limited scope, such as the extent of proposed mitigation or the evaluation of location or design variations for a limited portion of the overall project. Where this is the case, the preparation of a supplemental EIS shall not necessarily:
 - Prevent the granting of new approvals;
 - Require the withdrawal of previous approvals; or
 - Require the suspension of project activities; for any activity not directly affected by the supplement. If the changes in question are of such magnitude to require a reassessment of the entire action, or more than a limited portion of the overall action, the Administration shall suspend any activities which would have an adverse environmental impact or limit the choice of reasonable alternatives, until the supplemental EIS is completed.

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If phasing project implementation requires additional environmental evaluation as a precursor to finalization of the EIS, the CRC would be wise to consult with FHWA and FTA at the earliest possible time regarding the nature and extent of the supplemental environmental work, and the options for the timing of that work. Consulting prior to the completion of the current Final EIS would be the ability of CRC management to assess the implications, schedule impacts and risks related to the potential need for supplemental environmental work on project schedule and budget so that if required, additional environmental work could be “scaled” and “right-timed” appropriately.

3.2.2 Federal Agency Coordination and Permitting

The CRC has done considerable work to comply with a wide range of complex environmental laws and requirements. The project is faced with important environmental issues relating to the natural and built environment, including endangered species, greenhouse gases and cultural and historic resources. Many federal, state and local permits and approvals will be required to advance the CRC, and in accordance with SAFETEA-LU 6002, progress towards compliance has been made during the NEPA process. Key areas of compliance include the following, among others:

- Endangered Species Act Section 7 Consultation
- Marine Mammal Protection Act
- Magnuson-Stevens Fisheries Conservation Management Act
- Migratory Bird Treaty Act
- Clean Water Act Section 401 Water Quality Certification
- Clean Water Act Section 404 Permit
- Rivers and harbors Section 9 Bridge Permit
- Rivers and Harbors Section 10 Waterway Structures Permit
- Sole Source Aquifer protection review
- Air Quality Conformity determination and Indirect Source Permits
- Section 106 Memorandum of Agreement

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- Section 4(f) Finding
- Land and Water Conservation Fund Act
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The CRC has engaged in extensive coordination with a broad array of environmental interests in addressing these issues. In particular, the CRC has done highly professional work on endangered species and greenhouse gases. The team's greenhouse gas report, for example, was one of the first in the country to examine how an individual transportation project, as opposed to a higher-level transportation plan, might affect greenhouse gas emissions. *See* Greenhouse Gas Emission Analysis Expert Review Panel (Nov. 20, 2008). The IRP can see only a few environmental issues that the CRC has yet to resolve, and for which the approach could benefit from some modification.

The IRP has identified the need to further address the following requirements in the environmental review process:

- Endangered Species Act
- Section 401 of the Clean Water Act
- Clean Air Act and Greenhouse Gas Emissions
- Section 106 of the National Historic Preservation Act
- Section 4(f) of the US Department of Transportation Act
- Executive Order 12898 Environmental Justice

The resolution of these issues is likely to establish the critical path for the issuance of a Record of Decision. The IRP reviewed the project team's work on other environmental issues, such as wetland filling under Section 404 of the Clean Water Act and wildlife protection under the Marine Mammal Protection Act. The IRP did not see concerns in these areas that were not resolvable over the longer term, or that had major schedule implications for the existing NEPA process.

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The Endangered Species Act

The Endangered Species Act (or ESA) prohibits the “take” of species listed for protection under the law. Where a federally funded or authorized project could impact any listed species, the law requires the project proponent to “consult” with the federal agencies responsible for these species. This consultation process allows the federal agencies to decide whether the project will adversely affect the listed species. If there is likely to be an adverse effect, the process will study the reasonable and prudent alternatives that will protect the species and its critical habitat. These protections will ultimately be adopted in a formal Biological Opinion.

Several species in the project area, especially Columbia River salmonids, are listed for protection under the ESA. The CRC therefore has an obligation to consult with the National Marine Fisheries Service and the US Fish & Wildlife Service. The CRC has wisely used a variety of consultation processes allowed under the ESA, first by doing informal “conferencing” with the Services in the early years and then by doing “pre-consultation” to flesh out the ESA issues and help prepare a thorough Biological Assessment (BA). The CRC submitted an early draft BA to the Services in April 2010, received helpful comments from the Services, and then submitted the formal draft BA on June 25, 2010. All of this early work should help the Services do their completeness review very quickly. The CRC is hopeful that the Services can complete their substantive evaluation and issue the Biological Opinion according to the schedule. However, the CRC recognizes the risk that the Services may need additional time, and they have included this risk in a number of scenarios for potential delay in the risk management assessment of the project.

Section 401 of the Clean Water Act

Clean Water Action Section 401 certification is required for any permit or license issued by a federal agency for any activity that may result in a discharge into waters of the state to ensure that the proposed project will not violate state water quality standards. This water quality certification is authorized under the 1974 Clean Water Act, and allows each state to have input into projects that may affect its waters (rivers, streams, lakes, and wetlands). Water quality standards are an effective tool available to States to protect the overall health of their water resources and the valuable functions they provide, including shoreline stabilization,

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nonpoint source runoff filtration, wildlife habitat, and erosion control, which directly benefit adjacent and downstream waters. Water quality standards, including designated uses, criteria, and an anti-degradation policy can provide a sound legal basis for protecting water resources through State water quality management programs.

Storm water can carry unwanted pollutants into nearby water bodies such as the Columbia River. To respond to this, many environmental agencies have promulgated requirements to avoid and mitigate against the water quality impacts. These requirements continue to evolve as the agencies learn more about storm water and its impacts. The IRP believes that the CRC has done a thorough job of following the requirements that apply to this project.

Because the project is located in two States with their own storm water requirements, the CRC agreed to use the more stringent of the two States' standards. The project also must meet stringent standards under the ESA for the protection of salmonids.

Clean Air Act and Greenhouse Gas Emissions

The CRC must comply with the “conformity” requirements of the Clean Air Act before the FHWA can issue a ROD to approve the project.

The CRC has evaluated air quality impacts in the Draft EIS. This included an analysis of mobile source air toxics, which is a broader suite of pollutants than those required for the conformity analysis. The mobile source analysis also evaluated “hot spot” impacts on subareas, not just the whole region on average. This analysis found that air emissions would be reduced, especially for alternatives that include tolling (though it is fair to note that the majority of the improvement comes from ongoing advances in auto technology and fuel content). The IRP does not see any concerns with this analysis.

The CRC also evaluated greenhouse gases. This analysis was one of the earliest evaluations of project-specific greenhouse gas emissions in the country. Indeed, greenhouse gases were not mentioned by the public as a significant issue in the early NEPA scoping process. They have become more important in recent years, and the CRC responded appropriately by seeking to analyze the greenhouse gas emissions related to the project.

Because the CRC was doing cutting-edge work, it had to develop its own methodology for analyzing project-related greenhouse gases. The team developed a methodology with input

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from EPA, FHWA, FTA, Ecology, and DEQ. This analysis found a slight reduction in greenhouse gas emissions as compared to the base case.

The CRC recognized that the methods for evaluating greenhouse gas emissions are rapidly changing, so they convened an Expert Review Panel to update and add to the analysis. The Panel supported the CRC's findings and suggested some improvements, such as using a more advanced EPA methodology that was published recently. The CRC adopted these suggestions, and will provide further greenhouse gas analysis in the Final EIS. The preliminary results of this analysis appear to the IRP to be consistent with the earlier analysis. The IRP notes that the CRC may need to do further analysis if the new methodology ends up contradicting the earlier results.

Section 106 of the National Historic Preservation Act

Section 106 of the National Historic Preservation Act requires federal agencies such as the FHWA and FTA take into account the effects of their undertakings on any district, site, building, structure, or object that is included on or eligible for inclusion on the National Register of Historic Places (NRHP). Section 106 outlines a step-wise process for compliance with Section 106:

- Initiating the section 106 process (36 CFR 800.3).
- Identifying historic properties (36 CFR 800.4).
- Assessing adverse effects (36 CFR 800.5).
- Resolution of adverse effects (36 CFR 800.6).

The process culminates in a Section 106 Memorandum of Agreement (MOA) that addresses any further coordination required, as well as any mitigation measures required to address adverse effects on protected resources.

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

Section 4(f) applies to all agencies within the USDOT. The 4(f) requirement was originally set forth in 49 USC 1653(f) and requires consideration in transportation project development of the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge or land of an historic site of national, state, or local significance (as

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determined by the federal, state, or local officials having jurisdiction over the park, recreation area, refuge, or site). Historic sites are afforded protection under Section 4(f) if listed or determined eligible for the National Register of Historic Places. The law is codified in 49 USC 303 and 23 USC 138 and is implemented by both the FHWA and FTA under their implementing regulations.

Under Section 4(f) the Secretary of Transportation cannot approve any program or project that requires the use of any property protected under Section 4(f) unless two conditions are met:

- There is no prudent or feasible alternative to the use of land from the property; and
- The program includes all possible planning to minimize harm to the property resulting from such use.

The Section 4(f) finding regarding “use” required by the Secretary of Transportation is made based on the Section 4(f) Evaluation in the Draft EIS and the Section 4(f) Statement and findings included in the FEIS and the ROD. A Section 4(f) “use” occurs when:

- Land from a Section 4(f) property is acquired for a transportation project, referred to as a “direct taking;” and/or
- The proximity impacts of the transportation project on the Section 4(f) site, without acquisition of land, are so great that the purposes for which the Section 4(f) site exists are substantially impaired. This is known as a “constructive use.”

FHWA and FTA are subject to the provisions of SAFETEA-LU including those applicable to 4(f) de minimis impact criteria. These requirements simplify the 4(f) process where the “responsible official(s) with jurisdiction over the resource agrees in writing” that the use of the 4(f) land would not have an adverse effect on the protected resource. The de minimis criteria and determinations are specific for historic sites, and are defined as the determination of either “no adverse effect” or “no historic properties affected” in compliance with Section 106 of the NHPA. For publicly owned parks, recreation areas, and wildlife and waterfowl refuges, the agencies with jurisdiction must determine whether impacts “adversely affect the activities, features and attributes” of the 4(f) resource.

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Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations

Executive Order 12898 requires each Federal agency to achieve environmental justice as part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects, including interrelated social and economic effects, of its programs, policies, and activities on minority populations. FHWA and FTA projects are subject to subsequent USDOT orders, regulations and guidance implementing Executive Order 12898. The NEPA review process for FHWA and FTA projects play a critical role in promoting USDOT compliance with Executive Order 12898, and to identify and avoid discrimination and avoid disproportionately high and adverse effects on minority populations and low-income populations by:

- Identifying and evaluating environmental, public health and interrelated social and economic effects
- Proposing measures to avoid, minimize and/or mitigate disproportionately high and adverse environmental and public health effects and interrelated social and economic effects, and providing offsetting benefits and opportunities to enhance communities, neighborhoods, and individuals affected
- Considering alternatives where such alternatives would result in avoiding and/or minimizing disproportionately high and adverse human health or environmental impacts
- Eliciting public involvement opportunities and considering the results of public comments, including soliciting input from minority and low income populations in considering alternatives

USDOT policy requires that in making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that will be taken and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as design, comparative impacts and the relevant number of similar existing system elements in non-minority and non-low income areas. Activities that will have a disproportionately high and adverse effect on minority populations or low income populations will only be carried out if further mitigation

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measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable. In determining if a mitigation measure or an alternative is “practicable” the social, economic (including costs) and environmental effects of avoiding or mitigating the adverse effects must be taken into account. For actions such as the CRC, the findings, determinations and/or demonstration are normally documented in the NEPA document prepared for the project.

The CRC has documented considerations relating to environmental justice in the Draft EIS, as well as in a separate Environmental Justice Technical Report. The evaluation of environmental justice considerations addressed USDOT requirements and was based on consultation and outreach with potentially affected communities and populations. The public outreach efforts involved establishment of, and consultation with, the Community and Environmental Justice Group (CEJG). The CRC also designated a CRC Tribal Liaison. Through the public coordination process, combined with technical analysis, a wide range of community issues and potential impacts were identified and discussed. In addition, the potential for disproportionate adverse impacts “specific” to low-income or minority populations was also raised. Potential mitigation measures to address environmental justice considerations were also included in the Draft EIS.

Issues/Open Items

Endangered Species Act

The ESA process can cause significant schedule delays if it creates new requirements or the need for new analysis late in the design of a project. The ESA consultation process is often complicated, and it is more complicated than usual for the CRC given the large number of ESA species that use the Columbia River. The CRC may need more additional time to bring the consultation process to closure, especially if the bridge design is changed in the vicinity of Hayden Island.

The IRP heard criticism from some members of the public that the ESA consultation should have occurred prior to the publication of the Draft EIS. As discussed above, the CRC did a significant amount of ESA work before the Draft EIS was published. The IRP does not

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believe that the CRC needed to finish the consultation before proceeding with the Draft EIS.

It is true that the CEQ's NEPA regulations encourage the integration of the NEPA and ESA processes, but they do not require that any particular phase of the ESA consultation be completed before the publication of the Draft EIS. *See* 40 CFR Sec. 1502.25. The federal agencies responsible for ESA compliance note that the ESA process is separate from the NEPA process, and that the two processes should be integrated by having the ESA process begin early and proceed in parallel with the NEPA process. Specifically, the agencies say that "since the time required to conduct formal section 7 consultation may be longer than the time required to complete preparation of NEPA compliance documents, the action agency should be encouraged to initiate informal consultation prior to NEPA public scoping. Biological assessments may be completed prior to the release of the Draft EIS and formal consultation, if required, should be initiated prior to or at the time of release of the Draft EIS. Early inclusion of section 7 in the NEPA process would allow action agencies to share project information earlier and would improve interagency coordination and efficiency. At the time the Final EIS is issued, section 7 consultation should be completed. The ROD should address the results of section 7 consultation." *See* USFWS & NMFS, *Endangered Species Consultation Handbook*, p. 4-11 (Mar. 1998).

The CRC accomplished these ESA goals by using extensive "conferencing" and "pre-consultation" processes before submitting a formal BA. This is a reasonable approach for a project where formal consultation is all but certain. The formal BA can be submitted later in the NEPA process, and the ESA consultation should be completed when the Final EIS is published.

Section 401 of the Clean Water Act

New stormwater requirements could require design changes or additional mitigation costs. The IRP does not see any need to change the CRC's handling of stormwater, though the CRC should continue to monitor for new requirements arising either directly from the Clean Water Act or state law or indirectly from the ESA process. New requirements could also be necessitated by changes in the project's design.

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Clean Air Act and Greenhouse Gas Emissions

The IRP has heard criticism from some members of the public that this conformity analysis should have been done prior to the publication of the Draft EIS. However, the FHWA has noted that conformity should normally be part of the Final EIS, not the Draft EIS, and that it can be delayed beyond the Final EIS in appropriate circumstances. *See* Memorandum From James M. Shrouds, Director, Office of Natural and Human Environment, FHWA, “Clarification of Transportation Conformity Requirements for FHWA/FTA Projects Requiring Environmental Impact Statements” (May 20, 2003). Indeed, the FHWA notes that “[i]n instances when the final EIS does not document full compliance with the transportation conformity provisions, the conformity determination must be made prior to issuance of a ROD.” The IRP therefore believes that doing the conformity analysis later is appropriate.

The IRP heard public comments about how the greenhouse gas model should incorporate “induced growth,” that is, the potential for increased population growth away from the urban centers after the new roadway makes travel easier. Some stakeholders believe that the new greenhouse gas analysis should include a re-run of Metro’s “Metroscope” model with newer data in order to get a better view of the potential for induced population growth.

The legal requirements applicable to greenhouse gases are in an uncertain state and very likely to change over the next few years. New legal requirements for greenhouse gases could be imposed during final design or construction, and could require changes in design or construction methods or materials. They could also cause schedule delays.

Section 106 of the National Historic Preservation Act

As documented in Chapter 3 of the Draft EIS, the Section 106 Consultation Process has been initiated to address the many resources in the project corridor. Based on IRP review of available materials provided, issues related to the potential adverse effects on historic properties and cultural resources protected under Section 106 are progressing toward resolution for the majority of the resources identified. However, many issues remain in flux and unresolved, including the Section 106 determination of effects and appropriate mitigations for the VNHR and the FVHNR. The entire VNHR is on the National Historic Register, as is the FVHNR, and are protected under Section 106.

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It is positive that the CRC recognizes that these issues are currently “open” and have pursued additional discussions with the National Park Service (NPS) and the Fort Vancouver National Trust. The need for these detailed discussions is not unusual at the transition between the Draft EIS and the Final EIS once the LPA is identified and more detailed information pertaining to the LPA emerges. It is precisely this type of coordination that was envisioned under SAFETEA-LU 6002 provisions which encourage a higher level of design of the LPA when necessary to support environmental decision-making. Although the nature and timing of these discussions are consistent with the progression from the Draft EIS to the Final EIS, it is common for the Section 106 consultation process to become the schedule driver for completion of the NEPA process and issuance of the ROD.

The CRC has been actively engaging in conversations with the both the NPS and the Trust regarding the VHNR in how best to address the mitigation efforts to be undertaken and to confirm the mitigation measures to be undertaken in a Section 106 Memorandum of Agreement (MOA). The IRP heard presentations from the Trust and the NPS as well as the CRC in regards to potential mitigation measures to be undertaken and the status of the MOA at the time of the IRP meetings and this report. The MOA, as part of the NEPA process, must be coordinated with its Federal partners (FHWA and FTA) and others to discuss the MOA process and contents.

The Section 106 Memorandum of Agreement (MOA) must be signed before the FEIS can be published and circulated and the ROD issued. Given the aggressive schedule contemplated for the resolution of remaining concerns and issuance of the ROD, the current status of the Section 106 coordination is of concern. Given the status of this issue the IRP seriously questions whether a ROD can be issued in December 2010. It is likely that the agreement on and incorporation of mitigations under Section 106 will require additional work relative to project design and costs. As a result of the complexities and outstanding issues related to the VHNR and the FVNHR, there is a high potential that the CRC requires additional time for the preparation, coordination and signature of the Section 106 MOA.

Both the NPS and the Trust have expressed concern to the CRC and to the IRP that neither the NPS nor the Trust has been involved in the drafting of the MOA, nor have they seen a draft of the MOA as of the time of this report. Both NPS and the Trust have also expressed

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concern that given they have not seen the draft MOA, that they have no assurance that their mitigation expectations have been included therein.

Additional concerns have been expressed in regards to the CRC's communication with the Department of Archaeology and Historic Preservation without first seeking input from the NPS and the Trust. This concern is expressed in two June 18, 2010 letters from the NPS to the Department of Archaeology and Historic Preservation and to the CRC. Both letters request the Department of Archaeology and Historic Preservation from refraining from providing comments on a CRC report entitled "Interstate 5, Columbia Crossing Draft Section 106 Cultural Resources Technical Report, June 2010", until the comments of the NPS and Trust have first been provided. The IRP is unaware of the resolution of either of these issues at the date of this report.

It is the understanding of the IRP, that the NPS, Trust and City have agreed upon the following mitigation measures which they anticipate will be incorporated into the written Section MOA to be signed by all parties, the CRC and the Federal Agencies:

- Providing improved connections between downtown Vancouver and the Vancouver National Historic Reserve, including the construction of an expanded pedestrian overpass/cover-connector between Evergreen Boulevard and 5th Street.
- Construction of a facility on-site at the Historic Reserve that will serve as a cultural management facility, storage and educational center that will house recovered artifacts and provide a learning center that will facilitate a range of educational experiences in connection with the artifacts.
- Maintaining the Barracks Post Hospital including assistance to the restoration efforts, such as seismic stabilization of the Barracks Post Hospital and minimizing adverse effects to planned landscaping buffers.

Based on the CRC Environmental Schedule dated March 26, 2010 provided to the IRP on June 17 and June 18, 2010, the Section 106 draft MOA was to be reviewed by the Washington State Historic Preservation Officer, the Department of Archaeology and Historic Preservation and other signatories between June 10, 2010 and July 9, 2010. In the same schedule, Tribal review of the MOA was to occur between June 10, 2010 and July 12,

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2010. As of July 12, the CRC has not provided the IRP with a draft of the Section 106 MOA. The IRP was told that “Federal Agencies are currently working on a draft MOA. The document can be forwarded as soon as it is made available to CRC.” The schedule provided indicated that the FTA/FHWA redline revisions to the draft MOA were to have occurred on June 8 and 9, 2010. Given these circumstances, along with the nature of reaching closure on the negotiations required to provide the foundations for the MOA, it appears unlikely that the MOA will be signed by September 24, 2010 as called for in the schedule. A signed MOA will be required prior to federal signature of the FEIS, a prerequisite for printing circulation of the FEIS, which is scheduled to be distributed in October 2010. History of such MOAs would indicate the CRC schedule to be aggressive.

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

Based on IRP review of the Draft Section 4(f) Evaluation, testimony provided, and the supplemental materials provided as of July 12, 2010, outstanding issues related to the Vancouver National Historic Reserve (VNHR) and the Fort Vancouver National Historic Reserve have the potential to delay completion of the Section 4(f) approval for the CRC.

The entire VNHR is on the National Historic Register and the VNHR is the site of a National Park asset, the Fort Vancouver National Historic Reserve Site, and are afforded protection under Section 4(f). There are three primary partners in the Historic Reserve: the National Parks Service (NPS), the Vancouver National Historic Reserve Trust (Trust) and the City of Vancouver (City). The Trust is the official nonprofit partner of the NPS, which is incorporated in the Vancouver National Historic Reserve, as is the City of Vancouver.

Other partners in the Historic Reserve include the United States Army and Washington State as represented by the Washington State Historical Society. The CRC would require the “use” of property under Section 4(f) as a result of the need to acquire permanent easements of the VNHR of approximately 1.5-2 acres. This “use: would occur along a strip of land on the southwest and western boundary of the VNHR Historic District.

The Trust and the City staff have met with the NPS partners to determine how to best accomplish the goal of providing improved pedestrian connections, noise dampening and visual abatement of freeway traffic, but which also facilitates site specific, culturally and historically appropriate design. The three partners appear to have identified the planning

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and measures needed to minimize harm to the property resulting from the proposed use required under Section 4(f) and as articulated in the FHWA/FTA joint regulations:

“In addition to determining that there are no feasible and prudent alternatives to avoid the use of 4(f) resources, the project approval process requires the consideration of “all possible planning to minimize harm” on the 4(f) resource. ...Minimization and mitigation measures should be determined through consultation with the official of the agency owning or administering the resource. ...Mitigation measures involving public parks, recreation areas, or wildlife and waterfowl refuges may involved a replacement of land and/or facilities of comparable value and function or monetary compensation, which could be used to enhance the remaining land. ...the cost of mitigation should be a reasonable public expenditure in light of the severity of the impact on the 4(f) resource in accordance with 23 C.F.R. 771.105(d).”

The project Draft EIS contains extensive reference to the applicability of Section 4(f), its impact on the VHNR-including the planned acquisition of several acres of land-and that its use of these historic site and national park resources calls for extensive mitigation. The Draft EIS further notes that the mitigation measures provide for “Supporting, in cooperation with the NPS, historic museums, and curatorial facilities.”

The Draft Section 4(f) Evaluation included as Chapter 5 of the Draft EIS presents a comprehensive assessment of potential uses, evaluation of prudent and feasible alternatives, and potential measures to minimize harm, consistent with the requirements and intent of Section 4(f). The document provides a good point of departure for the USDOT findings and approvals regarding Section 4(f). However, the Section 4(f) approval for the CRC cannot be issued until both conditions under which the Secretary can make this determination have been met. In order to meet both of these conditions, outstanding issues related to the VHNR and the Fort Vancouver National Historic Reserve must be resolved.

Under Section 4(f), FHWA and FTA are required to coordinate with the Department of the Interior (DOI), including the National Park Service (NPS), on impacts to properties protected under Section 4(f), and during that coordination the DOI may concur with, or object to, approval under one or both of the Section 4(f) conditions. Based on the materials reviewed as of July 12, 2010, it appears unlikely that the DOI will concur in the Section 4(f)

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approval at this time and additional coordination is warranted. This coordination has the potential to affect the project schedule for the conclusion of the environmental review process.

The NPS is part of the DOI. DOI consultation and review required under Section 4(f), DOI review of the CRC is likely to result in one of the following outcomes relative to the project:

- Full concurrence with both provisos – i.e., agreement that there are no prudent and feasible alternatives to the use of property, and that the project incorporates all planning to minimize harm. In this case the DOI would have no objection to Section 4(f) approval of the project.
- Concurrence with only the first proviso – in which case one of several scenarios could arise:
 - The DOI could recommend further investigation and consultation to identify additional measures to minimize harm and have no objection to Section 4(f) approval of this project, contingent upon resolution by the FTA, FHWA and all other involved parties and documentation in the final statement of the additional measures.
 - The DOI might indicate no objection to Section 4(f) approval provided specific measures to minimize harm are documented in the final statement.
- Objection to Section 4(f) approval – in which case the objection could take several forms:
 - DOI objects to the preferred alternative and indicates a preference for another or identifies and recommends further alternatives for study and evaluation. Measures to minimize harm can be discussed for proposed alternatives.
 - DOI defers comments on measures to minimize harm pending the selection of a feasible and prudent alternative and urges field consultation among involved parties to select a feasible and prudent alternative and develop measures to minimize harm. In order to resolve issues DOI would be willing to provide expeditious review of any revised Section 4(f) documentation that may be circulated for review and comment.

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- DOI concurs that there is no feasible and prudent alternative, yet it objects to the project because measures to minimize harm are grossly inadequate.

The CRC should undertake necessary coordination to ascertain if any outcome other than “full concurrence” is likely, as any other outcome would result in delays to the issuance of the ROD. This coordination is on the critical path for bringing the environmental review process under NEPA to closure, and should be closely coordinated with the Section 106 consultation process.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations

During the IRP review, it became apparent that substantial confusion currently exists regarding environmental justice considerations. The term “environmental justice” was used in a wide variety of contexts, sometimes in keeping with the federal definition of “environmental justice” and sometimes outside of that definition. The IRP also heard comments from representatives of the CEJG that much of the coordination that characterized the Draft EIS process was no longer happening, and that the CEJG was not current on the most recent project developments. Metro representatives commented that “environmental justice” considerations need additional consideration. The City of Portland had previously indicated in its resolution adopting a Locally Preferred Alternative that the environmental justice effects related to tolling required further evaluation. The net effect is an appearance or perception that “environmental justice” issues are unresolved and not a current priority of the CRC. This is true despite the comprehensive analysis and documentation that the CRC has prepared regarding environmental justice in accordance with federal requirements in support of the NEPA review process.

Recommendations

Recommendation related to the Endangered Species Act

With respect to the Endangered Species Act, the IRP offers the following recommendations

- **Recommendation 7: Advance ESA consultation immediately.** The IRP suggests The CRC advance the ESA consultation process as far and as quickly as possible to mitigate the potential for schedule delays. In particular, the IRP recommends talking to

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the Services about approving a process within the Biological Opinion to accommodate a modest amount of new in-water work created by a new Hayden Island design. Possible in-water work related to a new Hayden Island design may result in schedule delay if a new Hayden Island design creates too much new in-water work to be accommodated in the existing process, so the project proponents can take that delay into account when making a decision about Hayden Island.

While the IRP agrees that these scenarios evaluate an appropriate range of possibilities, the panel believes that the estimated delay risks could be optimistic. The ESA process often takes longer than people wish. This is especially true if the project's design changes, as might happen here for Hayden Island. If a new design requires a significant amount of additional in-water work, the Services could require a new BA. And if the design is not resolved before the Services issue their Biological Opinion, a new design could require the re-initiation of the consultation process. Some of this delay could be avoided if the Services can create a process within their Biological Opinion to evaluate and approve minor changes to the in-water work ultimately done. Still, given the potential for significant delays later in the process, the IRP recommends taking the time needed now to ensure that the ESA process can be done as smoothly as possible for the ultimate design.

Recommendation related to the Section 401 of the Clean Water Act

With respect to Section 401 of the Clean Water Act, the IRP offers the following recommendation:

- **Recommendation 8: Continue to monitor stormwater requirements at the federal, state, and local levels.** Based on the IRP review, it appears that the stormwater work done so far is appropriate for the current phase of project development. The IRP encourages the CRC to continue to monitor stormwater requirements at the federal, state, and local levels, and to work out the design, cost, and schedule implications of any new requirements as soon as possible.

Recommendations related to the Clean Air Act

With respect to the Clean Air Act, the IRP offers the following recommendations:

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- **Recommendation 9: Assign risk and resources to monitoring greenhouse gas requirements.** The IRP recommends that the CRC assign staff and add to the risk management plan the responsibility of monitoring new greenhouse gas requirements for transportation projects. This is a rapidly changing regulatory field, and the team needs to be aware of requirements that could emerge more quickly than usual.
- **Recommendation 10: Finalize outstanding issues related to impact assessment.** Finalize outstanding technical issues related to impact assessment, including updating the land use scenario relative to the MetroScope analysis to assist decision-makers in improving their understanding of cumulative effects and induced growth. This will allow the fullest possible review of greenhouse gas impacts, inclusive of consideration of induced growth, cumulative, and secondary impacts.

Based on IRP experience, it will be very difficult for the CRC to complete the necessary 106 consultation process in time to support a December 14, 2010 ROD as indicated in the CRC schedule dated March 26, 2010 provided to the IRP.

The IRP does not perceive that the sum total of addressing all mitigation measures is a serious financial burden on the overall project. Indeed, it appears as if the CRC through the design process has enabled reasonable mitigation. However, not completing this critical aspect of the project; i.e., not codifying all agreements and mitigation measures by this point in the process has created an unnecessary risk, and has increased the potential of turning what could have been an asset to project development (a high quality mitigation plan and agreements with key parties) into a liability.

With respect to Section 106, the IRP offers the following recommendations:

- **Recommendation 11: Immediately provide the additional resources necessary to expedite the Section 106 Consultation process, before the schedule is further impacted.** These resources could take the form of additional personnel assigned to the 106 Consultation process, and/or performance of additional studies to address outstanding concerns. Policy decisions regarding the extent of mitigation provided and the potential impact of these mitigations on the overall project budget should be aggressively pursued. Even with the commitment of these additional resources, based

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on the information provided to the IRP, it appears likely that the 106 Consultation process will require an extension of the existing schedule for the completion of the NEPA process and the issuance of a ROD.

- **Recommendation 12: Immediately bring the NPS, Trust and City of Vancouver into the Memorandum of Agreement (MOA) process, and actively engage them in resolving concerns about necessary mitigation measures.** The CRC should consider a series of workshops with the National Park Service, the Vancouver National Historic Reserve Trust, and the City of Vancouver to accelerate resolution of remaining issues, and to expedite the development of a Section 106 MOA. Since the ROD cannot be issued until all parties sign the Section 106 MOA, *at this point the Section 106 Memorandum of Agreement is clearly on the critical path.*

With respect to the mitigation issues surrounding the National Park and Fort Vancouver Historic Reserve, the IRP notes that there is still ambiguity of what is contemplated for the final design of the pedestrian connector the housing/public display/learning center for the archived artifacts and the protection/preservation of the Barracks Post Hospital. The ambiguity can be resolved through specifics memorialized in the Section 106 MOA.

The timing of the completion of the Section 106 Consultation process has a direct impact on the circulation of the FEIS, the issuance of the ROD, and the conclusion of the environmental review process under NEPA. Consideration of additional alternatives, design modifications, and mitigation of adverse effects under Section 106 could further impact the schedule for completion of the environmental review process under NEPA, as well as project implementation costs. The Section 106 Consultation process also informs the Section 4(f) evaluation, findings and approval, so delays in the completion of the Section 106 process also could impact the conclusion of the Section 4(f) process.

Although a design competition was conducted for the pedestrian connector, the design may present additional possible issues such as design for a tunnel configuration, which could lead to another list of issues to be resolved in addition to significant cost. Thus, the CRC, in conjunction with the NPS and the Trust should continue to work towards an acceptable solution that can be confirmed with some specificity in the Section 106 MOA.

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Relative to the housing and public display of the artifacts, there is some concern with the NPS and the Trust, that should space not be made available as part of the CRC, that the artifacts may need to be sent elsewhere in the National Park system as the current warehousing facilities at the VNHS are at full capacity. This would be an unfortunate outcome for the local communities, the region, and nation whose students benefit from the learning experiences gained when being able to incorporate the actual artifacts with the historical site on which they were discovered. The IRP understands that when the military facilities are turned over the NPS and VHNP in September 2010, that an existing building has already been identified as the location where these artifacts will be housed, thereby reducing any capital construction cost for a new building to be designed and constructed. The IRP considers this a minor cost in relation to the overall cost of the CRC and would reap benefits to numerous stakeholders and provide mitigation measures as required under NEPA.

With respect to the Barracks Post Hospital, the actual footprint of the project limits will come very close to the Barracks Post Hospital requiring special consideration and construction mitigation efforts to avoid impact to the facility's foundation. In addition, given the age of the Barracks Post Hospital and the close proximity to the CRC, seismic upgrades of the Hospital would be required to ensure protection of the facility from any potential earthquake. The Barracks Post Hospital serves as a sound buffer to the VNHR and taking of the facility would require noise mitigation structures be built, which could result in visible impacts to the VNHR.

The CRC cannot afford to alienate any of its partners nor suffer any delays that would seem to be avoidable. Should the Section 106 MOA, when received by the NPS, and the Trust not conform to the agreement reached between the NPS, Trust and City, there is a potential risk that the CRC could suffer undue delays and/or experience compliance issues under the NEPA mitigation requirements.

Recommendation Related to Section 4(f) of the US Department of Transportation Act

With respect to Section 4(f) issues, the IRP offers the following recommendations:

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- **Recommendation 13: Accelerate the resolution of Section 106 and 4(f) issues.**

Provide the necessary resources to make Section 4(f) a priority to address the full range of Section 4(f) issues throughout the development of the FEIS, including accelerating coordination with the National Park Service (NPS) and the Department of the Interior (DOI) to get agreement on the mitigation measures to be taken.

A Section 4(f) finding is required prior to the issuance of the ROD, and the conclusion of the environmental review process under NEPA. If the DOI objects to the Section 4(f) approval, the project schedule will be delayed. If the objection relates to the first proviso of Section 4(f) – regarding availability of prudent or feasible alternatives to the use of Section 4(f) property, additional design development could be required, the project delayed, and the cost of implementing the project increased. If the objection relates to incorporation of all planning to minimize harm, delays in the completion of the environmental review process are likely, and project schedule and implementation costs would be affected.

As part of this coordination, CRC should first confirm with NPS that there are no prudent and feasible alternatives to the use of Section 4(f) property, and ask whether the NPS expects to see additional alternatives at this time. A second step would be to address the NPS position regarding all possible planning to minimize harm, building on the coordination to support the Section 106 Consultation process. As both of these steps can influence the project definition, impacts to other potential resources, and project costs, the IRP recommends that

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations

The term “environmental justice” in the federal context has a specific, legal meaning. While the breadth of the analysis required is broad reaching – covering a wide range of human health, environmental, social, and economic issues – the application of that analysis is specific to only particular populations (i.e., minority or low income populations). In addition, the assessment of impacts under environmental justice is limited to those that are *disproportionately high* and *adverse*. Under USDOT regulations and guidance, and as described in Chapter 3 of the Draft EIS, disproportionately high and adverse effects are those that:

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- Are predominantly borne by minority populations or low-income populations; or
- Would be experienced by minority or low-income 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.

Ultimately, it is not the occurrence of impacts that is the focus in conducting an environmental justice analysis. Rather, the focus is on whether more minority and low-income people are impacted than non-minority and non-low income populations. This distinction has not been made clearly in the CRC Draft EIS, and is blurred by combining the discussion into a single section entitled “Neighborhoods and Environmental Justice.” In this section, Census demographics for environmental justice populations (i.e. minority and low income populations) are discussed alongside and in the same terms as populations that may be of special interest, but are not environmental justice populations (Disabled, age 65 or older, no car). Subsequent tables combine discussion of community impacts, such as displacements, with potentially disproportionate, adverse impacts “specific” to low income populations. A similar lack of distinction is illustrated by the designation of the “Community and Environmental Justice Group,” which also combines two related, but not coincident fields of interest.

In combining the discussions related to environmental justice with larger neighborhood and community impacts, the CRC strove to present the most comprehensive discussion possible. Although well intentioned, the comprehensive presentation in fact made it more difficult for the lay reader to understand environmental justice issues. It is not reasonable to expect the general public to be able to make a distinction between which part of the discussion related to neighborhoods or community impacts applies to the general population, and which applies to environmental justice populations. To area residents, all impacts are naturally a concern. As currently written, the Draft EIS places a burden on the reader to know what is, and what is not, truly an environmental justice consideration. As a result, environmental justice issues become less clear, as opposed to clarified, in the Draft EIS. Public testimony before the IRP confirmed this confusion among members of the community.



Recommendation

Recommendation Related to Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations

With respect to the apparent confusion that has ensued relative to environmental justice, the IRP offers the following recommendation:

- **Recommendation 14: Separate the environmental justice discussion in the Final EIS from other impact assessment categories, and limit debate to only those areas related to the federal definition of environmental justice.** The IRP suggests the discussion can be sorted by:
 - Clearly represent environmental justice impacts in tabular and graphic format, distinct from generalized information related to community resources and neighborhoods.
 - Isolate the environmental justice discussion, so that the potential implications of tolling on low-income populations can more appropriately be a focus of the environmental justice analysis.
 - Reconstitute the CEJG to separate environmental justice and community impacts working groups to facilitate appropriate focus in each. If needed, on occasion joint meetings could be held to facilitate collaboration, and
 - Mobilize the newly formed working groups to assist in the development of mitigation measures related to the LPA.

3.2.3 Stakeholder Outreach / Public Involvement

Public outreach is a critical factor in a successful NEPA process and essential for effective decision-making that reflects community values. The incorporation of meaningful public involvement is the means by which the CSS critical success factor of ‘reflecting community values’ is achieved. This occurs when all of the following are done:

- Potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health
- Public contributions influence decisions

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- Concerns of all participants are considered in the decision-making process
- Decision makers seek out and facilitate involvement of those potentially affected;
- The public and stakeholders are made aware of or assured that their input has been considered and shaped the project outcome;
- Legal and regulatory requirements of agency stakeholders have been met; and
- Environmental impacts that damage air or water quality, create health hazards, or otherwise damage livability in the area are reduced or eliminated, and meaningful mitigation, enhancement and compensation are implemented.

The IRP recognizes the extensive and significant outreach efforts that have taken place regarding the CRC and to put these efforts into context as the project moves forward. However, the IRP also believes that once the project sponsors agreed upon the LPA, that the outreach efforts may not have been accomplished with the same vigor as prior to the Draft EIS. Although the CRC has taken into consideration the input it has received and continues to address concerns raised in the public outreach efforts, there remains a perception that the project is moving ahead in disregard of further input. Thus, the IRP determined a more complete history and background of the public outreach efforts was needed in order to provide context to the IRP's recommendations.

The concept of a project began to take shape from the work dating back to January 1999 when the Oregon and Washington State DOTs, in cooperation with regional decision makers, initiated the Portland/Vancouver I-5 Trade Corridor Freight Feasibility and Needs Assessment, to better understand the magnitude of the congestion problem and explore concepts for improvement. Elected officials, agency decision makers, business executives, local citizens and freight and industry representatives from both states worked together on this assessment, including, but not limited to, the following officials:

- Chair, Oregon Transportation Commission
- Commissioner, Washington State Transportation Commission
- Executive Officer, Metro
- Commissioner, City of Portland

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- General Manager, Tri-Met
- Executive Director, C-Tran
- Executive Director, Port of Vancouver
- Mayor, City of Vancouver
- Commissioner, Clark County Board of Commissioners
- Executive Director, Port of Portland

The individuals involved in the Trade and Partnership Task Force were assisted by an integrated staff of agencies from both states, both national and local consultants, and advisors from those stakeholders that have been involved continuously throughout the project. The study focused on answering questions posed by a group of business and civic leaders. As stated in the Summary of Findings of the Final Report published on January 27, 2000,

“To maintain the economic competitiveness of the Portland/Vancouver region, and to maintain the high quality of life, this region needs to develop a Strategic Plan for managing demand in the I-5 Trade Corridor and making a balanced set of improvements in the corridor. To keep up with mobility needs in the corridor, there must be highway, transit, and freight and passenger rail improvements. There is no silver bullet. Improvements in the corridor will be costly and most cannot be funded with existing transportation revenue. It is possible however, to fund public involvement in the I-5 Trade Corridor with a combination of federal funds, tolling and state funding from Oregon and Washington.”

In the Leadership Committee’s findings, it was also noted “the complexity of the problem requires that the new capacity be multi-faceted. It should include highway, transit, rail and demand management, while also supporting the vitality of the river-based economy.” The Leadership Committee also commented that given the current status of public funding, that tolling would be required to pay for the improvements.

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The I-5 Trade Corridor Task Force

In 2001, the Washington and Oregon Governors appointed a task force of community members, business representatives, and elected officials to address concerns about congestion on I-5 between Portland and Vancouver. Several of the members who had been involved in the earlier Trade and Partnership task force were also appointed to this I-5 Trade Corridor Task Force, which ensured consistency and continuity of many of the concepts, concerns and issues that were initially identified in the 2000 Report. The 2001-2002 study area was defined as I-5 between the I-205 interchange in Washington and the I-84 interchange in Oregon and referred to as the I-5 Trade Corridor. The primary goals of the I-5 Trade Corridor Task Force were to determine the level of investment needed in the corridor for highway, transit, and heavy rail improvements and how to manage the transportation and land-use systems to protect investment.

The I-5 Trade Corridor Task Force led an intense 18-month effort to develop a strategic plan to address growing congestion. The process involved transportation experts and elected officials. The public was given many opportunities to be involved in the development of the Strategic Plan. A Community Forum of interested stakeholders from both states was invited to provide input at each milestone. The I-5 Trade and Transportation Partnership outreach included 1,700 people that participated in six rounds of public meetings, community forums at each milestone, a mailing list of 10,000 individuals, door-to-door delivery of project information to businesses, homes and apartments along the improvement corridors, billboard advertisements, bus advertisements, press releases, public notices, participation in community-based events such as neighborhood fairs, soliciting speaking engagements with 275 businesses, community and neighborhood groups, presentations to more than 70 groups, and a project website that was accessed over 400,000 times.

After adopting draft recommendations in January 2002, the I-5 Trade Corridor Task Force asked for additional evaluation and design work to be completed on the Bridge Influence Area (BIA), between SR 500 and Columbia Boulevard, and including light rail between the EXPO Center and Downtown Vancouver. This resulted in the development of four river crossing concepts.

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Two working groups of community stakeholders, one in Oregon and one in Washington, were invited to help the I-5 Trade Corridor Task Force develop key findings and recommendations relating to environmental justice issues. Ideas from these two working groups formed the basis for much of the ongoing work whose intent is to (1) identify, avoid and mitigate impacts from potential improvements, (2) ensure that benefits and impacts are equitably distributed, and (3) ensure that outreach efforts include meaningful involvement of low income and minority residents in the corridor. It was from this effort that a Final Strategic Plan was adopted recommending fixing three highway bottlenecks of which the CRC was one of those three areas.

The Strategic Plan made the following key findings:

- “A joint use (Hwy/LRT) bridge could be cost-effective but needs further study in an EIS. ...Some river crossing concepts include the conversion of one of the existing freeway bridges for LRT use. While this is technically feasible, the cost of retrofitting the bridges to include modified decking, electric systems, cathodic protection, and other conversion costs would be significant. If upgrading the bridge to meet current seismic standards is required, the retrofit costs easily could exceed the costs of a new LRT bridge. ...Concepts that provide for separate LRT and freeway bridges could potentially allow the LRT and highway projects to move forward independently of each other. However, further analysis is required to address the joint or separate bridge decision. Such a decision is likely to be based on LRT and highway alignment design requirements, right-of-way and environmental impacts, land use opportunities and constraints relative to siting an LRT station on Hayden Island, construction costs, traffic staging, operating concerns, and potentially other concerns as well. “
- “Capital projects of this magnitude recommended by the Task Force typically require a variety of funding and financing mechanisms. The Region will not be able to rely on any single revenue source....Developing a final funding package for the bi-state improvements will be a complicated process that will involve a number of diverse entities, including state legislatures, federal agencies, and various financial institutions”.
- “Public involvement and Environmental Justice Working Groups should be formed at the very beginning of the EIS. Working group membership should include

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representatives from environmental justice communities along the Corridor. The Public Involvement working group should address public outreach. The Environmental Justice working group membership should include liaisons to the Public Involvement Working Group to ensure community concerns are incorporated into the EIS and that adequate emphasis is placed on the potential impacts and benefits to low income and minority communities.”

In 2004, following the Strategic Plan and identification of the project area, CRC planning began. The project as it is known today formally started in 2005. As an interstate highway project, the work fell under the jurisdiction of the respective State’s Departments of Transportation. However, as noted in the Introduction to this report, the CRC is more than a bridge crossing a river. It is a multi-partner, multi-modal project aimed at improving the travel efficiency and safety for cars, trucks, transit, bikes and pedestrians; strengthening the regional economy through transportation solutions; and supporting community livability.

The NEPA public involvement program was formally initiated with publication of a Notice of Intent to prepare an Environmental Impact Statement (EIS) in the Federal Register on September 27, 2005. Since 2005, using data developed by the I-5 Transportation and Trade Partnerships, the CRC has been engaging and working with the public, tribal governments and partner agencies to define problems in the Project area and to:

- Understand who may be affected by the Project and actively collaborate in the Project development
- Provide on-going meaningful public involvement opportunities throughout the region

Outreach

The IRP’s review of the outreach efforts on the CRC concludes that the outreach program has been extensive. The IRP’s independent review of the material maintained by the CRC record and reports/letters/memorandums prepared by multiple working groups and community groups confirms that the project has used comprehensive and interactive outreach tools and used citizen advisory groups to solicit input from informed stakeholders. The CRC targeted outreach to special interest populations through use of demographic

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research and met with people in both Oregon and Washington to gather input. Multiple methods were used to inform and involve including:

- Ongoing community presentations
- Information booths
- Individual meetings
- Media coverage
- Website
- Printed fact sheets
- E-newsletter
- Direct mail
- Comments forms
- Written responses to questions
- CRC-sponsored event.

Public Meetings

Public meetings were held in both Oregon and Washington to solicit feedback on how to define the overall goals and objectives of the CRC and to agree on the purpose and need statement. In the midst of the needs, design constraints and other “non-technical” issues surrounding the project; public and stakeholder input played an important role in the development of the LPA. From February 2005 to April 1, 2010, the CRC has engaged over 22,000 community members in conversation about the Project at over 750 events. The IRP reviewed the chronological list of these events.

In summary, the outreach and public involvement activities included:

- 131 public meetings with community advisory groups
- 84 community meetings and events on Hayden Island
- 57 informational booths at community fairs, festivals and farmers markets

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- 35 open houses, workshops and drop-in events
- Hundreds of copies of the DEIS were distributed, two public hearings were held, and 1,600 comments were received during the public comment period.

Public open houses and design workshops were held for the general public and special interest groups in coordination with key milestones. The IRP has been able to trace through the various events and has verified that the CRC took input from these events, in combination with the advisory group recommendations and technical analysis to help develop the CRC.

CRC Task Force

To facilitate the discussion and stakeholder input and to provide for a transparent and accountable decision-making process, the Oregon and Washington DOTs (City of Portland Resolution No. 36618) formed a 39-member CRC Task Force in 2005 composed of leaders representing a broad cross section of Washington and Oregon communities including public agencies, businesses, civic organizations, neighborhoods, and freight, commuter and environmental groups. Several members of the I-5 Trade Corridor Task Force were appointed to the CRC Task Force, with Henry Hewitt, now the Past Chair of the Oregon Transportation Commission, having served on each task force since 1999 and continues as the Chair of the PSC as of the date of this IRP report.

As stated in their charter, the role of the CRC Task Force was to:

- Respond to and advise the joint project team on technical data and its policy implementation leading to a Notice of Intent (NOI).
- Provide advice to the Joint Commission Subcommittee throughout the EIS until issuance of the ROD.
- Represent and report back to their representative organizations.

The CRC Task Force developed a vision and values statement on October 12, 2005 that was to provide the foundation for developing criteria and performance measure that would be used to evaluate the I-5 BIA alternatives. The statement indicated that the CRC NEPA process would include consideration of: crossing infrastructure; multimodal transportation;

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connectivity; high capacity transit; land use; funding; community and business interests; under-represented, low income and minority communication; commuter and freight mobility; maritime mobility; and the environment.

Meetings held regularly between the CRC Task Force and the CRC throughout 2005 and early 2006 provided input during the formation of the Project Purpose and Need statement. In addition, a series of public open houses held during the fall of 2005 provided more input from the public regarding how the CRC should define its goals and objectives.

In December 2005, a Final Problem Definition was prepared by the CRC Task Force that addressed current and future problems in the BIA. On January 17, 2006, the CRC Task Force issued a Statement of Purpose and Need that identified the following specific needs to be addressed:

- Growing travel demand and congestion
- Impaired freight mobility
- Limited public transportation operation, connectivity, and reliability
- Safety and vulnerability to incidents
- Substandard bicycle and pedestrian facilities
- Seismic vulnerability

In February 2006, the CRC Task Force adopted a six-step evaluation framework that defined a formal process for screening the large number of transportation components and subsequently, a limited set of multi-modal alternative packages. In general, the framework established screening criteria and performance measures to evaluate the effectiveness of the transportation components in addressing:

- The project Purpose and Need
- Problems identified in the project Problem Definition
- Values identified in the CRC Task Force's Vision and Values Statement

In June 2006, the CRC presented its review and evaluation to the CRC Task Force regarding the screening work that had been performed to date and proposed several alternatives to be

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removed from further evaluation. The CRC Task Force was actively involved in the screening process.

Advisory and Working Groups

In addition to the CRC Task Force, several advisory and working groups were formed to address specific project issues such as public involvement, environmental justice, freight, bicycle, pedestrian, urban design, interchange alignment and light rail design issues.

Per the City of Portland's Resolution No. 36618, July 9, 2008, the DEIS was developed with substantial public oversight including the guidance of the CRC Task Force, and several advisory and working groups. As noted in TriMet's July 9, 2008 Resolution 08-07-58, the "Project has also formed citizen advisory groups to ensure the values and interests of the community are reflected in alternatives under study. These groups provide a critical link between the Project and the community." These advisory and working groups included specialists from agency and consultant staff as well as from other organizations. The groups included:

- Community and Environmental Justice Group (CEJG)
- Freight Working Group (FWG)
- Marine Drive Stakeholder Group (MDSG)
- Pedestrian and Bicycle Advisory Committee (PBAC)
- Portland Working Group (PWG)
- Urban Design Advisory Group (UDAG)
- Vancouver Working Group (VWG)
- Performance Measures Advisory Group (PMAG)

CEJG

CEJG was formed in the summer of 2006 to achieve the goal of meaningful public engagement throughout the project development process. The members of the CEJG came from neighborhoods in the project area and include environmental justice communities representing the diverse interests and perspectives of the Vancouver, Portland and Hayden

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Island neighborhoods potentially affected by the CRC, including those residents and business owners who are likely to be displaced. The IRP has confirmed that the CEJG has met 33 times since 2006 and provided comments on the DEIS. Outreach and communications included several events involving multiple minority populations.

Examples of input received from the CEJG included:

- Community resource mapping
- Draft EIS Comment Guide for Citizens
- Executive Order Training
- Modifications in Design
- Additional Community surveying

Per the CEJG's July 1, 2008 letter to the CRC, the CEJG believed the DEIS generally described the communities within the Project areas. However, outstanding concerns were identified on which the CEJG expressed a desire to continue working with the CRC to clarify before the FEIS including:

- Health and environmental impacts
- Displacement of homes, businesses, resources, neighborhoods and impacts on quality of life
- Study of alternatives for corridor placement and the impact area.

It appears to the IRP that at some point following the DEIS communication with the CEJG working group became limited. The IRP further believes that both the purpose and definition of CEJG in relation to the NEPA process has been misunderstood, which has led to some confusion as to actions that have or perceived to have not taken place regarding environmental justice issues. The IRP has confirmed through its meetings and input from the public, that the CEJG working group has been reconstituted and that the CRC that the is now working together with CEJG in addressing these issues.

Freight Working Group (FWG)

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The 13-member FWG provides insight, observation, and recommendations about the needs for truck access and mobility within the corridor; characterizes the horizontal and vertical clearances, acceleration/deceleration, and stopping performance needs of the trucks that must be accommodated; provides meaningful comments on the effect of the geometric, regulatory, and capacity changes on truck movements in the corridor; and provides testimony and objective information about the effects of congestion on freight-related businesses and the businesses they serve.

The IRP has confirmed that the FWG has met 21 times since 2006 and has made recommendations on freight ideas to consider in the DEIS, interchange designs and the number of replacement bridge lanes and project refinements. Although the FWG, in its February 4, 2009 FWG letter to the CRC, recommended through an extensive analysis that a 12-lane bridge option (three through lanes and three add/drop lanes) be considered, in a November 30, 2009 letter, the FWG endorsed the CRC's draft recommendation for design refinements with a 10-lane bridge with 12-foot wide shoulders which could accommodate two additional lanes in the future, if necessary, and would substantially improve safety and freight mobility. In addition, the FWG understood that the braided ramps and Marine Drive Flyover ramp may not be fundable at this time, but emphasized the importance of them not being precluded by the design of the refined project. Finally, the FWG stressed that the PSC move forward quickly and that "Construction couldn't start soon enough for us." The IRP has confirmed that the FWG continues to work closely with the CRC.

Marine Drive Stakeholder Group (MDSG)

The MDSG advised the CRC on designs to improve the safety and traffic operations of the Marine Drive Interchange. In August 2009, the group of 18 stakeholders recommended a new alignment be advanced to the Final EIS that better satisfied the criteria of the stakeholders. It called for a reconstruction of the interchange with additional ramps to improve safety. The IRP confirmed that the MDSG met six times between 2008 and 2009. The FWG representatives that presented to the IRP also confirm that input was considered from the MDSG in devising solutions that best address the freight mobility needs within the BIA.

Pedestrian and Bicycle Advisory Committee (PBAC)

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PBAC was established to guide the development of improvements for people who walk or ride bicycles in or through the project area. The 15-member committee brought together community members and agency representatives to develop recommendations on facilities and connections for pedestrian and bicycle circulation. The IRP has confirmed that the PBAC has met 33 times since 2007, and per the PBAC's August 28, 2009 letter to the CRC, had met 28 times since March 2007. The group made recommendations on the location of the bicycle and pedestrian pathway on the replacement bridge, alignment of the land pathway connecting the bridge, elements for maintenance and security plan and criteria for bicycle and pedestrian facility design for both the replacement and supplemental bridge options in the DEIS. In PBAC's January 8, 2008 letter to the CRC, PBAC noted that the committee would begin to focus on the evaluation of the specific engineering details of the pedestrian and bicycle infrastructure for the LPA. PBAC continued its reviews which were transmitted to the CRC on June 17, 2008.

In PBAC's August 27, 2008 letter to the CRC, PBAC provided information relative to its model for forecasting year 2030 pedestrian and bicycle travel demand. The forecasts were developed to take into account the three primary factors related to pedestrian and bicycle demand: future land use, percentage of trips by mode, and walking and bicycling trip lengths. PBAC's conclusions in its letter noted that the existing non-standard pedestrian and bicycle facilities across and connecting the Interstate bridge discourage many pedestrians and bicyclists from crossing the Columbia River. *"The 'build' alternatives proposed as part of the CRC project would provide vastly improved facilities for pedestrians and bicyclists."* As part of its recommendations, the PBAC also recommended that the new pedestrian and bicycle facility include a separated recreational pathway that is adjacent to two one-way bicycle lanes. This design, as noted by PBAC, would allow bicyclists of different speeds and abilities to pass one another safely and provide adequate width to separate slower pedestrians from faster bicyclists as well as provide areas for pedestrians to rest and to take in the view of the Columbia River.

On August 28, 2009, PBAC, in its memorandum to the CRC, after a "rigorous" screening process, recommended and supported the PSC's two-bridge, covered path instead of the exposed path alongside highway traffic. The PBAC also provided a list of further

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recommendations for the maintenance and security program necessary for the path to be safe, secure and well maintained.

On June 18, 2010, a letter was received from the Portland Pedestrian Advisory Committee (PAC), which was a member of the PBAC. The letter noted its withdrawal of support for the CRC, primarily due to connections of the Hayden Island Interchange and reduction in the width of the bike/pedestrian lanes as the result of a reduction of 12 lanes to 10 lanes. The IRP believes that the PSC, the CRC and the community of Hayden Island are driving towards a solution of the Hayden Island interchange concerns as discussed elsewhere in this report.

Portland Working Group (PWG)

The PWG was convened to ensure that the community perspective was incorporated into the design and planning for the extension of the MAX Yellow light rail line from the EXPO center to Vancouver. The 14-member group advises the CRC on issues related to design; mobility and access; community cohesion; transit planning; business and community outreach, and impacts on businesses and neighborhoods for Hayden Island and the Oregon light rail segment of the project.

The IRP has confirmed that the PWG has met 11 times since 2009 and has made recommendations on the CRC project design based on two PWG meetings and a community workshop held to gather public input regarding Hayden Island LRT station design. The first PWG meeting was held on September 9, 2009 to provide the groundwork for station planning and to get PWG's direction to take to the public workshop. Based on the input from the PWG, the consultant team's urban designed revised the two preliminary station concepts and added a third concept design. The PWG conducted a community workshop on September 30, 2009 with approximately 50 people attending. The PWG reconvened on October 14, 2009 to consider the ideas heard at the community workshop.

On January 14, 2010, the PWG sent its Conceptual Design Report to the CRC with the intention to provide guidance to the CRC, TriMet, and the City of Portland regarding the Hayden Island station design. The Hayden Island Light Rail Transit Station is an element of the multimodal project.

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Urban Design Advisory Group (UDAG)

UDAG was formed in December 2006. UDAG advises the CRC on the appearance and design of the bridge, transit, and highway improvements. Former Vancouver Mayor Royce Pollard and Portland Mayor Sam Adams lead the bi-state group. The 16 members from Oregon and Washington contribute diverse community perspectives on a variety of topics including architecture, aesthetic design, cultural and historic resources, community connections, and sustainability. The IRP has confirmed that UDAG has met 14 times as a full committee and held multiple smaller subcommittee meetings.

UDAG visited each of the affected intersections and explored the bridgehead areas so that local needs could be understood and the consequences of implementing the designs could be visualized; meeting in workshop sessions between UDAG formal meetings, and joint meetings were held with PBAC. In June 2008, UDAG developed and published guidelines that pertain to the main span across the Columbia River and to other urban design of all other elements of the five-mile corridor. In May 2009, UDAG formed the Aesthetic Design sub-committee to study architectural design concepts for the CRC and provide design recommendations.

In September 2009, UDAG unanimously adopted its Aesthetic Design Guidelines report that built upon the June 2008 draft guidelines and approved the current design concept for the main span across the Columbia River. The UDAG report is based on the current design concept that was presented to the IRP. Noted in the key elements for design within the report is:

“The Columbia River Crossing must be a structure that can accommodate traffic, trains, pedestrians and cyclists in an efficient manner that has the least impact on the environment. To achieve this, the Columbia River Crossing is comprised of two parallel bridge structures utilizing a stacked transit system. In this configuration, traffic flows on the top deck of the two structures. The trains travel in the lower portion of one structure and bicycles and pedestrians share space in the lower portion of the second structure. This scheme minimizes the overall width of the structures and minimizes the footprint of the bridge both in the water and over land. Stacked transit structures have been used on other projects throughout the country.

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However, few if any rival this scale and complexity of the CRC. In addition, this is the first stacked transit bridge to utilize a hybrid system that connects two concrete decks with a lattice of steel cross-bracing. The “V” shape of the cross bracing sets up a structural rhythm for the bridge on which every other component of the bridge is centered. Therefore, the form of the cross bracing system was selected to create the essential foundation for the aesthetics of the project. ...The triangular shape was inspired by the shape of the cross bracing and has resulted in a pier shape that is both dynamic and visually elegant. This form also minimizes the footprint of the bridge and maximizes visual transparency throughout the structure.”

UDAG did pose two recommendations for consideration for further refinement of the Iconic Bridge over the North Portland Harbor. While UDAG has concurred with the current design configuration over the main crossing, it appears to the IRP that the recommendations regarding the North Portland Harbor Bridge have not been incorporated into the current design configuration. The design of the bridge and the IRP’s findings and recommendations are presented later in this report.

Vancouver Working Group (VWG)

The VWG is made up of 21 community members (residents, business owners, transit-dependent populations and commuters) who have an interest in light rail planning and in Vancouver. The IRP has confirmed that the VWG has met 14 times in 2009 to develop recommendations and provide feedback to the CRC, the City of Vancouver and C-TRAN. The group’s recommendation was included in a written report to the CRC in October 2009 which included a preferred North/South and East/West light rail alignment, station locations and design, and park and ride locations. During the process of considering various options, the VWG sponsored three community workshops open to the entire community. In addition, while the recommendations in the report reflected a majority of the VWG members, there were some members of the VWG who did not vote for the final recommendations and had variations, which were also presented to the CRC.

Performance Measures Advisory Group (PMAG)

The PMAG was established by the PSC in May 2009 to provide technical advice to a future bi-state, multi-agency Mobility Council. Representation on PMAG included the Cities of

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Portland and Vancouver, the Ports of Portland and Vancouver, TriMet and C-Tran, Metro and the Regional Transportation Council, WSDOT, and ODOT. PMAG met 9 times between June 2009 and January 2010. PMAG produced an interim report that identified six goal areas and goal statements that could be used by the Mobility Council relative to performance measures.

CRC Public Involvement Campaign

In addition to the working group input that had been in process since 2006, in January 2007, the CRC launched an intensive public involvement campaign to present the screening results of the preliminary 12 alternatives and receive comments. The CRC, working with the Task Force members and input from other stakeholders, developed an additional alternative to the four that had been identified to move forward, which proposed a reuse of the existing bridge for northbound I-5 traffic, bicycles, and pedestrians. With this alternative, a new, supplemental bridge would carry high capacity transit and southbound I-5 traffic.

The DEIS was sent out for public comment in May 2008. Per the CRC Task Force's Final Resolution published on June 24, 2008, the CRC sought public comment on the Draft EIS from the CRC Task Force as well as the public through outreach events during the 60-day comment period. The CRC Task Force supported construction of a replacement bridge and light rail transit. With respect to the alignment and terminus options, the CRC Task Force noted in its Final Resolution that these should be determined through a combination of:

- Federal New Starts funding eligibility
- Public and local stakeholder involvement
- Project evaluation and technical determination of the terminus that allows for the greatest flexibility for future high capacity transit extension connections in Clark County

Public comment was submitted via several methods, including email, postal mail, and public meetings including two public hearings and two open houses. In addition, during and following the public comment period on the DEIS, the elected and appointed boards/councils of the local agencies sponsoring the CRC held hearings and workshops to gather public input on and discuss the alternatives as part of their efforts to determine and adopt an LPA.

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Locally Preferred Alternative

The May 2008 Draft EIS stated that WSDOT and ODOT were leading the highway design. Metro and RTC are the Metropolitan Planning Organizations for the region, and they maintain the regional and metropolitan transportation plans that will have to be amended to include a locally preferred alternative for the CRC. TriMet and C-TRAN, the region's transit operators, must endorse the transit elements of the project. The cities of Portland and Vancouver must approve any local project elements. Other state and federal agencies and stakeholders are also participating in technical, regulatory, or advisory roles. An addendum to the May 2008 Draft EIS, a May 2008 technical memorandum, described Stacked Transit Highway Bridge (STHB) design for the replacement bridge and identified the differences from a traditional replacement bridge option. One primary difference from this May 2008 STHB memorandum to the design refinement being considered today is the open-web girder concept that evolved through discussions with working groups to the CRC, including UDAG and the PBAC. The STHB design is discussed later in this IRP report.

The CRC Task Force met June 24, 2008 to hear public testimony on a LPA recommendation. In July 2008, local project partners selected a replacement bridge with light rail to Clark County as the LPA from five alternatives in the Draft EIS. The LPA was chosen based on information in the Draft EIS, a recommendation from the CRC Task Force, and public comment. Each board and council passed a resolution on the CRC LPA, a replacement bridge with light rail to Vancouver. Agencies attached a variety of issues and considerations to their resolutions, some of which were in conflict. CRC has been working with the agencies to incorporate areas of agreement and clarify areas of disagreement as the design of the project has progressed. All sponsors signing the LPA agreed and recognized in their respective resolutions that design would be refined as input continued to be received from the working groups, the federal, state and regional agencies, and the general public. For example, the City of Vancouver in its resolution noted that many of the project's physical and aesthetic designs would be resolved during the refinement of the LPA Project including input from working groups such as UDAG, which was noted to be issuing a preliminary report in June 2008.

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As part of this process, the two regional transportation planning agencies, Metro and RTC-adopted the LPA into their Regional Transportation Plan and Metropolitan Plan in late summer 2008, respectively. The approval of the LPA is an action that describes the project to be advanced into further analysis, engineering, financing, and impact mitigation. The final project to be proposed for construction will not be fully defined until the Final EIS and the ROD are complete.

Following the adoption of the LPA in July 2008, the CRC continued to evaluate and solicit input from the public, other stakeholders, and project sponsors on other elements of the CRC that would help further refine and develop the LPA. Local partners raised the following issues during the LPA resolution process:

- Travel demand and land use assumptions
- Greenhouse gas analysis
- Financing strategies and tolling strategies
- Selection of the number of lanes on the replacement I-5 bridge
- Further development of Project costs and financial information
- Formation of a project advisory council composed of partner agency representatives

The CRC sponsored several events to receive additional input after the LPA was chosen including:

- Dec 08-Open houses on the number of bridge lanes, Marine Drive interchange, Vancouver Light Rail
- Jan/Mar 09-Workshops on Vancouver light rail design
- Jan 09-Q&A session on the number of lanes
- June 09-Open houses on bridge design, finance and tolling, light rail route, bike/ped facilities
- Summer 09: Listening sessions on tolling
- Sep 09-Hayden Island light rail design workshop

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- Feb 10-Open houses on Vancouver light rail route
- Feb 10-Open house on Hayden Island improvements
- June 14, 10-Hayden Island open house and public comment session

PSC

Although the original intention of the CRC Task Force, as noted in its Charter was to remain intact through receipt of the ROD, one of the CRC Task Force's recommendations included in its Final Resolution was to create a formal oversight committee that would strive for consensus and provide for a public process of review, deliberation and decision-making for outstanding major project issues and decisions. The CRC Task Force also recommended that the FWG, PBAC, UDAG, Sustainability Working Group (SWG) and the Community and Environmental Justice Group (in addition to other working groups that would be formed post the CRC Task Force to provide input into the project design refinement) continue their advisory roles for refinement of the LPA and report their findings and recommendations to the local oversight committee. In addition, the project sponsors signing the LPA all recommended that a formal oversight committee be formed and would provide for a public process of review, deliberation and decision making for outstanding major project issues and decisions. As previously noted, these project sponsors understood, as so noted in their respective resolutions, that refinement of the LPA would continue and that the advisory groups would be meeting, preparing reports and submitting them to the formal oversight committee.

In accordance with the CRC Task Force's recommendation and recommendations of the project sponsors signing the LPA, on June 19, 2008, the Task Force was sunset and the Governors of Oregon and Washington issued a joint letter calling for a formal Project Sponsor's Council (PSC) to allow for high level formalized input to the Departments of Transportation. The Governors stated that the PSC would continue to meet after the CRC Task Force's final meeting to provide direction on an LPA and to ensure that a structure was in place to provide guidance to the project as it transitioned from planning to design and construction. The PSC members include representatives of WSDOT and ODOT, RTC and Metro, C-Tran and TriMet and Vancouver and Portland. The formal charge of the PSC as

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contained in the Governor's June 19, 2008 letter was to review and make decisions regarding the:

- Completion of the EIS,
- Project design, including but not limited to: examining ways to provide an efficient solution that meets safety, transportation and environmental goals,
- Timelines associated with project development,
- Development and use of sustainable construction methods,
- Consistency of the Project with Oregon and Washington's statutory reduction goals for greenhouse gases, and
- A finance plan that balances revenue generation and demand management.

The PSC was charged with making recommendations on a consensus basis to the greatest extent possible regarding the major project development issues and decisions regarding issues highlighted in the project sponsors' resolutions including:

- Traffic demand and induced growth concerns
- Compliance with greenhouse gas emission reduction growth
- Number of lanes
- Hayden Island Interchange
- Completion of the Environmental Impact Statement
- Project design
- Project timeline
- Sustainable construction methods
- Financial Plan

In addressing these concerns, following the adoption of the LPA in July 2008, the PSC in conjunction with the CRC, continued its outreach efforts to evaluate and solicit input from the public, other stakeholders, and project sponsors regarding these issues that would help refine and develop the LPA.

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Travel Demand and Induced Growth

To address the travel demand concern, a panel of independent experts was formed to review and evaluate the travel demand model and the results presented in the Draft EIS. The Travel Demand Model Review Panel found project analysis and conclusions to be valid and comprehensive, and that there would be a low potential to induce growth because the CRC is replacing a facility already located in a densely-built urban area.

Greenhouse Gas Emissions

The greenhouse gas emissions concerns were reviewed by an independent expert panel using the analysis presented in the Draft EIS. The expert panel found the CRC analysis and conclusions to be reasonable, but did provide suggestions to refine the calculations for the Final EIS.

Number of Lanes

The PSC took on the task of reviewing the number of lanes. The Draft EIS evaluated highway alternatives with cross sections ranging from 8 to 12 lanes at the river crossing. During the period of the LPA adoption until early 2009, Metro and the City of Portland each conducted a public hearing to receive additional input prior to passing resolutions in January and February 2009. These resolutions informed positions Metro and Portland PSC representatives brought back to the PSC regarding the number of lanes. On March 2, 2009, the PSC voted unanimously to recommend that the replacement bridges be constructed with adequate width to accommodate up to six lanes each in each direction to provide 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. It is the IRP’s understanding that the PSC has worked with the CRC resulting in a consensus on a 10-lane solution.

Number Columbia River Bridges

The Draft EIS evaluated a two-bridge design and a three-bridge design. Several advantages of the two-bridge design were identified in the Draft EIS, including fewer piers with less in-

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water structure, smaller surface area generating less storm water runoff, and a more compact crossing with less imposing visual obstruction of the river. However, the nature of the 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 and unique design. Both the UDAG and PBAC working groups provided recommendations to the PSC to move the design forward and the PSC agreed with these recommendations. The bridge design is discussed later in this report.

Hayden Island Interchange

On August 19, 2009, the Hayden Island Plan, adopted by the Portland City Council, was prepared as a mitigation measure for the development moratorium enacted by the Portland City Council in September 2006 to address development on the island and at the congested I-5 interchange. Additionally, the plan was developed to provide guidance to the CRC. The Hayden Island Plan “*seeks to protect the interests of the island as well as ensure that the amount and type of development on Hayden Island would not overload the proposed freeway improvements.*” The IRP notes that the community outreach regarding the Hayden Island interchange and bridge design relative to Hayden Island has continued through the IRP’s review period. Another work group composed of community members, port representatives, and CRC members, was convened to explore the feasibility of proposed modifications to the Hayden Island interchange design to reduce the overall footprint and other impacts while preserving its functionality. A public meeting regarding the proposed alternatives was held on June 14, 2010. As of the date of this IRP report, the Hayden Island aspect of the design remains unresolved, although the IRP notes that the PSC is working with the Hayden Island Community and the CRC to a solution to which all appear will agree.

Issues/Open Items

The IRP believes there is a perception that the CRC is not including and/or listening to public and stakeholder opinion and is not performing the public outreach required under NEPA. Based on presentations made to the IRP, both in its meetings and at the community comment sessions, it is apparent that several groups no longer feel “included” in the efforts to move the Project from the Draft EIS to the Final EIS. There appears to be a lack of trust and credibility in what the CRC is doing and how it is proceeding.

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The IRP is also unclear as to how the CRC has communicated back to the project sponsors signing the LPA (many of whom are members of various working groups) relative to how the input from the working groups and other advisory groups have helped in refining the LPA and addressing the issues and concerns identified in the respective resolutions to be addressed and resolved during this LPA refinement process and leading up to the Final EIS and Record of Decision.

This perception appears to have developed due to a lack of communication with the various working groups since the completion of their respective reports. The CRC's lack of engagement in feedback with each of the groups and major stakeholders, explaining what decisions were made based on their advice, where the project was going, what their role would be in the future; and if necessary when and why the advisory group's efforts were considered complete, has significantly contributed to the lack of trust and a perception that any information presented is more as a "sales pitch" versus genuine discussion and consideration of the concerns and issues being raised by the public.

The IRP has confirmed through its review of all of the working groups reports that the CRC has, in fact, incorporated the working group's recommendations into the current design (within design constraints which are out of the control of the CRC). However, despite the fact that the CRC has indeed accomplished the public outreach goals as required under NEPA throughout the project's tenure, when communication is curtailed, as has been the case with some of the working groups after the Draft EIS was published, there is a sense of loss of ownership in the project and a fear that whatever input was provided is no longer being considered or even rejected without comment or reason. This further leads to a feeling, even if not correct, that the CRC was going through the motions and not truly engaged in a meaningful public input. This sense of loss of ownership and fear of rejection is then what leads to the lack of trust and credibility.

There is also a perception among some that the two state Departments of Transportation are "taking" or "have taken over" the project, excluding some key stakeholders who consider themselves to have equal ownership or say in the project moving forward.

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Consequence

It is important that all those affected by the CRC have a sense of “ownership” of the Project and feel like they have been part of the team that has influenced how this Project takes shape. Continued communication is an essential part of the outreach program with continued feedback to the public and stakeholders of how their input is being received. This feedback is more than a “tracking program” in an excel spreadsheet, and must include the “human” element which extends to face-to-face communication and discussion/feedback to assure that: concerns have been listened to; responded to; and decisions understood despite whether the specific input was accepted or not. It is clear to the IRP that the majority of those interested in this project understands that not every recommendation can be accepted and also understands that some of the recommendations from various stakeholders are in conflict with one another, resulting in a needed compromise that best addresses the overall needs as previously discussed.

If the feelings of lack of trust and credibility continue, there is a risk that some of the sponsors of the Project might rescind their support for the CRC, thereby jeopardizing the partnership required to move the CRC forward. The lack of agreement among the sponsors and buy-in from the community could seriously delay the CRC; or in a worst case scenario result in cancellation all together.

Recommendation related to Public Outreach

With respect to Public Outreach efforts, the IRP offers the following key recommendations:

Recommendation 15: Re-invigorate public involvement and re-engage with respective working groups. Review with these groups how their respective input and recommendations have been incorporated into the current design. The CRC should reinstitute and reinvigorate the public involvement and agency coordination programs that characterized the Draft EIS phase during the preparation of the Final EIS. For those recommendations which were not incorporated, it is advised that the CRC review with the working group why the specific recommendation was not or could not be considered in the current design, or was modified based on other inputs received, including feedback from local, regional and federal agencies. The review should include a review of what the problem(s) are, how they got to the alternatives covered in the Draft EIS, how the LPA is

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being refined and what is being proposed for the Final EIS. The IRP suggests that the public working group reengagement can be achieved by:

- Holding a frank discussion at the PSC of what major contentious issues remain. The discussion at the PSC should include confirmation among all that a solution must be agreed to (i.e. that no one wants to go on record as supporting a no-build solution) and agreement or confirmation of who will make the decision and whose support is vital to achieving funding and hence getting the project actually to construction.
- Continuing to provide feedback to interested parties and working groups to regain the trust of the project sponsors and community; and provide the opportunity to meet the needs, goals and objectives of the various partners as was originally conceived in the LPA within the design constraints discussed elsewhere in this report. This outreach program and feedback includes continued communication of how input is received and considered and how input and recommendations is then incorporated into the FEIS, or if not included, why not. It is the feeling of being part of the team and a feeling that the public outreach efforts have in fact been real and benefited the CRC that will allow the project to move forward and be In the end, having support for the project is a pre-requisite to obtaining funding. What has made the CRC unique from other national and state projects that compete for funds is the complexity of the Project as described in other sections of this Report.

3.2.4 Tribal Consultation

The CRC has been working with nine federally recognized tribes and one non-federally recognized tribe-the Chinooks, including:

- Nez Perce
- Umatilla
- Warm Springs
- Yakama

The other five tribes include:

- Cowiltz

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- Colville
- Grand Ronde
- Siletz
- Spokane

Of the nine federally recognized tribes, four have treaty rights on the Columbia River.

The CRC initiated Section 106 consultation with the tribes in December 2005, including face-to-face meetings with each tribe. In March 2006, the CRC sent invitations to all tribes to be participating agencies under SAFETEA-LU. Both the Grand Ronde and Cowlitz tribes accepted. The CRC also entered into Intergovernmental Agreements (IGAs) with the tribes interested in providing monitoring services. A Tribal Leadership Summit was held in 2007.

The CRC remains in on-going coordination with the tribal cultural resources offices on the following milestones:

- EIS scoping
- Project's Purpose and Need
- APE
- Alternatives Screening
- Criteria for Alternatives Selection
- Preliminary cultural resource findings from screening analysis
- Range of Alternatives
- History Seminary
- Inadvertent Discovery Plan
- Geotechnical monitoring Plan
- Cultural Resources scope of work including methodologies and techniques for archeological fieldwork.

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In addition to the participating tribes, the CRC met with Columbia River Inter Tribal Fish Commission (CRITFC) to provide a project update, measures to minimize impacts to ESA-listed species and proposed compensatory mitigation measures and to discuss other sensitive species such as lamprey. CRITFC was very interested/concerned about project impacts to lamprey. Very little is known about the species. The species is not ESA listed, but lamprey populations are in rapid decline and they are culturally significant to the tribes for food & traditional purposes. As follow-up the CRC will continue its consultation with the CRITFC, along with the lamprey specialists from US Fish & Wildlife Service and Oregon Dept. of Fish & Wildlife to discuss the project impacts and minimization measures specific to lamprey as well as a way to assess lamprey presence and/or populations in the project area. Additional work on lamprey is on-going and will be included as part of the FEIS; either as additional text to the FEIS Ecosystems Technical Report or as a separate document that would be an appendix to the Ecosystems Technical Report.

Issues/Open Items

There are significant cultural resources and potential burials in the project area. While the downstream alignment option was preferred by the tribes, concerns still exist regarding how any remains and artifacts if found will be handled and what will be done with whatever is found.

The IRP is also aware of the critical nature of working with the four tribes that have fishing rights on the Columbia River and assuring that those rights are preserved during the construction and operation of the CRC. While the CRC has conveyed to the IRP that the CRC and the tribes are working together and to date appear to have agreed on the proposed LPA and approach to constructing the CRC, the IRP has not seen the draft MOA nor did any of the tribes provide direct input to the IRP regarding these issues. It appears that there are still some unresolved issues, such as lamprey population impacts that may need to be addressed in an MOA and as design progresses.

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Recommendation

- **Recommendation 16: Bring the tribes and the Columbia Fishing Commission into the MOA process immediately, and actively engage them to resolve concerns regarding the mitigation measures to be undertaken.**

3.3 Roadway Design

Roadway design elements include sizing of the corridor, horizontal and vertical alignment of the freeway and specifically the river crossing, cross section features and interchange geometry.

The IRP received much information about the freeway design process and outcome. For projects at the EIS stage of project development the roadway design elements should be sufficiently established to enable understanding of the three-dimensional requirements and impacts, and to allow for detailed analyses of traffic operations, environmental considerations (air and noise quality assessments, stormwater runoff requirements) and determination of construction quantities to enable reasonable estimates of construction costs. For the CRC, design includes freeway and interchange design, LRT alignment, and design of bridges and retaining walls, including most notably the river crossing structure.

3.3.1 Overall Corridor Approach and Sizing

The locally preferred alternative for I-5 and the bridge itself represented represents a reasonable trade-off between meeting future travel demands, spatial or right-of-way limitations, and funding requirements. The LPA reflected consideration of traffic impacts well beyond the bridge influence area. The sizing of the bridge itself properly considered the need for both basic lanes (3 minimum each direction) as well as auxiliary lanes, necessary for accommodation of entering and exiting traffic along the freeway. Such auxiliary lanes serve not just ‘capacity’ but also critical operation of merging and diverging under ranges of density and speed, including operation of large freight-carrying trucks whose operating requirements are particularly important. Under the LPA as shown in the Draft EIS the resulting corridor would produce a measurable improvement in traffic operations but would still represent an appropriately ‘constrained’ capacity appropriate for the context.

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Issue / Open Items

Following publication of the Draft EIS a number of issues arose that led to a reconsideration of basic corridor sizing decisions. Among those decisions revisited was the number of lanes across the bridge itself. As the river crossing represents the most costly portion of the facility as well as that portion carrying the most traffic, revisiting of the cross section has the potential for significant changes in the expected operational character of I-5. These discussions have been further linked to the controversy and re-visiting of the interchange solutions and traffic issues associated with Hayden Island.

In the opinion of the IRP there has been insufficient linkage in the stakeholder discussion of number of lanes on the river crossing, interchange design requirements at Hayden Island, and expected or desired traffic performance. They are not separable but intertwined issues. In seeking to limit the footprint and cost of the project, suggestions to reduce lanes from 12 to 10 or 8 without reducing access points and associated traffic will have serious long range implications to the viability of the I-5 corridor. Such discussions and decisions about reducing the bridge size should also consider changes in interchange access, and should be made based on a full evaluation of the traffic operational effects of such decisions.

The issues and challenges here are not unique to the Portland/Vancouver metropolitan area. Members of the IRP have been involved in projects of a similar nature and scale (new alignment interstate crossings in urban areas over major rivers; complete reconstruction of urban freeways as multi-billion dollar megaprojects; with concerns about footprint, cost, multi-modalism and infrastructure renewal).

In IRP members' experience, addressing these issues has been achieved through a process of collaborative decision-making in which overall corridor sizing is related to varying levels of expected or desired traffic operational quality. In this context, an agreed-upon minimum operational performance contributes on the front-end to the decision as opposed to an afterthought or something to be characterized after the decision has been reached. For the case here that would have amounted to an open discussion about the number of hours of congestion in the design year (2, 3, 6?) that would be acceptable given a particular number of lanes on the bridge as well as other segments of I-5.

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Moreover, this discussion would involve the full range of stakeholders, not just those in the Metro area. The IRP observes that the discourse over project size and scale has been limited to discussion of traffic patterns and future demands associated with the Metro area. It is seems well documented that much of the traffic using I-5 within the bridge influence area is ‘local’ in nature. What perhaps has not been sufficiently discussed or emphasized, though, is that portion of traffic that is associated with ‘out-state’ and indeed national activities.

I-5 is arguably among the five most important interstate facilities in the nation. It achieved designation as one of US DOT’s Corridors of the Future. Fundamental decisions about I-5 involve (or should involve) not just those who reside and work in the Vancouver/Portland metro area, but those in the two states of Washington and Oregon who also rely on the service provided by I-5. The IRP has seen little explicit acknowledgement of this fact (other than related to port freight needs, which are in themselves substantial).

A related but no less important concern has to do with the limitations of data and analysis relative to the type and scale of investment contemplated. This again is not unusual; but in the IRP’s experience it has been openly and proactively discussed as part of the overall decision-making process on the front end of project development.

All discussion of performance and requirements in the CRC has been limited to a 2030 to 2040 time frame commensurate with the available long-range Metro land use and transportation plans. The IRP understands the reasons for this and would not have done anything different in terms of analysis processes. What needs to be understood, though, is the unique nature of the investments here demands consideration of what may happen beyond the nominal design year.

As has been discussed during public sessions of the IRP, the CRC seems not to have brought the service life of the bridges and other corridor reconstruction into the discussion of corridor sizing. It is particularly important to do so here, as the IRP observes that both Portland and Vancouver are still growing communities. Neither city is expected to reach ‘build-out’ by this time period. Moreover, by the time the nominal design year of 2030 is reached (merely 12 years after the currently scheduled opening date), the bridge itself if properly constructed and reasonably maintained should have a remaining service life of *70 to 90 more years*.

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The greatest long-term risk will be in undersizing, not oversizing the bridge.

The IRP is aware of the testimony regarding 2030 traffic analyses of the operational effects of constructing 8 versus 10 versus 12 lanes on the bridge. Such analyses are useful but insufficient to enable a fully informed decision on how much capacity the bridge should be constructed to carry. Under a ‘worst case’ scenario of continued access to I-5 at both Marine Drive and Hayden Island, and under a full build-out (which is likely to occur well past 2030) of both Port facility plans and Hayden Island redevelopment, it seems likely that ultimate traffic demands and pressures on I-5 at the bridge could be significantly greater than 2030 analyses demonstrate.

Estimating the demand for major projects such as the CRC necessarily incorporates uncertainty reflecting future conditions. The year 2030 forecasted demand for this portion of I-5 is higher than what exists today, but some might also envision a scenario wherein this level of demand might not be reached; or might be reached only after a longer passage of time (e.g., not until 2040 or 2050). Even under such scenarios, though, measurable benefits (travel time savings, reductions in crashes, increased efficiency in operations) can be achieved only with substantial increases in capacity crossing the river. And even in the case of the original 12-lane LPA, the sizing of the bridge and I-5 based on 2030 estimates is demonstrably a compromise that reflects the conditions typical of constrained urban settings.

The IRP concurs with the constrained approach for I-5 as a whole and with solutions that expect constrained operation under design conditions. The decision to treat I-5 as a six basic lane freeway is reasonable given the circumstances. All stakeholders must recognize, though, that this decision itself represents a ‘context specific’ mobility compromise. The decision reflects well understood multiple pressures on decision-making (overall cost, negative perceptions about highways, footprint of the facility) which all support downsizing.

The IRP advises perspective on the corridor sizing and specifically bridge sizing decision. *In the opinion of the IRP, the greatest long-term risk will be in undersizing, not oversizing the bridge.* The project development history of the CRC suggests that once constructed that will be the end of discussions about Columbia River crossing bridges for many generations.

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The types of bridges under consideration do not allow for widening; whatever width is constructed will be all that is ever available for mobility. The stated difference in costs of 8 vs. 10; or 10 vs. 12 lanes is nominal given the overall cost of the bridge and project. (CRC cost estimates indicate that reducing the bridge from 12 to 10 lanes saves \$20M to \$30M.)

Investments in the bridge and other transportation infrastructure produce real assets that, properly managed, can provide real economic and other returns to both Oregon and Washington over the long term. Agreements can be struck to manage whatever assets are built, and such agreements can change to reflect changing conditions that are inevitable over time. However, one cannot manage what one chooses not to build. Everyone – those who live in both communities as well as all users of I-5 – will live well into the 21st century with the consequences of the decision of what to build or not build.

Recommendation

The CRC should perform sensitivity analyses using a range of growth rate assumptions for traffic volume to estimate I-5 performance for time periods beyond 2030, including also sensitivity of different levels of traffic volume associated with Hayden Island and Marine Drive.. Comparison of the operations of 8, 10 and 12-lane sections should be done.

The IRP would not substitute our judgment for the Project Sponsors or those who have been studying and working with this project for many years. It appears as of the writing of this report that a consensus has emerged that ‘ten lanes is enough’. Should the PSC settle on a ten-lane design, the IRP urges that there be a full understanding of the long-term implications of this decision. The IRP expects that this may mean the need to impose aggressive management of access to this most critical portion of I-5, such as ramp metering (perhaps for only non-freight users) at Marine Drive and Hayden Island and even potentially peak period ramp closures for non-freight moving vehicles. Management of the limited capacity would most appropriately be driven by carefully defined and continuously monitored operational performance measures.

Given the critical nature of traffic flow on the bridge and the need to maintain maintenance and operational flexibility, should a ten-lane design be chosen the IRP recommends that it include full-width continuous shoulders for emergency access, enforcement and maintenance

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activities, all of which will be critical and difficult to accommodate under high volume, recurring congestion.

3.3.2 Roadway Alignment Design

Interstate highways are part of the National Highway System. As a matter of law their design falls under the responsibility of the US DOT (Title 23 Code of Federal Regulations). The Secretary of Transportation has delegated this statutory responsibility to the Federal Highway Administration. Through rulemaking, FHWA adopted the American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design of Highways (current edition is 2007) as the basis for geometric design standards for NHS and Interstate facilities. As a matter of standard practice for interstate design, state DOTs adopt the appropriate design criteria, in consultation with FHWA Division staff. This was done for the CRC.

The AASHTO Policy and its application to interstate design includes some measure of flexibility, but for many geometric elements and dimensions design standards are fixed. For example, although the AASHTO policy includes guidelines for operational quality ('design level of service') this is not considered a 'standard' but rather a decision to be made on a 'case-by-case' basis as was done for the CRC.

In terms of design dimensions, among the more applicable and 'impacting' elements are freeway lane widths (12-ft minimum) and shoulder widths (10 to 12-ft minimum on freeway mainlines of more than 3 lanes). Note that in many urban freeway reconstruction projects full shoulders have been either compromised or eliminated (this being done as a 'design exception'.) The IRP understands that reconstruction will maintain full shoulders wherever possible. Shoulders are high value cross section features on high volume facilities where reliability of service is important. They afford the ability to access and quickly clear incidents and crashes, to safely perform routine maintenance activities with minimal need for lane closures, and to enable law enforcement activities.

Alignment features (horizontal and vertical alignment) and interchange design features (acceleration and deceleration lane lengths, ramp alignment) are designed based on a selected

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design speed. The AASHTO Policy offers the following definition and guidance on design speed:

‘Design speed is a selected speed used to determine the various geometric design features of the roadway. The assumed design speed should be a logical one with respect to the topography, anticipated operating speed, the adjacent land use, and the functional classification of highway. Except for local streets where speed controls are frequently included intentionally, every effort should be made to use as high a design speed as practical to attain a desired degree of safety, mobility and efficiency within the constraints of environmental quality, economics, aesthetics, and social or political impacts...The selected design speed should be consistent with the speeds that drivers are likely to expect on a given highway facility.’

There are limitations to allowable design speeds for interstates. According to AASHTO the range of design speeds for urban freeways is from 50 mph minimum to 70 mph. Selection of an appropriate design speed for an interstate project such as I-5 represents a balance. Highest speeds translate to milder minimum curves, longer vertical curves and longer acceleration and deceleration lane lengths. The CRC, WSDOT and ODOT (in collaboration with FHWA) have made appropriate and reasonable decisions about the selected design speed for I-5 on both sides of the Columbia River. The selected design speed of 70 mph in Oregon and 65mph in Washington is achievable and respectful of the context.

It is common and to be expected that full application of design criteria in every instance will not be possible. Good urban freeway design anticipates the need for ‘design exceptions’ in selected locations. FHWA must approve any and all interstate design exceptions. These are discouraged when requested for significant lengths of facility or where multiple exceptions are sought in one location. It is also common for design exception issues to emerge throughout the design process as the plans move from their current 30% state to 100% design.

The IRP has reviewed in general terms basic alignment and cross section designs. Design of I-5 meets basic criteria and appears correct and reasonable for the selected design speed. The design generally meets design criteria, but great care will need to be maintained as the design work proceeds for both roadway and structures to avoid or minimize design exceptions.

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It is also extremely important for the documentation of design decisions to be complete and made accessible to all who will be involved in latter stages of project development, through final design to construction. Much design work has involved dialogue with key stakeholders, adjacent property owners (both business and residents) and officials of communities served. Promises have been made and expectations created in avoiding impacts through alignment design and retaining wall or structural solutions. It is typical of project development, particularly for projects of this size and scope, for different entities to ‘pick up’ the design and complete it. The credibility and acceptability of the project as it moves to construction will rely on maintaining those promises and retaining the intent of the work that has been completed to date.

The following sections address observations and recommendations regarding design of selected critical interchange locations along I-5.

Interchange Design – Oregon

One of the challenging aspects of this project is the geometric and operational design of the interchanges. Their proximity to one another, the mix of auto and freight traffic, high traffic volumes and many other factors weigh into this discussion and make it an urban design challenge.

Issues/Open Items

The IRP heard testimony from CRC consultants that I-5 corridor traffic analyses had been performed for a significant length of I-5 beyond the BIA to establish the operational quality of the proposed design. Despite this work there remains substantial concern within the public and with some stakeholders that the proposed freeway improvements will not produce substantial benefits due to capacity restrictions in freeway segments at the Rose Quarter and I-405 interchange to the south. The concerns take two forms – first, that no real benefits will be seen; or second, that ODOT and the City will be ‘forced’ to make unwanted capacity improvements to I-5 further south of the CRC.

Questions about the reasonableness of investment in the CRC bridge because unresolved issues remain to the south threaten the viability of the project. Given the long term nature of

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the CRC, such questions ignore the inevitable need (over the next 30 to 50 years) to reconstruct essentially all of the freeway system in Portland.

Recommendations related to Interchange Design - Oregon

Both ODOT and the City have recognized for many years that I-5 in Portland would require some reconstruction and improvement to traffic flow. The Rose Quarter has been the subject of multiple studies over the years, including one such effort about to begin.

With respect to Oregon interchange design, the IRP offers the following recommendations:

- **Recommendation 17: The CRC should perform sensitivity analyses using a range of growth rate assumptions for traffic volume, then estimate I-5 performance for time periods beyond 2030, including sensitivity of different traffic volume levels associated with Hayden Island and Marine Drive. Comparison for 8, 10, and 12-lane sections should also be done.**
- **Recommendation 18: The IRP encourages ODOT to work with the City of Portland and fully develop a solution for I-5 from I-405 to I-84.** This effort, which would include a cost estimate and impact analysis, could be ‘programmed’ to fit with any staging or phasing plan that may emerge. While reconstruction of the Rose Quarter segment is a separate project with its own purpose and need and independent value, most residents and stakeholders perceive a strong linkage between that freeway segment and the CRC bridge influence area. ODOT should be encouraged to demonstrate how the two separate projects will fit and complement each other. To do requires work on the Rose Quarter project to proceed apace. ODOT and the City staff should jointly acknowledge to other external stakeholders that they
 - 1) Agree that freeway capacity improvements in the CRC will bring meaningful congestion relief benefits under current conditions;
 - 2) Irrespective of the CRC, there is an agreed intent to improve traffic operations and safety of I-5 south of the bridge influence area; and
 - 3) Are confident that reasonable and acceptable solutions to the Rose Quarter, I-405 and the I-5/I-405 interchange area can be developed and implemented over time.

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- **Recommendation 19: The Marine Drive interchange issue needs to be resolved without delay.** Opportunities to lower the profile would benefit from full investigation in the context of reducing cost.

Marine Drive

Considerable effort has been expended to assure that the Marine Drive interchange will function adequately in serving its primary purpose – handling of freight traffic to and from Port facilities. The IRP is satisfied that CRC has engaged key stakeholders and undertaken an appropriate alternatives process to develop an optimal interchange solution.

CRC design staff has focused on the Marine Drive interchange and connections to Hayden Island in attempting to restrain or limit initial construction costs. Given the importance of maintaining high quality of service to the Port traffic and the relatively minor savings, the IRP suggests looking elsewhere for deferrals or cost refinements.

The Marine Drive interchange remains in flux pending resolution of Hayden Island. If a consensus emerges that Oregon traffic should all focus on Marine Drive, it is important that special efforts be made to assure reasonable and reliable access dedicated to Port traffic remains. The CRC should maintain strong contacts and involvement with Port stakeholders as design solutions continue to be studied.

If there are in fact opportunities to lower the bridge profile (thereby not accommodating the largest vessels that may infrequently wish to pass upstream, they should be presented and discussed. If on the other hand the navigational clearance to be provided is in fact the absolute minimum as determined by the Coast Guard, then that needs to be clearly communicated and documented properly in the Final EIS. Project sponsors need to have the confidence that the bridge as proposed represents the best value.

Hayden Island

The City is to be commended and CRC as well for revisiting Hayden Island. The unique situation there and its proximity to the bridge and resultant design requirements warranted a special look. It is unfortunate that such a new look could not have been done by the CRC, but the panel understands that CRC is fully engaged and cooperating with the City and its consultants. The IRP anticipates the findings will be understood by all.

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For the record, if a full interchange is considered necessary for Hayden Island, the design shown in the Draft EIS is reasonable. It was based on the agreed-upon basic and auxiliary lane requirements and reflected the specific constraints or ‘context’ described below. It appears not to have been fully explained early in the process or understood by stakeholders. But criticisms of the number of lanes or footprint are equivalent to ‘shooting the messenger’.

The context defines the physical footprint and adverse costs and effects. Proximity to Marine Drive, the fact that it is an island (requiring significant structures to cross onto it) and its proximity to the river crossing bridge (which has a rising profile to meet navigation requirements), the demand volumes during peak periods as well as the fact that interstate design standards apply to all roadway elements, all combined to produce the ramp braids, auxiliary lanes and significant highway infrastructure associated with the Draft EIS.

The solution currently being investigated appropriately recognizes the true trade-offs that must be considered. Reducing the footprint or perceived impacts of the interchange may mean reducing or eliminating direct access to the Island. It is within this context that an informed and ultimately more acceptable solution to all parties may be reached.

Issues/Open Items

The City of Portland and ODOT must recognize the relationship between access, land use and infrastructure that force decisions about Hayden Island. The IRP was told that the population of the Island is planned to be no more than 5000 to 6000 residents, many of them retired or with limited mobility needs beyond the island itself. A decision has been made to serve the island with a light rail station regardless of the potential demand for such service. The IRP agrees with the following commentary from a blogger discussing the problems with Hayden Island:

‘The problem with Hayden Island is that it wants to be two different things that are inconsistent. On one hand, it wants to be the destination shopping area of choice for Vancouver Sales tax dodgers, which implies a giant freeway interchange, and it wants to be a quiet place to live which would be best served by no interchange at all with traffic access just a small 2 lane bridge to Marine drive for local access.

It can't be both.

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As for I-5, it is the most important North-south transportation route west of the Mississippi river and it obviously needs help, and since replacement will likely be 'the bridge' for as long as any of us now alive will live it ought to be done on a sufficiently grand scale to meet the needs of that time span.

Using it as a choke point to restrict I-5 traffic doesn't make it”.

In retrospect, the CRC could have challenged the assumption that all interchanges (including specifically Hayden Island) would be retained. The Hayden Island interchange is the only one that, from a system perspective as well as design challenge, may warrant consideration for removal. IRP members are familiar with access changes and FHWA interstate interchange policy applications nationwide.

Access, travel demand and lane requirements/design footprint are inextricably linked.

Eliminating access to achieve improved traffic operations or minimize freeway footprint requirements is unusual but not unprecedented. In any event, this second look being undertaken now gives everyone the opportunity to consider a completely fresh design alternative for Hayden Island.

The City of Portland is rightly acknowledged as a leader in transportation planning, multimodalism and creativity. There is a history in this region of understanding the importance of integrating land use with transportation infrastructure. In the view of the IRP, the issues associated with Hayden Island strike us as a textbook example of this.

If the land use plan and vision for Hayden Island require direct interchanging then the costs and footprint (including potentially one additional lane across the bridge each direction) should be understood to be a direct outcome of that local land use decision. If on the other hand residents and businesses can live with and indeed thrive relying on indirect access to I-5 via Marine Drive, then the impacts on the island can be greatly reduced; and freeway operations potentially improved as well.

The IRP understands that the recent update of the Hayden Island land use plan (which occurred *after* adoption of the LPA) assumed an interchange with I-5. Historically, it seems clear that Portland chose through the land use planning process to develop the island as a regional retail or commercial destination point. What is not clear with the recent plan update

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was whether the updated land use plan for Hayden Island relied on the interchange being there or merely assumed it was there because of history. Stated a bit differently, would the land use plan be less viable if the interchange were not part of the island's infrastructure? Reference to 'regional retail' in the plan suggests a need, but the IRP was told that the developer envisions more mixed use and neighborhood type development, and that 'big box' development was being eliminated.

The presentations on travel demand forecasting showed design hour trip demands to/from the south and Hayden Island of more than 1200 vehicles *per hour*. These results reflected analyses that were done a number of years ago and may not be current with respect to the latest plan update. However, follow-up discussions with CRC traffic operations task leads confirm that the Hayden Island interchange peak period demand forecasts are comparable to those for Marine Drive. If these demands are in fact consistent with the current plan, then they would seem to represent much more planned development than implied by 6000 residents. They would also seem to suggest a high degree of expected or desired commercial, auto-centric development for the island; and one that may in fact contribute to overloading of the proposed freeway improvements.

If the City wants/needs an interchange here because their land use plan relies on it, then that decision directly translates to more footprint and possibly, depending on the amount of development sought, perhaps one more lane on the bridge itself. These design requirements include ramp braids, CD roads, etc. that have been shown. If on the other hand the City wants a narrower bridge, less costly project, and lesser overall footprint, then the corridor solution may be able to accommodate that while maintaining the performance of I-5 and meet purpose and need by eliminating the Hayden Island interchange and providing indirect access only through Marine Drive. Much has been made of the state DOTs 'taking over' the project. Land use decisions are clearly local responsibility. The infrastructure impacts of such decisions become joint responsibility. Here it seems clear that Portland's decisions about land use on Hayden Island should be seen as creating a direct impact on the project itself.

Once the City of Portland and the residents of Hayden Island determine their collective future, transportation solutions can be readily found.

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As of the writing of this report the outcome for Hayden Island remains unclear. The IRP is optimistic that an acceptable solution will be reached. The IRP urges that this decision reflect not just cost and footprint issues but also traffic operational effects on I-5.

For reasons discussed above, this issue is of sufficient importance and the magnitude of the issues and decisions great enough to warrant additional time for the City, its consultants, residents of Hayden Island and the CRC to understand and participate in analysis and decision-making. The IRP is encouraged by both the commitment of all parties to reach an agreement and strongly encourages them to do so quickly.

It does seem clear, though, that barring a decision to go back to the Draft EIS solution, whatever change is made at Hayden Island may be of sufficient magnitude and importance to require a Supplemental EIS. This decision, of course, is to be made by FHWA and FTA. Having to perform a Supplemental EIS should not be viewed as a negative (given other issues raised in this report); but it should provide the impetus and sense of urgency on all parties to arrive at a decision so work on the Supplemental EIS can proceed immediately. If the linkage between Hayden Island land use decisions is allowed to be separated from design solutions to produce reasonable freeway acceptable traffic operations, there is a risk that suboptimal total project decisions will be reached. Failure to acknowledge such a linkage also allows the suggestion to be perpetuated that local units of government are in some fashion not part of the overall corridor decision process.

Finally, the IRP notes that the record of recent activities involving re-visiting of Hayden Island suggests the potential challenges from stakeholders who were involved in and agreed with the plan that is in the Draft EIS, but have not been involved or agree with the current City-led effort. CRC should consult with FHWA on whether revising access to Hayden Island would be of sufficient importance and change to merit a re-evaluation of the EIS.

Recommendation related to Hayden Island

With respect to Hayden Island, the IRP offers the following recommendation:

- **Recommendation 20: The City of Portland and the CRC must commit to timely resolution of the design and transportation issues at Hayden Island.** Resolution will involve full understanding of the land use, transportation, physical footprint, cost

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and environmental implications of an acceptable plan. In resolution of these issues, the IRP suggests that:

- The operational performance of I-5 must be maintained regardless of the presence or design of Hayden Island access
- The design and environmental effects understood and documented as long as a consensus on the plan can be reached quickly
- The direct link between the bridge size and Hayden Island be re-established, making it clear that the project will reflect local land use decisions but will also produce operational quality expected of a national interstate highway. They may choose to leave the total decision in the City's hands (of course, full knowledge of the implications of either choice is important).
- Cost estimates should be prepared, demonstrating the difference in overall total cost associated with an interchange at Hayden Island and wider bridge; and indirect access with sufficient interchange at Marine Drive and a narrow bridge. It is not clear to the IRP whether a decision to eliminate the interchange would have a net effect of reducing overall cost.

If a decision is made to eliminate a Hayden Island interchange and the judgment is that would change the viability of the Hayden Island land use plan, then the City perhaps should undertake such revision.

Interchange Design – Washington

The CRC engineering team has developed reasonable and appropriate interchange design alternatives to meet design requirements for the interchanges in Clark County. The design of high volume interchanges employing multi-lane exits and 'add-lane' entrances with auxiliary lanes represents best practices in urban freeway design. The alternatives reflect close coordination with key stakeholders and application of best design practices for freeway design in constrained urban areas. While some issues remain (most notably resolution of the Marine Drive and Hayden Island interchanges) the IRP is confident these can be addressed.

Testimony from the City of Vancouver staff demonstrated to the IRP that the CRC team had coordinated with the City on interchange configuration, street system linkages overall

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access needs. The CRC team has demonstrated design sensitivity with respect to minimizing the footprint of I-5 in proximity to Fort Vancouver and National Park Service property.

Issues/ Open Items

Demand management is central to the project's success. Restricting entering traffic during periods of potential congestion through metering is the best tool available for demand management on the freeway. Entrance ramps of insufficient length are difficult to meter without adverse queuing spilling back onto the crossroad. The ability to institute and operate ramp-metering technology at entrance ramps is a key element of any demand management program. The CRC should verify that entrance ramp designs (length and width) are sufficient to enable the implementation of metering, including the ability to implement bus transit bypass or other transit priority schemes.

The financial viability of the project remains a key concern. A significant part of the total project investment need is associated with interchange reconstruction and capacity improvements along the I-5 mainline in Washington. With respect to phasing, there may be more than one potential phasing scheme to consider under a limited funding scenario. The CRC team has pointed out that deferral of system interchange construction at the north end of the project is one such approach, as well as deferral of portions of the Marine Drive interchange in Oregon.. The IRP recommends the CRC fully investigate and develop alternative construction phasing concepts for the I-5 corridor in Washington.

The CRC engineering team has recommended single point diamond (SPI) interchanges at a number of locations. Members of the IRP have considerable experience in interchange configuration design studies. The panel's experience is that such designs can be more expensive and operationally less efficient than other diamond alternatives, particularly in locations where the crossroad is under the freeway. The IRP suggests that as part of design refinement the CRC should investigate such alternative diamond forms with the objective being to determine whether cost savings in the profile of I-5 and bridge structures can be attained.



Recommendation Related to Interchange Design - Washington

With respect to interchange design in Washington State, the IRP offers the following recommendation:

- **Recommendation #21: The CRC should consider developing one or more phased construction plans reflecting the potential for a significant funding shortfall.** This recommendation reflects certain facts beyond the control of the CRC and Project Sponsors:
 - The project is too important and vital to be reliant on all parties being able to fund the full amounts anticipated to be needed.
 - Complexities in design and construction produce great uncertainties in ultimate costs required, and even under full available funding, the time to construct will be lengthy, further increasing risk of affordability

3.3.3 Roadway Design: Bridge

The Columbia River Bridge is the longest of four structures that carry I-5 between the south shore of the North Portland Harbor and the north shore of the Columbia River. The four structures are the North Portland Harbor Bridge that crosses a channel on the south side of Hayden Island, the Oregon approach bridge, the Columbia River Bridge, and the Washington approach bridge. The Columbia River and the North Portland Harbor channel are designated federally navigable waterways. Two nearby airports, the historic Pearson Airpark in Vancouver and the Portland International Airport, have influence on the airspace in the vicinity of the I-5 river crossing.

The existing Columbia River Bridge consists of two side-by-side through-truss bridges, each approximately 3,000 ft in length with three lanes of traffic and a lift span over the navigation channel. The Northbound bridge was built in 1917 and the Southbound bridge was built in 1958. Currently 135,000 vehicles cross the bridge each day. Bridge lifts average more than 30 per month, up to a maximum of about 60 lifts per month. The lifts are restricted from 6:30 to 9:30 a.m. and from 2:30 to 6:00 p.m. to reduce impact to I-5 rush-hour traffic.

The Columbia River Bridge replacement represents the single largest capital expenditure for the CRC and is expected to be in service over 100 years.

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May 2008 Draft EIS. In May 2008 the Draft EIS was published with four build alternatives and a No-Build alternative for the Columbia River Bridge crossing. The four build alternatives consisted of two replacement alternatives, one with bus rapid transit and one with light rail, and two supplemental alternatives, one with bus rapid transit and one with light rail. The replacement alternatives had two designs: a 3-bridge configuration and a 2-bridge stacked transit/highway bridge (STHB) configuration. The 3-bridge configuration had northbound and southbound highway traffic on adjacent single-level bridges, and a third adjacent bridge for combined transit, pedestrian, and bike traffic. The 2-bridge STHB configuration had northbound and southbound highway traffic on the top decks of adjacent bridges; bi-directional transit beneath the highway deck of the southbound bridge; and a pedestrian/bike path suspended from the outside overhang on the northbound bridge.

May 2008 Stacked Transit/Highway Bridge (STHB) Memorandum. Also in May 2008 a STHB memorandum was published as an addendum to the technical reports prepared for the Draft EIS. The memorandum was published because the technical reports that assessed the range of alternatives being evaluated in the Draft EIS were completed prior to the introduction of the STHB design option. The conceptual and baseline design for the STHB for purposes of the NEPA analysis was developed as a closed-box concrete segmental box girder bridge, although the memorandum stated: “the STHB concept could be implemented with a variety of bridge types, including a composite structure.”

The STHB memorandum assumed a closed-box STHB for the Columbia River Bridge and stated the following differences that would mean the two adjacent bridges, spaced with 50 ft of separation, would not be aesthetically similar when designed for the specific traffic loads of each:

- The southbound bridge would need to be designed to handle larger loads due to combined highway and transit, and this would require larger foundations and piers. The overall increase in cross-sectional area relative to the northbound bridge was assumed approximately 33 percent, with individual piers per foundation approximately 30 percent larger. The memorandum stated that the two dissimilar bridge structures “could appear busy or aesthetically incoherent, causing a long-term visual impact.”

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- From the south, the transit guideway would join the southbound highway bridge near the northern shore of Hayden Island, and split from the highway after reaching the Vancouver shore. The memorandum stated: “as such, the southbound bridge with STHB will be more complicated to build than a standard concrete box girder bridge.” It was also stated that the additional structure for transit could be a negative visual impact on both sides of the bridge.
- A major modification for the southbound STHB relative to the northbound bridge would be a 5-ft higher profile to offset some of the increased foundation depth and provide adequate clearance over the BNSF Railroad in Washington.
- Another major modification for the STHB would be the additional foundations to support the additional loading from transit, and additional piers on the south shore due to the transition where transit enters the superstructure. At that point the transit guideway would require its own conventional bridge structure with additional piers and foundations to support it. Therefore, the 3-bridge configuration would require a total of 21 piers and the 2-bridge STHB would require a total of 17 piers.
- At both the north and south ends of the bridge, I-5 roadway ramps would need to be configured to not interfere with the multi-use path approaches.
- Aviation clearance would be slightly impacted by the need to raise the STHB five ft relative to the non-stacked northbound bridge due to the additional 5-ft depth of the STHB cross-section. The raised bridge would obstruct Pearson Field’s Obstacle Clearance Surface for westbound departures to a slightly greater degree.

May 8, 2008 FHWA Letter. In its May 8, 2008 letter to the CRC providing comments on the Columbia River Draft Bridge Type, Size, and Location Narrative, the FHWA made the following comments:

- They recommended advancing the option for a steel superstructure parallel with the concrete segmental box girder option as the selection process progressed for the replacement structure.
- They “strongly recommend against the concept of placing the transit inside a closed box superstructure for security and safety reasons, as well as concerns over the operational

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reliability of the interstate system. Other options that accommodate transit and highway needs on a shared substructure, such as double deck or wider single deck structures may be possible, but the security, safety, and reliability of the interstate system must be addressed.”

- They strongly recommended that a pile load test program be incorporated into the design development phase of the project.

June 2008 Urban Design Advisory Group (UDAG) Report. In June 2008 the UDAG published a report entitled “Design Guidance for the Columbia River Crossing Project.” The UDAG took as its starting point a draft technical report entitled “Architectural Guidelines and Aesthetic Assessment Framework” that was published in 2006 by the CRC consultant design team. The 2006 report included environmental, architectural, context-sensitive, and sustainable universal design goals. The UDAG stated that the aviation and navigation clearance restrictions ruled out bridge types such as suspension or cable-stayed bridges for the main crossing;

“For the bridge replacement option, bridge types were swiftly narrowed to variations within the segmental box-girder family of structures. However, the design envelope for the rest of the Columbia River span is less constrained than at the north bank. A broader range of bridge types should be investigated, transitioning into a box-girder structure near the north bank. ... UDAG recommends reaching beyond the typology of box-girder bridges for some of the more visually important bridges, such as the four spans over the North Portland Harbor. ... This might suggest a non-symmetrical bridge design or inclusion of an iconic object associated with the river crossing.”

They recommended that bridges be designed to be seen from above and below and, where possible, to use above-deck structure to help define the span. The UDAG also looked at generalized guidelines to direct the design of the almost sixty lesser bridges within the BIA. Their report included a number of recommendations for the bridges and other parts of the BIA.

July 2008 Locally Preferred Alternative (LPA) Selection. In July 2008 the replacement bridge with light rail to Vancouver was selected by the project sponsors as the LPA from the

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five alternatives analyzed in the Draft EIS. The local partners passed resolutions on the LPA, attaching a total of 134 issues and considerations on which the CRC has been working with the local partners to incorporate or clarify as design has progressed. Of the 134 issues, several dealt with bridge design issues including continuing design advisory input; using the June 2008 UDAG report as a starting point for refinement; aesthetics, cost efficiency, and sustainability as important considerations; preference for STHB; having the highest quality signature distinction bridge design given engineering and cost limitations; considering iconic design elements for the North Portland Harbor span; and reconsidering the constraints related to navigation and airspace.

December 2008 Columbia River Bridge Technical Screening Study Final Report. In December 2008 the final report for the Columbia River Bridge Technical Screening Study was published, stating that the bridges crossing the Columbia River represent the single largest capital expenditure for the project and will be designed to last 150 years. The voting panel for the technical screening study was comprised of twelve bridge engineers: two ODOT and two WSDOT bridge engineers, two FHWA engineers, two consultants representing FTA, two independent consultants, and two CRC bridge engineers. The type selection process consisted of a technical screening and an aesthetic screening. The technical screening study consisted of two phases. The tier 1 screening determined which bridge types had technical merit; the three performance requirements for the tier 1 screening were navigation clearance, aviation clearance, and technical suitability. The technical screening study identified 24 bridge types for consideration, and the tier 1 screening narrowed the number to ten: six bridge types for the 3-bridge configuration and four bridge types for the 2-bridge configuration. The open-web box was one of the four bridge types for the 2-bridge STHB configuration.

The second phase of the Technical Screening Study was the tier 2 screening, which ranked the ten bridge types that had been determined to have technical merit. The six performance attributes for the tier 2 screening were in-water work impacts, structural complexity, aesthetic opportunity, maintainability, project schedule, and operational reliability; and the two cost attributes were design cost and construction cost. Structural complexity, operational reliability, and maintainability were determined to be the three most important performance

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attributes and received 80 percent of the performance-ranking weight. Between design cost and construction cost, construction cost was determined to be the most important cost attribute and received 90 percent of the cost-ranking weight. The top ranking for the tier 2 performance attribute scoring went to the closed-box concrete segmental girder bridge for the 3-bridge configuration. The open-web STHB was tied with the closed-box concrete segmental STHB in 7th and 8th place out of 10. The lowest cost ranking for the tier 2 cost attribute scoring went to the closed-box concrete segmental STHB, followed by the closed-box concrete segmental girder bridge for the 3-bridge configuration in 2nd place. The open-web STHB was tied with the steel I-girder 3-bridge configuration in 4th and 5th place out of 10. For the 3-bridge configuration, panel members unanimously preferred a closed-box concrete segmental girder bridge type; the majority of panel members preferred the open-web box for the 2-bridge configuration. All ten bridge types evaluated in the tier 2 screening were advanced to the formal type study. The report states that “the value indices identified a preference for the concrete segmental girder bridge type for both configurations.”

In a June 4, 2010 phone discussion with CRC and IRP members, the CRC stated that in the technical screening study workshop the FTA and FHWA indicated they would not entertain a closed-box cross-section for the STHB due to operational reliability concerns related to transit being in a tunnel-like structure. The CRC also commented that several of the bridge engineers did not agree with the open-web STHB due to operational reliability concerns; they believed the 3-bridge configuration was safer because truck traffic was separated from transit/bike/pedestrian traffic.

September 2009 UDAG Architectural Design Concept Document. In September 2009 the UDAG published the “Architectural Design Concept Document” which was developed through collaboration between the UDAG Aesthetic Design Subcommittee (ADS) and the CRC Design Team. It built on the June 2008 UDAG guidance document:

“...by creating a focused design direction for the Columbia River Crossing and the North Portland Harbor Crossing. ...The design ideas represented herein are not the final product, rather, they are the result of ADS deliberations and study over the last four months. ... It is anticipated that the design will evolve and will be refined over the next two years with continued input from a wide array of stakeholders in the

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project. Many decisions will need to be made in the development of a final design for the CRC Project.”

The UDAG also commented on the open-web STHB:

“Stacked transit structures have been used on other projects throughout the country. However, few if any rival the scale and complexity of the CRC. In addition, this is the first stacked transit bridge to utilize a hybrid system that connects two concrete decks with a lattice of steel cross-bracing.”

The UDAG also recommended two iconic bridge types for the North Portland Harbor bridge where aviation clearance was less restricted:

- 1) “a single tied arch that crosses the outer ramps of the bridge,” and
- 2) “a pair of single pylon asymmetrical cable-stayed bridges featuring a set of open arms welcoming the user to Portland with iconic elements framing the City.”

The UDAG recommended that both options be advanced for further analysis, “ensuring that aesthetics along with cost, constructability, maintenance and life-cycle costs are considered in the final selection of a bridge type.”

October 2009 Columbia River Bridge Type Study Final Report. In October 2009 the bridge type study final report was published. It addressed the Columbia River Bridge only. The study included both the 2-bridge configuration and the 3-bridge configuration. It documented all computation and synthesis of the technical and aesthetic screening studies and recommended a bridge type for each configuration. The bridges were to provide a minimum navigation clearance of 300-ft width and 95-ft height. Foundations considered were 8-ft diameter driven piles and 10-ft diameter drilled shafts. Water depth typically varies from 20 to 40 ft at pier locations. The type study assumed all configurations and bridge types would be supported on drilled shafts (1) to provide a consistent basis for comparison, (2) to reduce hydro-acoustic impacts relative to driving piles, and (3) to allow a smaller pier cap with corresponding reduced environmental footprint and reduced mass for seismic considerations. It is anticipated that the drilled shafts would be socketed 30 ft into the Troutdale formation and derive support mainly from skin friction in the Troutdale which is at approximately 200 ft. Preliminary ground motion hazard assessment indicated a potential

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for liquefaction to a depth of approximately 85 ft. Preliminary hydraulic efforts indicated a scour potential to a depth of approximately 60 ft.

The type study made the following statement about the closed box cross-section:

“The box girder is a robust structural system. The torsional characteristics of a box girder provide an inherent redundancy given the ability of the closed section to distribute asymmetric loading. In addition to behavioral advantages, box girders have a proven performance record and afford efficiency in construction due to their modularity.”

The type study made the following statement about the open-web cross-section:

“The web connections to the upper and lower web walls are required to transfer significant shear loads. It is anticipated that the ends of the web members will be welded to steel base assemblies that are in turn bolted to the upper and lower web walls using high-strength bars. These connections are critical to structural performance of the box girder. Key areas of concern are available stressing lengths provided by the short upper and lower web walls and the small load transfer area.”

The type study made the following statement about security:

“The most commonly considered malevolent act associated with mass transit is a vehicle-borne improvised explosive device. The size of the weapon can vary depending on the size of the vehicle. A 3-bridge configuration separates transit and bike/pedestrians from vehicular traffic which makes it more desirable from a security perspective (i.e., this arrangement will likely have less potential for impacting operational reliability). Conversely, an incident involving one of the modes of transportation on the 2-bridge shared-use option has a greater likelihood of negatively effecting operational reliability. However, there are measures that can be employed in a 2-bridge configuration to reduce the threat ... Operational reliability considerations in the bridge type selection process will be realized in the construction cost estimate. The only mitigation with significant cost implication is the open structural system, all other mitigations are considered incidental and assumed covered by the cost estimate contingency.”

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The type study estimated the construction costs of each of the four 2-bridge configurations and each of the six 3-bridge configurations. The type study recommended both a 2-bridge configuration and a 3-bridge configuration. The open-web box girder bridge was recommended for the 2-bridge configuration at an estimated construction cost of \$563M, based on best operational reliability and best aesthetic value. The closed-box concrete segmental girder bridge was recommended for the 3-bridge configuration at an estimated construction cost of \$561M, based on most technically suitable and least construction cost.

The bridge type study stated that a 2-bridge configuration was endorsed by the following stakeholders: the Urban Design Advisory Group, the Portland Pedestrian Advisory Committee, and the PSC. No endorsements were provided for the 3-bridge configuration.

Fall 2009 CRC Refinements. During the last half of 2009 the CRC, working with stakeholder groups, identified several elements of the project design that could be modified or postponed to reduce construction costs. Those pertaining to the bridge crossings were:

- Use narrower decks on the Columbia River bridges. The deck width would be narrowed from 99 ft to 91 ft, with initial striping for five lanes rather than six lanes, allowing an option to re-stripe the bridges for six lanes with narrowed shoulders in the future. This refinement was estimated to save \$20-30M.
- Retain the existing North Portland Harbor bridge, widening it to accommodate standard width lanes and shoulders. This refinement was estimated to save \$70-110M.

February 26, 2010 FHWA Letter. A letter dated February 26, 2010 from FHWA to the CRC included the following comments by FHWA on the bridge type study:

- FHWA disagreed with the conclusion that the 2-bridge and 3-bridge configurations provide the same level of operational reliability. FHWA's position was that "the physical separation of the transit and highway modes, i.e., the 3-bridge option, provides for a greater degree of redundancy in the system which results in a higher level of operational reliability." They were "willing to continue development of both alternatives at this point because no fatal flaws have been identified to eliminate either."
- CRC should "utilize multi-disciplinary panels to assist in the identification of safety and security measures, and maintenance needs, including access."

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- FHWA states that the report should “include a disclaimer that the cost estimates contained in the report are preliminary in nature and should only be used for comparing bridge types and not for cost estimating or funding purposes” because “the cost estimates contain a considerable amount of uncertainty due to the assumptions used to develop them,” e.g., the assumption the construction work will be performed year round without interruption.
- Reputable drilled shaft contractors should be consulted regarding constructability of the proposed drilled shafts.
- The FHWA “recommend that a drilled shaft and/or driven pile test programs be implemented for both temporary and permanent shaft and pile installations.”
- They concurred that, for the 2-bridge configuration, the open-web is the recommended structure type (rather than a closed box for transit).
- If the 2-bridge configuration is selected, they recommended “a high priority be placed on the technical soundness and performance, constructability, and economic viability of the open web structure type prior to proceeding with final design” in recognition that “only a handful of these structure types have been designed and constructed worldwide and none on the interstate system.”
- “The web top and bottom flange connections may warrant special proof testing, as well as assuring they are adequate for all factored loads.” Advanced structural modeling should be, “if possible, correlated to load tests of a connection mock up. The need for testing will depend on the actual proposed connection configuration. If the connection includes any type of unconventional detailing and/or unusually high levels of reinforcement congestion, we recommend special testing and/or prototype construction be performed to prove adequacy.”
- FHWA stated, “since proposed connection details have not yet been presented, it appears that construction sequencing and project cost may still be areas of significant uncertainty.”

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- For the 2-bridge configuration, they recommended a quantitative measure be developed to support the conclusion that the open-web box girder has the best operational reliability.
- The FHWA “recommend, in the case where the 3-bridge configuration is identified as the preferred crossing option, that a dual design for both the steel box girder and concrete segmental superstructures be pursued ...”

May 2010 Cost Estimate Validation Process (CEVP) Workshop Final Report.

A CEVP workshop was held in September 2009 to investigate means to defer scope and value engineer portions of the CRC to define a more economically feasible project. The workshop built upon data developed in the February 2009 CEVP workshop. As described in the May 2010 CEVP Workshop Final Report, overall objectives were to update, validate, and quantify uncertainty and risk in the CRC cost and schedule. The base cost was heavily weighted to bridge construction, with approximately 75 percent of the entire project cost attributed to bridge costs. Assumptions made in the estimation of project costs and schedule included:

- “The main river crossing structure is assumed to be segmental concrete.” A segmental concrete superstructure and 10-ft diameter driven piles were discussed in depth.
- “In-water work is assumed to be allowed year-round with construction activity restrictions during critical periods.”
- “All project elements are assumed to be delivered through a design-bid-build procurement process.”

June 1, 2010 CRC Response to FHWA Letter. In its June 1, 2010 memorandum response to FHWA’s February 26, 2010 letter on the Bridge Type Study, the CRC stated:

- The CRC is no longer considering a 3-bridge configuration. They disagreed with FHWA on the comment that the 2-bridge configuration has lower operational reliability, stating that they are “of the opinion that the operational reliability of a 3-bridge configuration is similar to that of a 2-bridge configuration ...”

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- The CRC has coordinated maintenance and safety/security design elements with first responders, specialists, and operational agencies on a conceptual basis and will conduct more detailed discussions as the designs are advanced.
- The CRC disagreed with FHWA on the uncertainty of estimated costs: “the cost estimates are bid-type estimates and are based on considerable design effort and construction assessment. As such, they can be used as reasonable estimates of probable construction cost in conjunction with the stated assumptions.”
- The CRC stated that a temporary pile test program and a drilled shaft test program are being developed “subject to permitting and funding. Currently CRC does not have funding to undertake either of these programs.”
- The CRC is working with regulatory agencies to expand the in-water-work window.
- The CRC stated “the type study report identifies the 2-bridge configuration and the open-web box girder as the recommended bridge configuration and type.”
- In response to FHWA’s request for a quantitative measure to support the conclusion that the open-web STHB has the best operational reliability, the CRC stated

“operational reliability is a consideration that evokes a response from professionals based on experience and instinct, and not numerical measurement. ... Aside from collecting additional operational data, we do not see any merit to try to further quantify the subjective assessment of operational reliability.”

July 7, 2010 URS Draft Final Findings Report. The City of Portland asked the consulting firm URS to aid them in their evaluation and decision making relative to the CRC. In its resulting July 7, 2010 Draft Final Findings Report, URS states that “one of the City’s goals is to ensure that the CRC is designed and constructed in a way that maximizes benefits for the least cost.” URS provided a critique of the current open-web main crossing design as described below:

- URS states,
“the bi-level deck option with an open-web box girder structure type represents essentially a unique structure type for the United States. Even abroad, this is not a

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common structure type. On the one hand, this will provide a certain level of uniqueness and ‘signature bridge’ quality to the project. On the other hand, it introduces a level of risk into the project. A unique design is more likely to experience design and cost growth during design, as the design issues that may not have been anticipated in the concept development are uncovered and addressed in final design. Contractors are also more likely to include contingencies in their design for a new or unique design. For more conventional designs, such as a concrete segmental box girder, there are numerous examples of these bridges constructed that can be benchmarked against the proposed bridge, for both design development/costing and bid risk for contractors.”

- URS also expressed concern about the span-to-depth ratio, i.e., the pier-to-pier span length relative to the depth of the box. The report states:

“It would be expected that the open-web box girder bridge would behave structurally similar to a truss bridge. For a variable depth truss bridge we would expect the span-to-depth ratio for an economical design to be in the range of 8 to 10. For a conventional box girder bridge we would expect this ratio to be in the range of 16 to 18. The span to depth provided in the proposed design is 15. If the structural behavior is indeed similar to a truss, this represents a very shallow structural section. The consequences of this are that one, economy will suffer, and that two, deflection criteria may be more difficult to achieve. We note that the cost reported in the CRC information places the cost of the open-web box at \$332 million and the cost of a conventional concrete box girder bridge at \$331 million. Given the choice of structural depths, we would have expected a wider cost range for these two bridge types.”

- The URS report also expressed concern about the redundancy of the open web, stating: “The issue of redundancy should be addressed for the open-web box girder design. In simple terms, a redundant structure is one where failure of a single component of the bridge will not result in collapse of the bridge. A non-redundant structure is one where failure of a single element would result in collapse of the bridge. These members are termed ‘fracture critical’ and require special design and inspection requirements if this type of design is implemented. If this redundancy analysis has not already been addressed, then as future design work progresses the web diagonal members of the

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open-web box girder should be investigated to assure that they do not represent fracture critical elements.”

- The report also discussed the issue of potential staging. The Report states:

“The staging of the construction of the Columbia River Crossing bridges is an area that does not seem to be addressed in the work to date and is a consideration that may have significant implications. If a structure type and lane arrangement is selected independent of staging considerations, it may limit staging options. There can be cost implications as well. The staging may also include phased construction of the facility in response to financial constraints. In general, the individual long-span river crossing bridges cannot easily be stage constructed. It is suggested that staging considerations be included in the final decision of lane arrangements and bridge type. The maximum flexibility for staging is afforded for bridge configurations that have separate structures for the different transportation components, and/or bridges that can be stage constructed. In this regard, there is some advantage in providing a three-bridge solution ... The LRT/pedestrian structure(s) could be constructed first, thus providing a viable transportation alternative during construction of the main I-5 spans.”

- URS also evaluated the question of whether there could be potential benefit from a single wide bridge with all traffic on the same level. They determined there is no structural advantage to joining the bridges into one wide structure except possibly related to reduced right-of-way or future flexibility to remove the median barrier to reconfigure traffic lanes. Identified disadvantages were the reduced access of snooper trucks for under-deck inspection purposes and the greater transverse thermal movements of one wide bridge.

FHWA Approval Authority.

While final decisions on specific bridge design solutions are typically made by the owner agency, in this case the ODOT and Washington State DOT, presumably by the bridge experts within each organization, the owner agencies make those decisions in collaboration with the FHWA in order to obtain subsequent FHWA approval of federal-aid funds. FHWA

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works with the States, with the focus of ensuring that the project provides the long-term performance intended such that optimal use of the federal funds is achieved.

FHWA authority is contained in 23 CFR 630 Subpart B. In particular, FHWA authority to approve a project is described in 23 CFR 650.220(e); that section basically says that the FHWA must approve a project prior to advertisement. While in some cases FHWA delegates this approval authority to the states, approval authority has not been delegated to the states on the CRC. The FHWA division and headquarter offices have determined that the CRC main span crossing falls into the category of “major or unusual bridges.” For major or unusual bridges, the FHWA Office of Bridge Technology retains approval authority over Type, Size, and Location (TS&L); that policy is described in the FHWA’s November 13, 1998 memorandum titled “Project Oversight Unusual Bridges and Structures.” The subsequent Plans, Specifications, and Estimates (PS&E) packages for construction projects are approved by the FHWA Division Offices; typically the FHWA Office of Bridge Technology is not involved in the PS&E approval process.

When FHWA makes a recommendation in their review comments, they expect the States to follow that recommendation or show why they do not need to follow that recommendation to FHWA’s satisfaction. If FHWA’s recommendations are not adequately addressed, FHWA will not approve federal-aid funds for the project.

Issues / Open Items

Columbia River Bridge Replacement

Existing I-5 bridges in the BIA were built prior to current seismic design standards and are founded on liquefiable soils. Previous studies concluded that the bridges cannot be upgraded to fully meet seismic design standards without complete bridge reconstruction. In an earthquake, bridges that have not been upgraded with seismic retrofits or replaced can be ineffective in resisting seismic forces, leaving them vulnerable to collapse.

The existing Columbia River Bridge has timber piles and other components that do not meet current seismic design standards, and seismic retrofits would be cost prohibitive. In addition to inadequate seismic resistance, the bridge has other issues related to safety, multi-modal traffic flow, and aviation clearance as listed below:

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- The vehicular crash rate on the Columbia River Bridge is over two times the statewide average for comparable urban freeways in Washington and Oregon, primarily due to outdated design including short weave and merge sections.
- The bridge lifts stop I-5 traffic. Alternatively, some marine traffic is restricted when the spans are not lifted.
- The pedestrian and bike lanes across the bridge are inadequate.
- The lift towers intrude into the Pearson Airpark restricted air space.
- The bridge is aging. The Northbound bridge is approaching 100 years of service life and the Southbound bridge is over 50 years old.

Columbia River Bridge Type Selection

As can be seen from the chronology of bridge type selection presented earlier in this section, much discussion and difference of opinion has continued and remains to this day concerning the 2-bridge versus 3-bridge configuration. Both were considered until late 2009 when the Columbia River Bridge Type Study Final Report, published October 2009, provided selections for both configurations but included endorsements by three local partner groups (the Urban Design Advisory Group, the Portland Pedestrian Advisory Committee, and the PSC) for only the 2-bridge configuration. Several participants in the technical screening study that preceded the formal bridge type study expressed opposition to the open-web STHB, and the value indices in the technical screening study identified a preference by participants for the closed-box concrete segmental girder bridge type for both the 2-bridge and the 3-bridge configuration. The type study report recommended both a 2-bridge configuration and a 3-bridge configuration. The open-web box girder was recommended for the 2-bridge configuration at an estimated construction cost \$563M, based on best operational reliability and best aesthetic value. The closed-box concrete segmental girder was recommended for the 3-bridge configuration at an estimated construction cost of \$561M, based on most technically suitable and least construction cost.

In its February 2010 letter to the CRC, the FHWA commented on the need to test the unique design details, expressed concerns about the uncertainties in the cost estimates, and

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stated that the 3-bridge option provides a greater degree of redundancy in the system which results in a higher level of operational reliability.

The July 2010 URS study sponsored by the City of Portland identified several concerns with the open-web STHB including increased risk and corresponding increased design and construction complexity and expected cost due to the unique design, potential deflection problems due to the high span-to-depth ratio, the need for a redundancy analysis to determine whether the steel diagonal web members represent fracture critical elements, and the need to consider staging impacts relative to structure type.

The CRC identified nine superstructure designs around the world that were similar to the proposed open-web STHB (Bras de la Plaine, France; Sylans Viaduct, France; Glaceries Viaduct, France; Boulonnais Viaducts, France; Arbois Bridge, France; Ponte Vecchio, Italy; Bubiyan Bridge, Kuwait; Kinokawa Viaduct, Japan; and Oresund Bridge between Denmark and Sweden). In reviewing the designs, however, the IRP found that none of the bridges has cross-sections, span lengths, and traffic loads comparable to the proposed open-web STHB.

The Oresund Bridge between Denmark and Sweden is the only one of the identified bridges that has two levels of traffic, but its webs are steel trusses rather than discrete steel web members connected to concrete slabs at each end by post-tensioned rods as proposed for the STHB.

Built in 2003, the Kinokawa Viaduct was Japan's first composite truss bridge. It has similar web-to-slab connection details as the proposed open-web STHB. However, it differs from the proposed open-web STHB in that it only carries traffic on the top slab, it has a maximum span length of 279 ft compared to the proposed STHB maximum span length of 465 ft, it has a width of approximately 35 ft compared to the proposed STHB minimum width of 91 ft, and it has external cables that run from the top slab to the bottom slab inside the girder that would interfere with the transit running inside the girder of the proposed STHB.

The Kinokawa Viaduct is one of eight composite truss bridges constructed in Japan (five for highway, one for railway, and two for pedestrian) with similar web-to-slab connection details to the proposed open-web STHB. None of the eight composite truss bridges has two levels of traffic. Some of the eight composite truss bridge projects were design-build projects,

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including the Kinokawa Viaduct. The web-to-slab connection detail for the Kinokawa bridge was developed by a design-build contractor specifically for that project, and only one of the other seven composite truss bridges has the same web-to-slab connection detail used in the Kinokawa bridge. The contractor did scale model tests for the Kinokawa web-to-slab connection detail to confirm the safety margin against ultimate loading, as this kind of research and development is usually done by construction companies in Japan. Japan has now built more than 100 corrugated (vertical) steel web bridges. They have found that in general the composite truss bridges are more expensive than conventional girder-type bridges in the 325-500 ft span range, whereas the corrugated steel web bridges are economical in the 400-525 ft span range.

One of the reasons the 2-bridge configuration was considered was to reduce the number of piers in the water. The 3-bridge configuration will require four additional piers, a total of 21 compared to 17 for the 2-bridge configuration.

Bridge Design-Specific CEVP

The CRC held a Cost Estimate Validation Process (CEVP) workshop in September 2009 to investigate ways to defer scope and value engineer portions of the project to define a more economically feasible project. However, as described in the May 2010 CEVP Workshop Final Report, the Columbia River Bridge replacement was assumed to have a concrete segmental superstructure rather than the current open-web design. Numerous bridges in the U.S. have been designed and built with the closed-box segmental girder shape, including bridges on the interstate. As such, the closed-box segmental girder bridge shape has known performance and lower risk than the unique open-web design. Also, in the CEVP the in-water work was assumed to be allowed year-round and the project was assumed to be delivered through a design-bid-build procurement process. These assumptions will result in estimated project costs and schedule that can be very different from project costs and schedule obtained using more accurate assumptions.

Time and Cost Impacts of Open-Web Testing

Unique connection details must be tested to ensure they can resist the expected loads since they have no history of performance. As described in its February 26, 2010 letter, FHWA stated that the web-to-slab connections may warrant special proof testing as well as assuring

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the connections are adequate for all factored loads. They recommend special testing and/or prototype construction to prove adequacy if the connection includes any type of unconventional detailing and/or unusually high levels of reinforcement congestion, as would be the case for the unique web-to-slab connections of the open-web STHB. State DOT bridge offices have similar testing requirements for unique connection details. The intent of the testing is to ensure adequate long-term performance of the connection details under loading, to avoid potential service load performance problems such as cracking and to avoid seismic load performance problems that could lead to collapse in an earthquake.

A typical research project managed by the National Cooperative Highway Research Program to conduct comparable full-scale connection detail component tests and scaled system tests would likely require \$300,000 to \$600,000 and three years to complete. In its June 1, 2010 letter response to FHWA, the CRC stated that they “anticipate in-depth analytical and scale testing to confirm the designs.”

Navigation Clearance

A replacement bridge with the minimum proposed vertical navigation clearance of 95 feet allows passage of most vessels currently traveling under the I-5 bridges during most of the year. However, marine contractors require a 110-ft vertical clearance and will not be able to pass under the new bridge without partial disassembly of their loads. In addition, two current marine contractors have stated they have begun construction on vessels that will require 125 ft of vertical clearance, and their hope is for clearances more in the range of 140 ft to allow for future development of large marine equipment. Interviews with some marine contractors suggest there is a possibility they can disassemble their equipment, at a cost, such that they are able to meet the available vertical clearance. Other marine contractors have said that they cannot dismantle their loads, meaning that they will not be able to cross under the new bridge.

North Portland Harbor Bridge

In August 2006, the CRC convened a panel of seismic bridge design experts to qualitatively assess the vulnerability of the existing I-5 bridges in a major seismic event. A critical issue discussed by the panel was the determination (through geotechnical testing) that the bridges are founded on soil that could liquefy in a major seismic event.

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The existing North Portland Harbor Bridge was proposed to be replaced with four new bridges: one for mainline I-5; two for ramps; and one for combined transit, bicyclists, and pedestrians. The refinements introduced in the last half of 2009 propose to retain the existing North Portland Harbor Bridge, widening it to accommodate standard width lanes and shoulders, at an estimated savings of \$70-110M relative to replacement. The plan is to do a seismic retrofit for the superstructure (Phase 1) but delay the seismic retrofit for the substructure (Phase 2) because the cost would be on the order of \$100M or half the cost of a replacement bridge.

If the existing North Portland Harbor Bridge is retained and a seismic retrofit of both the superstructure and the substructure is not performed, the bridge could collapse in an earthquake, resulting in loss of life and significant cost to rebuild. The economic cost to the region of a collapsed I-5 bridge would also be large.

Temporary Pile Test Program and Drilled Shaft Test Program

The piles or drilled shafts used for the bridge over the Columbia River will be large (8-ft diameter driven piles and 10-ft diameter drilled shafts), and their performance in the liquefiable soils at the site is unknown. As described in the October 2009 Columbia River Bridge Type Study Final Report, it is anticipated that the drilled shafts would be socketed 30 ft into the Troutdale formation and derive support mainly from skin friction in the Troutdale which was at approximately 200 ft. Preliminary ground motion hazard assessment indicated a potential for liquefaction to a depth of approximately 85 ft. Preliminary hydraulic efforts indicated a scour potential to a depth of approximately 60 ft.

The large-diameter piles or drilled shafts may not be able to reach capacity when constructed, and such a problem would require foundation re-design and significant construction delay and additional cost. Foundation testing prior to construction will help ensure that foundation capacities can be achieved in the field. This will avoid construction time delays and construction cost increases due to inadequate foundation capacities.

Recommendations related to Columbia River Bridge Replacement

With respect to the Columbia River Bridge Replacement, the IRP offers the following recommendation:

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- **Recommendation 22: Revisit the bridge type selection for the river crossing given the risks: reconsider the June 2008 UDAG recommendations concerning the possibility of a concrete segmental or steel box-girder shape for the Columbia River Bridge and an iconic shape for the North Portland Harbor Bridge.**

As noted previously in Section 3.2.1, the IRP recommended that the CRC consult with FHWA and FTA regarding the need to prepare for additional environmental analyses in light of the river crossing bridge design, phasing considerations, and Hayden Island redesign.

The Columbia River Bridge represents the single largest capital expenditure for the project and is expected to be in service over 100 years. The design for such a significant long-lasting investment should be carefully considered, with estimated design and construction time, cost, and long-term performance weighed among the various bridge type alternatives. Risks related to the current open-web design include:

- The open-web design is unique with no history of construction or performance.
- The web-to-slab connections of the open-web section increase design and construction complexity and, therefore, increase schedule and cost.
- Because of its unique details relative to intended loads, the web-to-slab connections require testing under gravity (self-weight and traffic) and seismic loads to ensure adequate performance, and these tests require time and expense.

In summary, the unique nature of the open-web STHB design, the increased risks associated with the engineering unknowns, and continuing concerns about the open-web STHB by various partners could delay the project. Moving the project forward could also be slowed by lengthy design and construction delays due to needed design approvals, testing requirements, and complex construction. Increased construction costs can be expected for unusual designs.

In the May 2010 CEVP Workshop Final Report, the Columbia River Bridge replacement was assumed to have a concrete segmental superstructure rather than the current open-web design.

As discussed later in section 3.6.6 of this report, the IRP recommends that the CEVP process be re-performed once the specific design option has been selected and be conducted prior to the Final EIS and before finalization of the project cost and implementation

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schedule. The CRC would also benefit from convening another expert panel to review the final bridge type selection prior to conducting the CEVP.

In reviewing the bridge type selection, the IRP offers the following considerations:

- Regarding an open web design, determine and consider the time and cost impacts of gravity (self-weight and traffic) and seismic load testing in the decision-making process relative to moving forward with the open-web bridge design. Unique connection details must be tested to ensure they can resist the expected loads since they have no history of performance.
- Revisit navigation and aviation clearances after finalizing the bridge design, to ensure they are optimized and consider navigation clearance needs of current and future marine traffic. The existing Columbia River Bridge allows a vertical navigation clearance of 179 ft when the lift spans are raised. The replacement bridge design currently has a navigation clearance of 95 ft, and marine contractors that currently cross under the bridge have stated that a navigation clearance of 110-140 ft is preferred for their marine traffic. A re-design to a single level of traffic on a 2-bridge or 3-bridge configuration would remove the lower level of traffic and result in a reduced structure depth at midspan, at the navigation channel, which could in turn provide a higher navigation clearance.
- When considering a replacement bridge, revisit the decision to retain the existing North Portland Harbor Bridge. When considering a replacement bridge, the IRP recommends that the UDAG aesthetic options be revisited to consider an iconic structure at the south end of the Columbia River crossing.
- When considering retaining the existing bridge, the IRP suggests CRC consider a full seismic retrofit (superstructure and substructure) and that the time and cost impacts of the full seismic retrofit be considered in the decision-making process. In addition, the IRP recommends that all bridges in the BIA be reviewed to ensure adequate seismic resistance. The existing North Portland Harbor Bridge was built in the 1980s and is in need of a retrofit to meet current seismic standards. It was proposed to be replaced as part of the CRC, but the refinements introduced in the latter half of 2009 retain the

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existing bridge with seismic retrofits of the superstructure only. However, retrofitting the bridge for both the superstructure (Phase 1) and the substructure (Phase 2) is needed to ensure adequate earthquake resistance to avoid collapse if the existing bridge remains in place, but would likely be cost prohibitive.

- Fund and implement the temporary pile test program and the drilled shaft test program. In the 2009 Bridge Type Study, 8-ft diameter driven piles and 10-ft diameter drilled shafts were considered for the foundations of the Columbia River Bridge. Per its February 26, 2010 letter, the FHWA stated that they “recommend that a drilled shaft and/or driven pile test programs be implemented for both temporary and permanent shaft and pile installations...” Per its June 1, 2010 letter response, the CRC stated that a temporary pile test program and a drilled shaft test program are being developed “subject to permitting and funding. Currently CRC does not have funding to undertake either of these programs.”

3.4 Light Rail Transit

Light Rail Transit (LRT) is seen by many proponents as an integral part of the overall mobility solution for the Columbia River Crossing Project. The substance of that support varies depending on who is expressing it. For example, some supporters see LRT as a means to provide new mobility options for those living in Vancouver to travel into Portland for employment, shopping or recreational purposes. Others are counting on substantial ridership to alleviate the need for additional capacity on the new bridges crossing the Columbia River. Among these individuals and groups are those who see the expansion of the current Portland LRT system to the north as part of the on-going commitment to balancing land-use and transportation systems.

The plan for LRT in the CRC is an expansion into Vancouver of Portland’s 52-mile system that was first opened in 1986. Currently, the Interstate MAX Yellow Line terminates at the Expo Center. The CRC proposes to extend that line to the north across the Columbia River, through downtown Vancouver via a couplet alignment and terminating at Clark College.

Major attributes of the proposed system include:

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- Three new miles of track and systems
- 19 new light rail vehicles
- A new elevated station at Hayden Island
- A dedicated guideway across the Columbia River
- Three new park 'n' ride facilities in Vancouver (Clark terminus, Mill Park and Ride, and the SR 14 Park and Ride)
- Six downtown Vancouver station platforms
- Expansion of TriMet's maintenance facility

Funding for the LRT component of the CRC is anticipated to come from Federal and State sources. CRC originally requested \$750 million through the New Starts submission; but has since raised that request to \$850 million. The total year of expenditure amount is \$945 million.

The LPA envisions that the LRT line will be located within the box section of the southbound bridge as it crosses the Columbia River. To the south the alignment connects to the Expo Center and to the north the LRT guideway leaves the new bridge and transitions into the downtown Vancouver area.

The systemic value of this extension seems obvious to the IRP as it will contribute to the long-term mobility needs of the region. Expansion of the already successful Portland system into Vancouver makes sense from a regional perspective and offers a logical investment towards future mobility needs in the area. The utility and value of this extension will become more and more evident as the two metropolitan areas continue to grow adjacent to one another and become less and less distinct in terms of employment, commercial activities and residential development.

Further, the IRP recognizes that LRT and the new CRC bridge are co-joined and one won't be built without the other. Support for the CRC would wane in Vancouver without a new bridge and that bridge would not be a reality from Portland's perspective without the inclusion of LRT. Thus, inclusion of LRT in a meaningful way is essential to the acceptability and hence viability and future of the project.

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A number of challenges exist with LRT that have a direct impact on how this component of the project is included in the overall solution. Major challenges are briefly reviewed below:

Hayden Island-It is impossible to separate the LRT station and line on Hayden Island from the Hayden Island Plan adopted by the Portland City Council in 2009 for the island's future. Elsewhere in this report is a detailed description about the adopted Hayden Island Long Range Plan, the expressed desire of the City of Portland and Hayden Island residents to have a smaller I-5 footprint on the island by reducing the number of interstate through and auxiliary lanes and their related desire for reducing the size of the planned Hayden Island interchange, and the overall need for LRT to service island residents or visitors. These are, in many ways, incongruent with one another. Resolution these sub-issues is essential to having a comprehensive plan that will provide the desired service and the justification for substantial federal funding.

C-TRAN's Position on Capital Funding-the transit agency charged with providing service in the Clark County area, including the City of Vancouver, is C-TRAN. The agency operates the bus system both in the Clark County service area and across the current Columbia River bridges into Portland. LRT would be a new service activity for the agency. Recently their board adopted a position that no funding would be provided for the local match for the capital improvements required for the extension of the LRT system from the Expo Center to Clark College or for the three Park and Ride lots in the Vancouver area. This lack of commitment for any portion of the capital improvement costs for the LRT portion of the CRC in Vancouver detracts from the overall strength of the proposal that will ultimately be used to justify substantial federal funding from FTA's New Starts Program. This is not an impossible hurdle to overcome but when this project is placed side-by-side with other projects where unquestionable political and financial support are evident it may prejudice the process and reduce the chances of securing the desired level of funding.

C-TRAN's Operations and Maintenance Costs-the agency has agreed in principle that it will fund the operations and maintenance O&M costs of the new LRT system after it is built. However, it must first get approval of the voters in their service area to do so. A proposed ballot initiative has been suggested at the earliest for the Spring of 2011. Expressed support for this initiative is said to be 50/50. In addition, currently a petition

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drive is underway in the C-TRAN service area that would prohibit LRT from being brought to Clark County. The outcome of the public process underway will impact whether or not funding is available to pay for the O&M portion of the LRT system proposed as part of the CRC.

Recommendation related to Light Rail Transit

The IRP sees that light rail transit is an essential component of the successful CRC. Therefore, if one or more of the concerns listed above prevent LRT from being included in the project then the consequences are significant and will probably result in substantial delays or no project at all.

With respect to Light Rail Transit, the IRP offers the following recommendation:

Recommendation 23: Prior to the Final EIS, immediately develop a plan for resolving the LRT issues surrounding Hayden Island and operation and maintenance costs.

The IRP suggests the following for developing a plan for LRT resolution:

- Perform a critical look at how best to service the island with LRT so that a final solution reflects a cohesive and realistic position on these matters.
- Address the impact of C-TRAN's position of no contribution in capital funds. The agency's position is that no contribution in capital funds will be made for the planned light rail transit improvements included in the CRC. While this would typically be seen in a negative light in the owner's pursuit of federal funding, the matching commitment of highway funds and other elements of the finance plan mitigate this situation.
- Find and dedicate funding for C-TRAN O&M expenses to ensure the financial viability of the line once it is opened. The IRP affirms that the LRT system will not pay for itself with fare box revenues. The public policy implications of not contributing to the O&M costs of the new line are evident and detrimental to the possibility of building the line in the first place.
- Review the entire LRT component of the CRC as part of the recommended effort to develop an alternative-phasing plan. As noted in Section 4.6 a possibility exists that

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total available funding will not be sufficient to complete the entire CRC as envisioned. LRT is acknowledged as integral to the overall project. As such it should be subject to the same approach as the highway elements in consideration of a phasing plan. The CRC should review the entire LRT component of the project as part of the recommended effort to develop an alternative-phasing plan. Phasing of some length of new facilities, station construction, and attendant parking facilities should all be examined in the same manner that freeway improvements would be reviewed.

3.5 Construction

3.5.1 Constructability

The discussion concerning constructability is addressed multiple times in this report. Section 3.3.3 discusses some of the issues relating to the bridge itself. In addition to that discussion, other matters relating to constructability were observed by the IRP and deserve comment.

Constructability issues relating to the CRC elements span the full spectrum of highway and transit work. On the one hand, many of the project elements are routine in nature and present no specific issues that raise concerns for the IRP. These include the following:

- Drainage features such as concrete box culverts, pipes, catch basins, etc.
- Safety elements such as barrier rail, traffic control markings, signals
- Structural elements such as retaining walls and most of the bridges
- Earthwork required to construct fills
- Asphalt and concrete pavement
- Miscellaneous roadway work throughout the project

These work items can be accomplished with routine effort and commons skills and equipment found in the contracting industry.

The major area where constructability becomes an issue is in the construction of the bridges that cross the Columbia River itself. The CRC presented a scheme for accomplishing this work during the IRP's meeting on June 17, 2010. That presentation showed a sequence that reflected how the bridge would be constructed as if it were a segmental concrete structure.

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Overall that presentation was an accurate reflection of how the bridge would be constructed were it a segmental concrete structure. However, the current bridge type for the CRC is not a segmental concrete structure but a open-web STHB. The IRP observes that the constructability issues surrounding this type of bridge are different than the segmental concrete methodology.

Some of the concerns relating to the open-web STHB bridge type have been discussed in detail in Sections 3.3.3. They include the foundation issues associated with the deep-drilled shaft design and the construction of these important elements. The depth and diameter of these shafts are not routine in the industry and the soil conditions in the project area will require special considerations and equipment to successfully install this work. The substructure including the columns above the water and other support elements are viewed as relatively routine except for the inherent difficulties associated with over water work, which the contractors will have to deal with.

In addition, Section 3.6.6 notes that the concrete segmental bridge was analyzed during a Constructability Review conducted by a panel of experts in June 2008. The utility of this effort at this time in the project development process is questionable given the changes in design that have occurred since this workshop was held.

Most concerning to the IRP is the construction of the bridge superstructure itself which includes the open-web STHB sections that will form the roadway surface for the highway, the running surface for the LRT and the platform for the bike/pedestrian users of the facility. The IRP did not perform a detailed analysis of the construction sequencing of this bridge type but the experience of the panel members is such that certain points can be made.

As has been discussed in Section 3.3.3 this unique bridge type had never been built in the United States nor has there been a similar structure constructed elsewhere in the world. The bridge will likely have to be built in sections with the upper and lower decks tied together with the web elements forming a unit that will have the structural integrity to be transportation and erected into final position. The size and weight of these units would have to be determined through extensive engineering analysis but the IRP clearly recognizes that each one will be a major construction element in and of itself. Given the site restrictions adjacent to the bridge site these units will likely have to be fabricated elsewhere and floated

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to the site on barges on the Columbia River. Cranes would then lift them into position. A strong possibility exists that temporary falsework of some kind will be required to support the units that have been placed until the stability of the structure has been achieved. All these details will have to be determined and factored into the design, fabrication and construction sequencing for the CRC. Absent such information, a credible schedule and cost estimate are impossible to ascertain.

Key Recommendation related to Constructability

With respect to constructability, the IRP offers the following recommendations:

- **Recommendation 24: Reconvene a panel of experts to conduct a constructability review of the bridge type once it has been determined.** This panel should include contractors and engineers with large bridge construction experience and those with over water expertise.

3.5.2 Schedule

Presentations and discussions included some schedule information for the IPR to consider. Section 3.6.4 details project schedule issues that largely focus on the current environmental process. Project schedules presented to the IRP reflect only activities through June 2013, which is well short of the ultimate completion date for the project. Recommendations in that section reflect the IRP's concerns relating to the overall project schedule. At this time the IRP is unable to make any observations as to the validity of the current project schedule as it relates to the construction. This is largely due to the unknowns about the bridge type, Hayden Island and phasing considerations.

3.6 Project Management, Decision Making and Governance

The topic of project management, governance and decision-making will be divided into two sections of this report because of the distinct differences between that which is required for project delivery and the management and governance structure that will be necessary for long-term oversight of the finished project.



3.6.1 Project Delivery Phase

The management of the CRC during project delivery will be addressed first. The related issues associated with a project that spans multiple states and jurisdictions are complex at best. They require careful and deliberate coordination so that the diverse needs and objectives of all associated parties are met as appropriate. This is not the first time a major project has required such an effort. Other such relationships exist across the country where bridges span rivers of adjoining states. A good example of a successful effective arrangement is that which existed for many years between the states of Maryland and Virginia as they successfully delivered the Woodrow Wilson Bridge. Ultimately, a functional and effective project management structure and efficient decision-making protocols are essential elements of successful multi-jurisdictional endeavors.

Ownership of the CRC is based in four organizations—ODOT, WSDOT, TriMet and C-TRAN. In addition, project partners include the US DOT (through the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA)) Metro, RTC and the Cities of Portland and Vancouver. Each of these partners recognizes the need for extensive and effective partnering and coordination to deliver a successful project. In addition, the informal “partnerships” for the CRC are much broader involving multiple tribes, various working and interest groups, numerous communities and the public at-large.

The CRC is one of national, state, regional and local significance. The challenges to delivery include funding, governance, differing legislative and policy issues among the respective public agencies, technical issues, project ownership, stakeholders and sponsors. As a federally identified mega-project (defined as one costing over a \$1 billion) and requiring multiple years to complete it is receiving attention at the highest levels of state and federal government. As such, the management and decision-making activities for the project reside at both the state and project levels with a number entities established for this express purpose.

Because the CRC involves I-5, it falls under the authorities of the US Department of Transportation and the respective state departments of transportation (DOT). Essentially, the laws under which the I-5 interstate highway is being constructed authorize the respective state DOTs to make final decisions for the states in all matters relating to, and to enter into,

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on behalf of the states, all contracts and agreements for project and to take such other actions on behalf of the State as may be necessary to comply with Federal and State laws.

(Ref: §1.3 Federal-State cooperation; WA RCW 47.01.260 (1); ORS 184.618 (1).

State governance is accomplished through an entity entitled the “Columbia River Crossing Executive Management Group” consisting of the WSDOT Secretary of Transportation, the Director of ODOT and the Co-Project Directors from each state. The Executive Management Group’s objectives are to assure alignment regarding funding decisions, overall project management, jointly meeting with the State legislatures and state transportation commissions and other decisions of the CRC that require bi-state involvement.

The PSC was established to incorporate the interests of each sponsor and to give that group a decision-making and oversight role in the overall project delivery process. Heads of each of the sponsor organizations sit on this council. It is co-chaired by Henry Hewitt, Past Chair, Oregon Transportation Commission and Steve Horenstein, Chair, WSU-Vancouver Advisory Council and board member of Vancouver National Trust. . The specific charge of the PSC is to advise the project on the following:

- Completion of the Environmental Impact Statement
- Project design
- Project timeline
- Sustainable construction methods
- Compliance with greenhouse gas emission reduction goals
- Financial plan

Day to day activities on the project are managed through two Project Co-Directors-Donald Wagner and Richard Brandman from Washington and Oregon respectively. Jointly they are charged with oversight of the project staff, including consultants who bring specific expertise to the project and the myriad of day-to-day activities associated with current project work.

In addition to the dedicated project staff reporting to the CRC Co-Directors, another group has been formed that draws upon the expertise of the sponsor organizations to address the on-going technical and implementation issues associated with the project development

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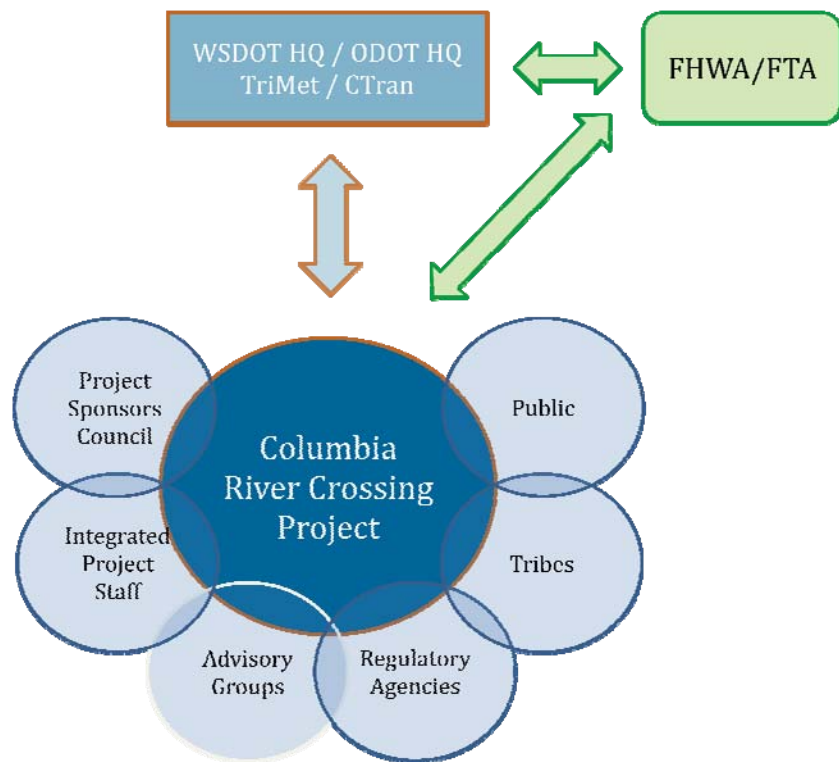


process. This group is referred to as the Integrated Project Staff (IPS). The IPS is involved in technical details of the project and offers recommendations to the PSC for consideration and ultimate decision-making. The IRP found broad acceptance and endorsement of the effectiveness of the IPS in advancing significant issues on the CRC.

The CRC presented a model for decision-making that reflects the diverse nature and relationships of the Executive Management Group, the PSC and the IPS. Figure 1 below shows how this was depicted to the IRP.

Figure 1 – CRC Decision-Making Model

Executive Decisions



Note that overall management and decision-making authority is shown to rest with the Executive Management Group but that the other entities contribute knowledge, expertise, analysis and management input.

Overall, the IRP finds this structure to be unique but not unusual for a project of this type and in concert with statutory requirements previously cited. Ultimately, final decision-

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making authority rests with the Executive Management Group based on statute and convention for interstate projects. That said, the IRP feels that such authority and the recognition of that authority by all of the parties to this project is two-fold; that which is provided through authorizing legislation or statute and that which is granted by the parties through relationships and goodwill.

The IRP believes that both must be in place for an effective project management structure to succeed. To date, the IRP feels that the statutory portion of this authority is in place but that the portion attributed to the Executive Management Group through relationships, trust and good will is lacking and must be reinforced based on input received during this review.

When projects span so many political and organizational entities there must be a project management and decision-making structure that will accommodate the delivery of the project in the context of the issues and concerns of each one. The use of the PSC, chaired by non-sponsor individuals is unique but not deemed out of order given the historical political and policy issues facing this project.

The model followed for the Woodrow Wilson Bridge included both state DOTs but in lieu of co-directors for the project the Commonwealth of Virginia ceded project delivery and management control for the main bridge to the Maryland Department of Transportation and its State Highway Administration. Overall management direction came from the Maryland Project Director Bob Douglass.

The IRP observes that the joint management approach can be effective for a project such as the CRC, but that it can create a more difficult decision-making framework for the overall delivery of the project. The IRP believes that the existing pre-construction management structure now in place should continue in its current form through receipt of the ROD since a change at this point would be disruptive and take too long to agree upon and implement. That said, recognizing the challenges of this structure, the Executive Management Group should ensure that the PSC and the IPS function in the most effective way possible.

The current Executive Management Group envisions that once the CRC has received its Record of Decision (ROD) a team composed of WSDOT HQ, ODOT HQ, TriMet and C-TRAN, as the Owners of the CRC, will be formed to provide executive oversight and coordination with the CRC IPS and the FHWA and FTA. The IRP understands that this

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specific CRC Executive Project Group has not yet been formed. Reporting to this Owners Group will be the CRC who will be responsible for collaborating with and communicating with the following entities:

- PSC
- IPS
- Advisory Groups
- Regulatory Agencies
- Tribes
- Public

Decisions at a Project level will be under various departments including:

- Environmental
- Transit
- Project Controls
- Highway
- Structures

These departments flow up through the Director of Project Delivery who in turns reports directly to the ODOT/WSDOT Co-Project Directors.

3.6.2 Long-Term Project Management

The second phase of project management, decision-making and governance relates to the activities that are not specific to the environmental study or technical design of the project but those which occur during construction and beyond. Some believe that this management structure should be put in place after construction is completed but the IRP believes that the sooner it is defined, established and functional the greater impact it will have on the operation of the future completed CRC.

In order to progress a mega-project of this size and complexity between states, the proper legal entity must be in place that can make decisions regarding the project relative to

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financial issues, operational matters and how the I-5 fits into the broader transportation system of the region. In addition, this entity must be in a position to monitor and administer the performance measures stipulated for the project.

Project finance deserves special attention in this discussion. The discussion of tolls, the manner in which those toll rates will be set and adjusted in the future, the nature of debt financing necessary to construct the project as well as a myriad of other issues will fall under the auspices of this long-term management entity.

The IRP has observed that all parties to the project seem to agree on the need to eventually have some kind of structure in place for the long-term oversight and management of the completed facility and corridor. However, the duties and responsibilities seem to be in question and the timing of the launch of this group continues to be up for discussion.

Additional discussion about this entity that will serve the role for long-term management of the facility is found in Section 5. Ultimately, decisions concerning governance, membership, organizational structure, authority and responsibilities must be resolved. Whether it is a bi-state authority, one state DOT or the other, some kind of bridge authority or commission or what some refer to as a mobility council something must be done and a direction taken.

Issue – State Agreements / Oversight

The lack of formation on the legal entities and/or formal agreement between states has the potential to delay the funding/financing process. In addition to potential delays that may arise, lack of movement in how the project will be funded, financed and managed through tolls may lead to mistrust and credibility problems among the project sponsors, which may also have an impact on the Final EIS review and approval as well as potential claims and disputes lodged against the CRC Owners.

Recommendation related to a Long-Term Management Structure

With respect to a long-term management structure, the IRP offers the following key recommendation:

- **Recommendation 25: Establish a Long-Term Project Management/Governance Structure; consider retaining legal expertise to assist in determining the best option and how to structure it between the two states.** It is the IRP's opinion that

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the formal management/governance structure between the states is essential to have in place as soon as possible. The IRP recommends doing so before the Final EIS is completed to allow the CRC to continue forward without disruption once the ROD is received. It is the IRP's experience that there are various legal options to be explored including some kind of joint authority or council, or even a decision to identify one DOT or the other as the lead, or any number of other entities to fill this role beginning in the very near future.

3.6.3 Environmental Stewardship, Management and Consultation

The CRC is one among many nationwide that are complex and have required substantial time in project development. The technical, management and political issues associated with CRC are not unique. State DOTs and FHWA have been confronted elsewhere with similar problems in coming to environmentally and financially feasible solutions codified in a Record of Decision that leads to actual implementation.

During the previous administration Executive Order 13274, "Environmental Stewardship and Transportation Infrastructure Project Review" was issued to the US DOT. Under this order high priority projects would be afforded resources and attention from federal agencies to 'provide a collaborative framework for Federal agencies to explore mutually beneficial stewardship opportunities, and to expedite, to the maximum extent practicable, their reviews for relevant permits or other approvals.'

States could apply to FHWA for status under Executive Order 13274 for their projects. In doing so they would be seeking the assistance of the US DOT (in the case here, FHWA and/or FTA), and specifically would be seeking both technical resources as well as authority for agency review periods to be firmly established so deadlines could be met.

CRC sought entry to this program (letter from Douglas Ficco to Mr. John McAvoy, FHWA Major Project Manager dated April 21, 2008). The project was considered to be eligible, as I-5 from Washington to California had been previously selected as one of the US DOT's *Corridors of the Future*. The FHWA acknowledged the request by CRC in a letter to Douglas Ficco from Fred Skaer, FHWA's Director of Project Development and Environmental

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Review dated July 24, 2008. The US DOT selected CRC as one of few projects nationally for eligibility on Tuesday August 5, and acknowledged selection in letters sent to both Director Matthew Garrett of ODOT and Secretary Paula Hammond of WSDOT from the FHWA Acting Administrator James Ray and FTA Administrator James Simpson. Note that the timing of the requests and selection of the CRC coincided with publication of the Draft EIS and selection of the LPA.

Under this program each project was assigned a project champion by the Office of the Secretary. Regular meetings and reports were held with the project champion responsible for making sure that FHWA was providing the assistance as needed to meet specific project needs. In extreme circumstances the program allowed for elevation of project issues to the direct attention of the Secretary and other measures to ensure expedition in resolution of project issues and completion of federal agency reviews.

Discussions with the CRC suggest that achievement of this status under Executive Order 13274 did not translate to action related to expedited reviews or additional resources. The IRP has discussed FHWA's Environmental Stewardship and Transportation Infrastructure Project Review program with senior staff of FHWA. The program itself, while still technically alive, no longer has the active attention of FHWA. Many of the projects under the program have been completed. No projects were actually elevated and the more extreme provisions of the program were not invoked for any project. Project champions are no longer being appointed and regular meetings no longer being held. In the case of CRC, while the status remains in place, there appear to be no meaningful activities undertaken associated with its status.

With the above in mind, the importance of expediting projects and providing assistance to states remains under current administration policies. FHWA has begun a new program titled 'Every Day Counts.' The Program offers assistance in the form of teams of professionals who, at the request of a state through Division offices, would work with DOTs on project problems. The 'Shortening Project Delivery Toolkit' that is part of the program contains the following elements:

- Planning and Environmental Linkages

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- Legal Sufficiency Enhancements (associated with NEPA and Section 4f documents)
- Expanding Use of Programmatic Agreements
- Use of In-Lieu Fee and Mitigation Banking
- Clarifying the Scope of Preliminary Design (i.e., work allowable under law prior to completion of NEPA)
- Flexibilities in Right-of-way
- Flexibilities in Utility Accommodation and Relocation
- Enhanced Technical Assistance on Delayed EISs

Any or all of the above initiatives would have relevance to CRC moving forward in reducing either NEPA schedule risk or advancing project development leading to construction.

The last initiative, Enhanced Technical Assistance on Delayed EISs, is described in detail:

‘This initiative will provide additional FHWA technical assistance to identify major challenges on ongoing Environmental Impact Statement projects and implement solutions to resolve project delays where feasible. Candidate projects would ideally be those where 60 months have elapsed since issuance of the Notice of Intent (NOI) without issuance of a Record of Decision (ROD). FHWA teams will focus on facilitating interagency coordination and collaboration to resolve outstanding issues and provide peer-to-peer activities, workshops, training, or specialized on-site assistance.’

As with any program or initiative there are limitations in available resources and FHWA would not necessarily be able to respond fully to all requests for assistance. Senior staff of FHWA suggested that for the case of an active project on the list of those under the Executive Order 13274 program, an agency could request assistance, mention the status under the executive order list, indicating they wanted the project to be re-energized and re-focused. Status on the executive order list would presumably have some positive influence on the consideration of the request.

The IRP notes that the FHWA has a strong interest in successful completion of all projects, but in particular those with such high visibility and which have had a history of special status nationally. The NEPA process belongs to FHWA. The agency is responsible for the

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technical and legal sufficiency of the document. The agency is also responsible for the adequacy of any and all work to be funded by federal funds, as is clearly the case for CRC.

The CRC would benefit from continued consultation with FHWA leadership within the two state Division offices to:

- Develop a specific work plan to address those issues that are schedule critical, involve interagency coordination and review, or represent uncertainties and therefore risks to completion.
- Request assistance of FHWA under the 'Every Day Counts' program.

Areas where assistance could be provided include:

- Tribal Consultation including MOA
- MOA and consultation with National Park Service
- River Crossing Bridge Type Selection (including two vs. three bridge alternatives)
- Legal sufficiency of Final EIS
- Need for SEIS
- Allowable progression of river bridge design work concurrent with required bridge testing (assuming current bridge type selection)

The IRP is confident that the CRC will find the FHWA willing and eager to provide assistance. The agency has a stake in the success of this project and has invested much of its own time and resources already.

3.6.4 Schedule

The most recent complete schedule available for the IRP's review was the draft critical path schedule with a data date of 03-24-10 and a print date of 04-23-10. This appears to be a very preliminary schedule, and details activities only through June 2013.

Issue

The schedules that have been provided to the IRP do not reflect major, important issues that have been identified in this report, which should be considered before the schedule is

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finalized. For example, there is no indication in the current schedules of the time required to perform testing of the bridge design. Should the CRC proceed with a unique bridge design, then the CRC would benefit if specific testing be undertaken (and if in fact this can occur per FHWA approvals). The IRP believes the Schedules provided are very optimistic and aggressive as to essential milestones. In many cases recent events have made the schedules obsolete.

The IRP has found based on its past experience as a whole that a complete schedule is the critical path control for Project advancement. Response to IRP requests with dated and in many cases no longer valid project schedules suggest that CRC is not using project schedules as a core management tool. This can detract from the credibility of and confidence in the project management staff and can lead to public uncertainty in the delivery of the Final EIS as currently promised to the Governors.

Recommendation related to Schedule

With respect to the Schedule, the IRP offers the following recommendation:

- **Recommendation #26: Update immediately the Critical Path Method (CPM) Project Schedule to reflect activities and events that have occurred to date as well as projecting future activities which may not currently be included in the schedule and maintain an updated CPM Schedule, distributing it to the PSC on a regular (typically monthly) basis.** The schedule should reflect actual information regarding planned CPM activities in order to provide the PSC with information as to whether the CRC is ahead or behind schedule.

The IRP believes that it is critical to the CRC's success that the PSC be able to make informed decisions based on the best available and current information of the CRC at the time the decisions are being made. Schedule and project status are key factors in the decision-making process. Thus, a current updated schedule is a necessary key tool in monitoring how the CRC is tracking against planned and anticipated milestones, including those milestones that may affect engineering and construction contracts as well as agency and funding requirements.

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Maintaining a current CPM schedule will allow the CRC to solve critical issues with the ability to prioritize those issues as they arise.

3.6.5 Project Cost Estimate

The cost estimate for the CRC is an important policy element that will drive many other decisions on the project. It's influence on the project Finance Plan is significant as it will determine how funding is allocated between the states, the amount and type of federal funding sought after and the manner in which tolls are included in the overall revenue streams necessary to build the project.

A cost estimate for a complex project such as the CRC is comprised of many elements. Some of these elements are straightforward and easily quantified while others are more difficult to assess.

State departments of transportation often utilize historical price information gathered over the course of years for many other projects as the basis for determining their cost estimate for a new project. This process has served them well for decades with reasonable results and accuracy. However, in the last couple of years this methodology has proven to be less accurate as the price of materials have fluctuated and trended downward due to national and world economic conditions. Further amplifying this condition is the fact that a reduced market of capital improvement projects throughout the country has resulted in contractors bidding their work at reduced rates. Add to this situation an increasing pool of contractors who have fled the land development marketplace and who are entering the state DOT bidding process for the first time often driving prices down accordingly. All told, in the current market, unit prices can still be a reasonable starting point for cost estimation but should not be taken at face value without a significant assessment of the impact of market conditions and other factors.

A trend that is becoming more and more prevalent is an approach adopted by state DOTs that more closely matches how a contractor would prepare an estimate for a contract. In doing so the DOT uses such factors as crew size, production rates, equipment rates, and other resource elements to “build up” their estimate much as a contractor might. Some state DOTs even hire retired contractors to prepare their estimates or to do simultaneous

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estimates to validate the numbers being proposed as the value of the work. This more sophisticated approach can be taken one-step further by incorporating other factors into the price equation such as risk.

CRC Cost Estimate

The CRC is really an aggregation of many smaller projects when the cost estimate is concerned. Taken as a whole, too many factors complicate the analysis to the point that the final number may not be accurate. However, by breaking the project down into more discrete elements that are more easily analyzed the outcome is typically a more accurate value for the work.

With this in mind the cost estimate for the CRC can be viewed in two separate components. First is the land work in both Vancouver and Portland including Marine Drive and the interchange on Hayden Island. The type of construction work involved in this portion of the project is more or less conventional highway construction in nature and costs can be computed based on consistency with similar work items on other projects. The IRP recognizes that Hayden Island presents some challenging construction work and designs as currently presented but is still relatively typical highway work.

The CRC bridges are very different from any other structure of this type in the country. For this reason, unit or square foot prices or historical pricing currently in hand by either state DOT are not deemed robust enough to render a credible or reliable number. In 2008 Paula Hammond, Secretary of WSDOT issued an executive order requiring that all state projects valued in excess of \$10 million undergo a process known as Cost Estimate Validation Process (CEVP) that takes a projects various elements, assess risks and other factors and comes up with an estimate that is usually a range of values for a project's construction costs.

Issues/Open Items

While many efforts were undertaken to ascertain the cost of the CRC two principle efforts represent the largest and most detailed initiatives to do so. A CEVP conducted in February 2009, which utilized individual work items commonly known as bid tabs, to assign values or costs. This information was based on historical information for pricing purposes. In addition, the CEVP participants noted non-conventional work items and paid particular

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attention to these in developing unique prices as appropriate. The CEVP methodology creates an assessment of the project costs and represents them in a probabilistic format that shows a range for the final cost of the project. The IRP found that this particular effort used information that may not have been current and that those involved had limited over water bridge construction experience. This second factor would have impacted how construction risks and methodologies would have been factored into the cost elements of the CEVP.

In June of 2008 another panel of experts was created to do a constructability review of the CRC. This review considered construction methods and contracting issues associated with the CRC with particular attention on the new bridge across the Columbia River.

During its review of the project the IRP received substantial information regarding the cost estimates performed by the CRC and their consultants. The following costs were assigned as noted in Table 6 below:

Table 6 – Cost Estimates for Alternatives

Alternative	Costs
Base Cost Estimate - LPA Full Build	\$2,585,323,590
Base Cost Estimate-LPA Phase 1	\$2,398,471,172
Build Up of LPA Phase 1 Cost Curve	\$2,604,000,000 to \$3,554,000,000
Build Up of LPA Full Build Cost Curve	\$2,775,000,000 to \$3,793,000,000

The last two values cited above include additions for risk that have been added to the base cost estimate in both cases.

The IRP learned through their analysis of the CRC that the cost estimates presented to the panel were developed for the currently proposed open-web STHB design but for an earlier

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alternative. In addition, the Constructability Review was also conducted on bridges that are not reflective of the current LPA.

Since the original LPA was selected the project staff has considered other alternatives. One such alternative was the closed box segmental bridge type that would have had the light rail transit line running through the open cells of one of the structures. This approach was rejected by the US DOT as a security risk and local project stakeholders also found it undesirable from an aesthetic and “experiential” aspect for the LRT patrons. Ultimately, the open web design that currently is shown in all of the literature for the project was selected as the new LPA.

The current CEVP costs are relative only and form little basis for actual conditions as they exist at this time.

A Constructability Review in June 2008 attempted to validate costs and construction techniques for the bridge type or types under consideration in that time frame. However, the current LPA was not considered as part of that review since it did not exist at the time. In addition, the IRP found that the presentation of construction methods offered in its meeting was generic and did not reflect the current open web design.

Recommendation related to the Cost Estimate

With respect to the project cost estimate, the IRP offers the following recommendation:

- **Recommendation 27: Prepare new updated cost estimates with better control of realistic financial needs once the actual bridge type and design have been determined.** The teams selected for this design and cost endeavor should have a large big bridge contractor representation. The project should utilize individuals with knowledge and expertise relevant to this type of bridge structure.

3.6.6 Risk Management

The IRP was encouraged to see the CRC conducting risk identification and assessments of the LPA as risk identification, assessment and resulting mitigation plans for high probably/high risk impacts allow a project team to be better prepared for handling risks as they arise, minimizing delay and cost overruns to the project that arise as a result of those

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risks. Risk assessments can also be used in the estimating process including probabilistic modeling, bounding the project estimate and providing a range of potential total project costs and completion times to be used in financial models for the purpose of funding and financing a project. The CRC's employment of best industry practices in the area of risk assessment is to be commended.

WSDOT utilizes a process entitled "Cost Estimate Validation Process" (CEVP) which is employed to update, validate and quantify uncertainty and risk in a project's cost and schedule. The CEVP represents a "snapshot" in time for that project and under the conditions known at that time. CEVP is used as part of WSDOT's risk based estimating process to provide a Basis of Estimate, generally used by WSDOT for funding purposes.

The IRP has reviewed the risk assessment performed for the CRC including the Final CEVP Report dated May 2010 and the Constructability Review Report dated June 2008. The IRP also listened to presentations made by the CRC on how the Final CEVP Report and CRC cost estimate were developed. A brief summary is presented herein as background information leading to the issues and the IRP's recommendations.

The FHWA requires that a Basis of Estimate be included with the completed Final EIS. The cost estimate range for the CRC currently anticipated to be incorporated into the Final EIS is predicated upon the information contained with the May 2010 Final CEVP Report. The Final CEVP Report is predicated upon the probabilistic risk modeling performed as part of the risk based estimate process employed by WSDOT through its Cost Risk Assessment (CRA) and CEVP workshops. Two workshops were held in September 2009 and February 2009.

The CEVP workshop held September 28-30, 2009 was part of an undertaking to investigate various means to defer scope and value engineering portions of the CRC in an effort to define a more economically feasible project. The September 2009 workshop built upon data developed within the February 2009 workshop. The February 2009 CEVP workshop considered identifiable and quantifiable project-type risks – i.e. those events that can occur in planning, design, bidding, construction and changed conditions.

Based on the CEVP results, the total project cost based on 60% likelihood for a LPA Phase 1 to 90% likelihood for a LPA full build ranged from \$3.2 billion to \$3.8 billion and

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respective projected completion dates from April 2020 to February 2021. These numbers and dates were then used as inputs for the Financial Model.

The CRC also conducted a Constructability workshop in June 2008 that included a risk assessment of constructability risks based on the LPA being evaluated at that time. These risks were not modeled using probabilistic methods as applied in the CEVP process, but rather employed a matrix risk assessment review of low, moderate, and high likelihood of the risk occurring and the resultant impact should the risk occur. It is the IRP's understanding that while some members of the Constructability workshop were also included in the CEVP workshops that the risk assessments as included in the Constructability report was not directly included in the CEVP risk model

Issues/Open Items

The CEVP Final Report includes a quote from the Association for the Advancement of Cost Engineering (AACE) International Recommended Practice Guide No. 41R-08 for Risk Analysis and Contingency Determination Using Range Estimating as follows:

“The project team must examine each critical item and predict its possible extreme values considering all risks, including compounding effects. It is important to understand that the range, as considered in this method, is not the expected accuracy of each item. This is a key issue. Risk analysis is not an analysis of estimate accuracy. Risk analysis is dependent upon estimate deliverables and estimate maturity. Contingency, as determined via the use of risk analysis, is not a measure of estimate accuracy. Rather, it is a reflection of risk at any specified or desired probability of not completing the project within the estimate.”

The IRP agrees with the AACEI quote and the basis for using this quote in reference to why the CEVP program was used in generation of the Basis of Estimate for the Final EIS. However, the validity of the Basis of Estimate is only as good as the inputs used for the CEVP model. This is where the IRP sees a significant weakness in the Final CEVP Report as presented to the IRP and thus potentially in the cost and schedule dates used in the financial model.

The February 2009 CEVP workshop was based on an LPA design, which is fundamentally different from the current LPA “refined” design currently contemplated for the Final EIS.

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As the CEVP performed in February 2009 used information and assumptions available at the time which are fundamentally different than the design concept and assumptions being put forth in the Final EIS, there is a significant risk that the range of numbers and dates used for the financing model, which in turn will be used for funding and financing of the Project is not accurate enough for such purposes. For instance, in Section 4.2 of the CEVP, the following statement is made:

“The Base Cost is heavily weighted to the construction of bridge structures.

Approximately seventy-five percent of the entire project cost can be attributed to the cost of bridge structures. With limited time in the workshop; a majority of the discussion centered on the bridge construction and demolition cost.”

The IRP also suspects that since the bridge type reviewed in the CEVP risk assessment was a less complex bridge design without unique “first-time” design elements that this assumption potentially affected other factors such as design and construction management which was reduced in the CEVP process from 15 percent to 12 percent.

A review of the attendees of the CEVP workshops revealed limited contractor participation with relevant experience. This would impact the quality and depth of the risk discussion for the construction of a segmental concrete box bridge type let alone the open-web STHB now being proposed in the refined LPA design. This, given the fact that the fundamental assumption given the bridge type and in-water work window has been dramatically changed from what was used in the CEVP model, means that both the higher and the lower range of numbers and completion dates for the financial model are potentially inaccurate in that the September 2009 CEVP workshop used data from the February 2009 workshop in its “value engineering” exercise.

The IRP understands that, as of the date of this report, the refined LPA concept going forward in the Final EIS is a two-bridge combined highway/transit bridge using an open web girder design. 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. The IRP also understands that the CRC continues to refine the Hayden Island plan for the portion of the bridge going over Hayden

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Island which may either reduce the number of lanes, interchanges and/or may eliminate the interchanges all together with a new bridge constructed over the harbor for Hayden Island access.

These three major and significant changes and departures from the assumptions used in the CEVP performed in February 2009 dramatically affect the assumptions on the identification of potentially emerging risks, the probability of those risks occurring and the schedule and cost impact these risks would then have on the project.

Another example of an inaccuracy in the CEVP risk model that may or may not have any affect when the CEVP is rerun is the decision on the number of lanes. The risk is that “the final 10 versus 12 lane decision is delayed”. In the “SMART” column of the risk table attached to the CEVP report it is noted that “If the decision is not made by January 2010 it will cause a delay” to the schedule. Unless this assumption, which if according to the CEVP has already come true, is evaluated in the midst of these other known changes, the reliability of the final outputs for cost and schedule are seriously suspect.

Until these changed conditions are considered in conjunction with the other risks included in the CEVP, the credibility of the cost basis for the project as a means for communicating the needed funding and financing is problematic.

Using data and information in the Base Estimate and funding/finance models that are not current and accurate can lead to potential delays in the review and approval process and receipt of a ROD. However, more serious is the concern that the Base Estimate and completion dates could be potentially so significantly different from that currently incorporated into the Final EIS, that seeking the necessary financing may be complicated and/or hindered since the confidence level would be significantly lower than would otherwise be expected with a risk based estimate that is based on the conceptual design and proposal included in the Final EIS. To the extent that the Base Estimate upper range potentially increases when the inputs and assumptions are revised to reflect information contained in the rest of the package, this could have a dramatic effect on the ability to finance the project and may also seriously impact the tolling policies under discussion.

One could argue that since this is a probabilistic model and that contingency has been added, the range of costs and completion dates in the May 2010 Final CEVP Report is still valid

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even if the LPA refined bridge design is used. The fallacy in this reasoning and logic is that the CRC has gone through further refinements from the CEVP workshop that include inputs to be fundamentally different from the inputs used in the CEVP. Thus, one really does *not* know how the changed inputs would affect the model, if at all, or to a significant amount. In addition, the working groups, project sponsors and even the federal agencies with whom the IRP has met and talked, all agree that while the refined LPA design may be “doable”, everyone also recognizes the refined LPA design is unique in many aspects and will have its challenges. Unless these challenges are vetted through a CEVP workshop process and then included in the model along with the other risks and assumed likelihoods and probabilities, then no one can with any certainty state one way or the other if the Base Estimate range remains reasonable and feasible. What is known is that the risk of not knowing is much higher as the outcome could be significantly different resulting in a domino effect of impacts and potential consequences to the project.

Additional consequences could also have ripple effect in future years when project sponsors, stakeholders, contractors and even the public potentially face significant project delay and cost overruns continually referring back to the Base Estimate included in the Final EIS as a basis for the disputes and claimed dollar amounts. Such potential claims could also have a severe impact on the states and local communities as to how these cost overruns are paid and who pays them.

Recommendation related to Risk Management

With respect to the CEVP process, the IRP offers the following recommendation:

- **Recommendation 28: Re-do the CEVP by the end of December 2010 and before submitting the Final EIS, using the selected river crossing bridge option and including any other assumptions that changed since February 2009, thus allowing information to be acquired regarding realistic schedule and cost information needed for state appropriations.** The CEVP should be consistent with the other assumptions being included in the Final EIS.

It is advisable that the CRC Review the model range of estimates and schedule completion once the CEVP is held to determine if they are significantly different than the inputs used

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for the financial model. If so, the financial model should also be updated to determine any potential impacts to the Base Estimate range, which may lead to other revisions relative to proposed financing and tolling plans.

Rerunning the CEVP enhance the probability of the Final EIS review and approval process proceeding more smoothly thus minimizing any undue delay in moving the CRC forward. A complete Final EIS package should be well coordinated and should be considering all evaluations required with respect to the proposed design being submitted. To do otherwise implies the CRC has not taken a well thought out approach that could lead to agency review and approval delays and which could have serious ramifications on the financing and funding of this major important and badly needed bridge for the nation, the state, the region and the local communities.

4 Finance

The financial issues surrounding the CRC are significant and drive many of the decisions being made by the project owners. This discussion about project finances is divided into the following sections:

- Project Cost Estimate
- Finance Plan
- Tolls

4.1 Project Finance Overview

The cost of delivering the CRC is the subject of another section of this report and will not be repeated here. Nevertheless, the need for a credible cost estimate is paramount and will build credibility in the overall project finance plan and serve to build confidence in the various entities and investors that will ultimately fund the project.

As noted elsewhere in the report the IRP has concerns about the actual cost of the project and the surety with which the cited numbers can be relied upon. The IRP recommends additional work on determining the most accurate cost information possible so that the finance plan can be developed with certainty. With this in mind, the IRP offers their

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observations about the Finance Plan and Tolls in the succeeding sections of this report with the proviso that at some point both of these project finance elements must be brought together in a comprehensive plan.

4.2 Finance Plan

The CRC has spent considerable time developing a Finance Plan that includes a wide variety of revenue sources from which the funds for this project will be drawn. The process followed by the CRC includes development of cost estimates using probabilistic tools resulting in a range of values for the ultimate cost of the project. They then took that range of values and applied it to the available known revenue sources. Concurrently, an effort was underway to match the project finance plan with the construction schedule to determine if cash flows would be appropriate for the level of work being performed.

To date ODOT and the WSDOT have contributed \$67.3 and \$67.9 million respectively to take the project to this point in the development process. Each state has drawn these funds from a variety of sources, which are unique to their specific circumstances, well documented and which will not be repeated here in this report.

Actual cash flow needs to have been modeled to reflect both the 60 (medium) and 90% (high) probabilities for final project costs. These are shown in Figure 2 below, which reflects the annual disbursements required for the project beginning in 2010 and proceeding through 2019.



Figure 2 – Expenditure Plan

Note the difference in cash flow by year is a reflection of the greater demand and higher costs associated with the 90% confidence level of final project cost. Obviously, the more accurate the project cost estimate is the more effective the modeling of cash flows will be and the Finance Plan will be more refined and realistic as financing is sought and toll strategies are adopted.

The Finance Plan for the CRC involves typical revenue streams for projects of this type around the country. The following summary was provided by the CRC to the IRP as sources of funding for the project. It is cited exactly as presented to the IRP:

- New Starts-\$850 million
- Assumes full FTA New Starts request is granted.
- CRC may fulfill FTA local match requirements using local highway expenditures, per Congressional action.
- Projects of National Significance-\$400 million

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- Additional funding above and beyond existing allocations. Assumed likely based on scope of CRC and historical success in securing Federal discretionary funding.
- Additional WSDOT/ODOT Funding-\$750-850 million
- \$50 million in existing funding, \$90 million in total allocations, less \$40 million expended. Assumes additional funding generated from both DOTs.
- Pre-Completion Toll Proceeds-\$0-200 million
- Assumes pre-completion tolling of I-5, generating about \$40 million per year for 5 years.
- Bond Proceeds-\$803-1466 million

A full reflection of all the revenue streams and their application to the LPA options and probability of their occurrence is shown in Figure 3 below.

Figure 3 – Capital Finance Plan Scenarios

Summary of Capital Finance Plan Scenarios

Revenue Source	LPA Phase I Option		LPA Full Build	
	Medium	High	Medium	High
Fed. Discretionary Highway: Existing	\$44	\$44	\$44	\$44
Fed. Discretionary Highway: Additional	\$400	\$400	\$500	\$500
ODOT/WSDOT: Existing	\$90	\$90	\$90	\$90
ODOT/WSDOT: Additional	\$750.0 - \$850.0	\$750.0 - \$850.0	\$901.5 - \$1,001.5	\$926.7 - \$1,026.7
Post Completion Toll Bond Proceeds	\$803.0 - \$1,103.0	\$1,166.2 - \$1,466.2	\$803.0 - \$1,103.0	\$1,166.2 - \$1,466.2
Pre-Completion Toll Revenues	\$0.0 - \$200.0	\$0.0 - \$200.0	\$0.0 - \$200.0	\$0.0 - \$200.0
Section 5309 New Start Funds	\$850	\$850	\$850	\$850
Total Revenues	\$3,237	\$3,600	\$3,489	\$3,877

Note that the citation above is for the LPA Phase I Option at the 40% confidence level resulting in a total project cost of \$3,237 million. Contrast that to the LPA Full Build at a 90% confidence level and the project cost \$640 million more or \$3,877 million.

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The Finance Plan for the CRC has many conditions that must be addressed or actions that must occur in order for it to be feasible. Each one provides its own measure of risk which must be accounted for. A brief summary of the financial assumptions of these conditions and actions along with the IRP's assessment of each is provided below:

- Federal Transit Administration New Starts funding-The CRC is actively seeking \$850 million through this program and appears to be well positioned to receive an amount at or close to this value. The use of local highway funds to match the federal transit funding is not unheard of and precedent exists elsewhere in the country for this to occur. The IRP found this assumption to be realistic but that for it to be achieved would take substantial effort on the part of the project.
- Projects of National Significance-The states are seeking \$400 million from this program that was established in 2005 in SAFETEA-LU. In FY 2009 it was funded at \$356 million. Funds are distributed by the US Secretary of Transportation through a grant program. The project staff proposes that funds from this program in the amounts included in the finance plan are realistic. The IRP concurs with this assessment.
- Additional WSDOT/ODOT Funding-The Finance Plan reflects that each state will have to raise their share of the \$750-850 million included in this category of funding. This will take legislative action on the part of the respective legislators. Some assurances have been given by various elected officials as to the certainty of this money. However, neither legislature has taken action to date to raise these funds nor have they taken a vote or passed a resolution reflecting their eventual support for it. The IRP is not in a position to judge the probability of this occurring and can only take the assurances at face value until demonstrative actions transpire.
- Toll Proceeds-the plan for financing the project relies on up to \$200 million in pre-construction tolls to be available as well as bond financing secured through future tolls in an amount in excess of \$1 billion to finance the project. This particular area of the finance plan is perhaps the most complex from a policy standpoint and implementation approach. Project stakeholders have a number of distinct views on the use of tolls. Among them are:

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- Those who are opposed to tolls in any form at any time for the project
- Those who are opposed to tolls unless there is some kind of system-wide application that includes I-205
- Those who feel like tolls are Oregon's way of punishing people who live in Vancouver and who want to cross the river into Portland
- Those who see tolls as a way to finance the project
- Those who see tolls as a means for financing other elements of the Oregon and Washington state transportation systems
- Those who see tolls as a means for addressing traffic demand management which would translate into higher tolls to control how many vehicles cross the river and when
- Those who see tolls as a means for addressing land-use planning objectives

Regardless of the number of groups the diversity of their positions is noteworthy. The IRP observed that the Finance Plan for the CRC relies on tolls as a revenue stream. This being the case, the relationship between tolls and debt financing aspects of the finance plan shows the two to be inseparable. Accepting that a major portion of the project will have to be built using funds derived from toll-backed bonds, means that policy decisions about toll rates, the ability to adjust those rates and other factors will largely be driven by the market place in order for tolls to be a viable revenue source.

The project staff has created a finance plan that includes the logical and typical funding sources used by other large projects around the country. Other forms of federal funding may be available but not in the size necessary to contribute in a substantial way to this project. The IRP believes that the levels of funding sought for in the New Starts program and the Projects of National Significance category probably represent the maximum or near maximum amounts available from both. Thus tolls become an important element of the finance plan. Absent tolls, the states would have to raise the additional funds from other sources besides those already mentioned and included in the plan. These sources would no doubt include some kind of taxation mechanism of which many exist and are in use across the country. That said, it is not within the purview or charge of the IRP to suggest which

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might method would substitute for the absence of toll revenues but only to acknowledge their need if tolling efforts are not successful.

The IRP observes that the Finance Plan has many of the hallmarks of plans from around the country and includes sources that are typical and to be expected. Two areas of the plan represent the largest risk to the project: funds to be secured through the respective legislatures and revenues coming from tolls.

4.3 Tolling

The CRC has devoted considerable time and attention to understanding the potential for and revenue generating possibilities associated with tolling I-5. There are many challenges to understanding tolling impacts, not the least of which is there is no recent history of tolling facilities in the area. Other technical challenges include the special ‘river crossing’ nature of the study area (river crossings in themselves present special driver behaviors in trip choice) and how to model I-205.

CRC analyses demonstrated knowledge of the technical requirements to estimate travel demand. The approaches used provided reasonably reliable information to inform decision-makers about both expected changes in travel demand as well as revenue potentially generated under a range of potential scenarios. This latter information is considered useful for informing discussions on policy issues around the types of toll regimes that may be used, as well as broader regional policy issues concerning tolling (or not tolling) I-205.

The IRP heard a critique of the travel demand forecasting approach that questioned the use of value of time, the data that was used to calibrate the travel demand model and the method used to include tolling in the demand analysis. It is clear that if tolling is to be part of the investment package, where tolls are the source for paying back revenue bonds, an investment grade analysis will have to be conducted. Such an analysis will have to be at a much higher level of specificity, for example, knowing what the tolling schedule will be. This investment grade analysis will include another travel demand analysis, most likely requiring a more up-to-date database upon which to calibrate the model. Project financiers typically will only accept as investment-grade quality work that is performed by certain entities who typically have proven experience in conducting such studies.

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Beyond the analytical requirements of an investment grade-quality study are the issues of responsibility and authority for setting of tolls. A discussion elsewhere in this report speaks to the need for a management/governance entity that will exist beyond the life of the construction project. Whether this entity is empowered by the respective legislatures to assess and manage tolls is yet to be determined. In all likelihood, if the bonds that are backed by toll revenues are held by one of the states and not this management/governance entity then the authority to levy, manage and otherwise administer tolls will not be held by this entity. Giving this entity TDM responsibility without the ability to manage tolls will severely limit their ability to achieve those relevant performance objectives.

Investment grade travel demand forecasts will be required to support any finance plan that relies on borrowing and tolling. At that point firm decisions about what tolling strategies are to be used and who will be responsible for setting tolls will need to be confirmed.

4.4 Cost Benefit Analysis

Cost/benefit analysis is an important tool for providing decision makers with a sense of the economic return on the investment of public dollars. The CRC has conducted such an analysis that reflects the key values identified early in the process. However, cost/benefit analysis is just one kind of information that helps inform such decisions, and for projects like the CRC, should be included along with other evaluation and assessment tools to provide decision makers with a total picture of the range of impacts. This additional information has been provided as part of the project documentation.

Finding

Cost/benefit analysis focuses on the key issues or “problems” that are characteristic of a project decision. The CRC has identified six problems that are the focus of evaluation: safety, travel demand and congestion, freight movement, limited public transportation operation/connectivity and reliability, pedestrian and bicycle movement and seismic vulnerability. Some of these issues are conducive to monetization, which is necessary when using cost/benefit analysis, while others are not. The CRC analysis recognizes this important consideration. The overall methodology of the cost/benefit analysis is that a net positive increase in societal welfare is a desirable outcome, even though some individual

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groups or individuals might see a decline. The methodology also adopts a very typical approach of using assumed monetary values associated with different types of benefits that when aggregated across all of the benefit categories provide an overall estimate of benefit. Thus, for example, monetary values of travel time, vehicle operating costs, and crashes/fatalities are used that represent accepted professional assumptions on such measures.

The cost/benefit analysis was undertaken for the LPA Full Build and the LPA Phase 1 alternatives. By far, and quite common in highway projects, the greatest monetary benefit associated with the project comes from travel time savings. In this case, travel time savings are estimated from two separate models: the regional travel demand model is used to estimate the 2020 and 2030 values, and an economic model is used to estimate the 2040 values (simply because the regional demand model does not project to 2040). The value of time is assumed to be \$18 per hour, which comes from a 2005 ODOT study. The cost/benefit method also disaggregates the travel time savings by types of traveler, e.g. commuter, low-income household, transit rider, etc. In addition, the method also attempts to incorporate a monetary value for economic development in the methodology, which according to economic theory should not be included.

Other factors considered in the method include reductions in crashes, vehicle operating costs, and pollutant emissions. The method also includes a savings (i.e., benefit) associated with delays due to bridge lifts. With respect to reductions in crashes, the analysis used a much more conservative estimate of the value of a human life as compared to current FHWA guidance which is also included in the newly published *AASHTO Highway Safety Manual (HSM)*, a document intended to provide a common basis and approach for quantitative safety analysis including economic analysis. Using FHWA and HSM values would greatly increase the level of benefit associated with either alternative. On the other hand, the use of economic development benefits (referred to as “uplift in property values”), which arguably should not be included in a cost/benefit analysis, would lower the level of estimated benefits.

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Testimony on the analysis confirmed that the travel time savings would be ‘front-end loaded’, i.e., that as traffic increased beyond 2030 congestion would re-emerge and savings (and benefits) diminish.

With respect to costs, the project used conservative estimates of capital and operations/maintenance costs. In addition, costs included estimates of the time delays associated with the disruption of traffic flow in the corridor during construction. Note that the costs included in the analysis do not reflect current assumptions about bridge type (see discussion elsewhere on this issue).

The difference in the cost/benefit analysis between the LPA Full Build and LPA Phase 1 alternatives was minor. Three measures of comparison were used: net present value, benefit/cost ratios, and internal rate of return. Both the net present value and benefit/cost ratio showed a positive return on the investment. The internal rate of return also showed a positive return but without knowing a minimally acceptable rate of return, it is unclear what this estimate means.

The methodology also included a “break even” analysis, which based on net present value and benefit/cost ratios, indicated the probability that the estimated costs would not exceed estimated benefits. It was concluded that there is at least an 80 percent probability that either alternative would “break even.” Although interesting in some ways, this break even analysis is so dependent on the assumptions made with respect to benefits and such things as value of time and value of a human life, that the IRP is not sure it adds much to the evaluation process.

Cost/benefit analysis is an important tool in providing decision makers with information on only one aspect of project worthiness, this being on those factors that can reasonably be assigned a monetary value for benefit and costs. The CRC has provided a broad evaluation framework in identifying the different types of benefits and costs associated with different alternatives, of which cost/benefit analysis is just one. This broad evaluation framework should continue to be used for the remainder of project development. Although there are many uncertainties within the project, such as the number of lanes and cost of improvements, the IRP found the general approach to the cost/benefit analysis to be reasonable regarding the relative benefits and costs for the project that are conducive to

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monetization. However, the benefit cost analysis presented to the IRP was a reflection of the original bridge type and not the current design. Revised benefit and cost information generated from the open-web STHB design must be used in order to have an accurate outcome of this analysis.

4.5 New Starts Funding Assumptions

The New Starts program is part of the Major Capital Investment Grant Program provisions of 49 USC 5309, and was most recently authorized in August 2005 by SAFETEA-LU. New Starts is a discretionary program, and is the primary means by which the Federal Transit Administration funds high capacity, fixed-guideway transit investments that are locally planned, implemented and operated. Because New Starts is a discretionary program, during project development candidate New Starts projects must compete with other potential transit investments in other metropolitan areas in order to secure funding. This competitive evaluation is conducted annually and provides the basis for FTA's recommendations to Congress as part of the development of the annual federal budget. The annual evaluation and rating of potential projects continue until the project is granted a Full Funding Grant Agreement and the level of federal funding commitment is established, after which time the project is no longer rated.

The discretionary nature of the program, combined with the increasing popularity of investment in transit in many localities, results in a highly competitive funding environment. Projects advance through the New Starts process based on a rigorous evaluation of project justification and financial commitment criteria, and the demand for the program greatly outstrips available funding. During project evaluation, the Federal Transit Administration assesses the merits of each proposed New Start in relation to other potential federal investments in high capacity, fixed-guideway projects nationwide. The accomplishment of the CRC in receiving approval to enter Preliminary Engineering should be appropriately recognized as a signal that at the time of the last annual rating (November 2009), the Federal Transit Administration viewed the CRC as a potentially viable candidate for Section 5309 investment. Achievement of an overall project rating of "Medium" is to be commended, as only projects that achieve a rating of "Medium" or better are allowed to advance through the New Starts project development process.

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Issues / Open Items

While approval of entry into Preliminary Engineering is a significant milestone, it is important to note that as stated in the FTA FY2011 *Annual Report on Funding Recommendations, New Starts, Small Starts, and Paul S. Sarbanes Transit in Parks Program* (New Starts Report):

“Projects can be expected to continue to change as they progress through the development process. Hence, the ratings for projects that are not yet recommended for FFGAs or PCGAs should not be construed as statements about the ultimate ratings of those projects. Rather, the ratings provide assessments of the projects’ strength and weaknesses at the time they were rated.”

Consequently, the CRC will continue to be re-evaluated on an annual basis, competing against other projects nationally to be recommended for funding. The following considerations have the potential to impact the ability of the project to maintain a competitive rating:

- 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 secure a recommendation for a FFGA could be at risk.
- The implications of Section 173 of the FY2010 Transportation, Housing and Urban Development Appropriations Act (THUD) on the New Starts Baseline need to be addressed. Changes to the New Starts Baseline resulting from compliance with Section 173 could affect overall project competitiveness in the New Starts process. The Act directs FTA to base the New Starts share rating for interstate, multi-modal projects located in an interstate highway corridor on the unified finance plan, as opposed to just on the transit elements of the project.
- The capital costs associated with the project have changed since the last New Starts evaluation, as has the New Starts share (November 2009). Changes in capital costs resulting from modifications to the Locally Preferred Alternative since the FY2011 New

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Starts rating and the changes in the New Starts share have the potential to affect the determination of user benefits and cost effectiveness of the project, as well as the overall competitiveness of the project.

The Local Financial Commitment rating is comprised of the following factors and subfactors, with associated weights:

- Section 5309 New Starts Share of Total Project Costs (20 percent)
- Capital Finance Plan (50 percent)
 - Agency Capital Condition (25 percent)
 - Commitment of Capital Funds (25 percent)
 - Capital Cost Estimates, Planning Assumptions, and Financial Capacity (50 percent)
- Operating Finance Plan (30 percent)
 - Agency Operating Condition (25 percent)
 - Commitment of Operating Funds (25 percent)
 - Operating Cost Estimates, Planning Assumptions, and Financial Capacity (50 percent)

While the CRC achieved an overall rating of Medium for Local Financial Commitment, the IRP identified several issues of potential concern relative to the maintenance of a Medium rating Local Financial Commitment:

- The New Starts program is highly competitive, and nationwide demand for the program is well in excess of historic or foreseeable funding levels. So while the program allows for 80 percent federal funding with 20 percent local match, in practice most projects today request less than 60 percent federal share, and many request less than 50 percent. As of the FY2011 New Starts Report, based on the transit share only, the CRC is requesting a 79 percent federal share for the transit element. This federal share exceeds all but one other project in Preliminary Engineering and Final Design.

However, the CRC received a rating of “High” for the factor related to Section 5309 New Starts Share of Total Project Costs, as this rating was based on a the New Starts

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share of the unified finance plan for the multi-modal project as opposed to just the transit element of the project, which lowers the New Starts share to 18.3 percent as opposed to 79 percent. This was done to comply with Section 173 of the FY2010 Transportation, Housing and Urban Development Appropriations Act. The Act directs FTA to base the New Starts share rating for interstate, multi-modal projects located in an interstate highway corridor on the unified finance plan, which lowered the New Starts share to 18.3 percent of the total cost of the multi-modal project, assumed to be \$4,096.1 million at the time of FY2011 New Starts report preparation.

- Although the CRC received an overall rating of Medium for the Capital Finance Plan in the FY2011 New Starts Report, the subfactor relating to “Capital Cost Estimates, Planning Assumptions, and Financial Capacity” received a rating of Medium-Low. In addition, in the rating the CRC Capital Finance Plan/Capital Cost Estimates, Planning Assumptions and Financial Capacity, the FY2011 New Starts Report indicates that “The interest rates and financing terms were reasonable when the submittal was prepared. However, given current market conditions, the assumptions are now optimistic.”
- Although the CRC received an overall rating of Medium for the Operating Finance Plan, the subfactor relating to “Operating Cost Estimates, Planning Assumptions, and Financial Capacity” received a rating of Medium-Low. In addition, in the rating for the CRC Operating Finance Plan/Operating Cost Estimates, Planning Assumptions, and Financial Capacity, the FY2011 New Starts Report states that “Several assumptions supporting the operating and maintenance cost estimates and revenue forecasts are optimistic relative to historical experience, especially in the short term.”

Given that the two most highly weighted subfactors for both the Capital Finance Plan and the Operating Finance Plan received a Medium-Low, and FTA identified potential issues affecting the assumptions used, if these subfactors were downgraded to Low, that, in combination with the down grading of any other subfactors, could lower the Financial Commitment rating to Medium-Low, delaying advancement of the project through the New Starts process.

Currently the effects of Section 173 of THUD on the competitiveness of the CRC in the New Starts process is unknown, and cannot be determined until the FTA concurrence on

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the Baseline has been obtained, and the travel demand forecasting projections, calculation of user-benefits and the cost effectiveness evaluation are updated. As part of this updating, the capital costs for the project and the assumptions regarding the New Starts share have changed from those assumed as the basis for the FY2011 New Starts evaluation, and need to be modified accordingly.

Recommendation related to Finance

With respect to finance, the IRP offers the following key recommendation:

- **Recommendation 29: Accelerate receipt of FTA concurrence to the revised Baseline prior to tendering the FY 2012 New Starts submission. Recalculate the cost effectiveness and user benefits associated with the project so the revised figures can be disclosed in the Final EIS as is FTA practice and the project's competitiveness in the New Starts process can be properly assessed.**

In re-reviewing the FTA rating factors, the IRP suggests CRC consider:

- Conducting sensitivity analyses to understand the implications of various combinations of potential changes in ratings in order to identify the critical financial drivers, assess risks, and develop options to address changes to these ratings should they occur.
- Updating the capital costs based on the Locally Preferred Alternative carried forward in the Final EIS prior to the release of the document and the New Starts FY2012 submittal.

4.6 Phasing Considerations

The CRC has recognized both the magnitude of the investment necessary to complete the project as well as the difficulties in assembling a workable finance plan. During refinement of the LPA concerns over total cost led to concerted efforts to refine project features or elements with the objective being to produce a more affordable project. CRC has in place mechanisms such as CEVP and Value Engineering, which are also valuable tools to address project affordability.

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Issues / Open Items

There is a possibility that despite best efforts to assemble funding, the Project Sponsors may encounter a significant shortfall in funding to complete all of CRC as currently envisioned. There is also a possibility that a number of current uncertainties in design and schedule will adversely affect the total cost of the project.

Projects of this size and scope are often planned and developed assuming a phased construction effort. Phasing (as opposed to staging) refers to the completion of some major portion of a total project, with such completion having meaningful value, yet deferring subsequent construction till later, often uncertain, dates when additional funding can be obtained.

From a long term perspective, phasing is preferred over permanent ‘scaling back’ of the ultimate plan, particularly in growing regions such as the Portland/Vancouver Metro area.

Optimal phasing plans address the most pressing problems first, minimize throw-away construction, and preserve right-of-way for subsequent phase completion. For any given phasing plan, slight revisions to current ultimate designs may be needed. As phased construction offers unique impacts and effects on resources and communities, potential phasing plans should be discussed with stakeholders and fully evaluated and documented.

Phasing is routinely considered by project owners for projects of this size and uncertain delivery timeframe. Current examples of similar projects (information obtained from FHWA Megaprojects office) either in final design or construction are summarized in Table 7 below:

Table 7 – National Sample of Similar Projects Using a Phased Approach

Project	Phased Approach
I-29/I-80/I-480, Council Bluffs Iowa	Reconstruction including Missouri River Bridge; project developed using tiered EIS; five segments identified with funding and construction for only segments 1 and 2 (\$837M); partial or interim solution for segment 3 and no funding yet for segments 4 and 5.
I-64/I-65/I-71 Indiana and Kentucky	Project in Louisville includes two new bridges over the Ohio River and adjacent interchange reconstruction; project funding and construction plan spread over 12 years (\$4.1 B)

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I-70 St. Louis	New crossing of the Mississippi River; project split into phases (SEIS re-evaluation performed) with initial phase of \$660 M (including the new bridge) and subsequent phases requiring \$2 B not yet funded but planned
I-71/I-77/I-90 Cleveland Inner Belt	Reconstruction including crossing of the Cuyahoga River; planned for phased construction from 2010 to 2033; initial phase of \$400 M and total funding requirement of \$3.5B.

Successful phasing for projects of this magnitude addresses the most pressing problems in initial phases, and produces manageable projects (say, three phases each in the \$1B to \$1.5B range). Appropriate consideration of phasing involves a number of project development steps. In carefully planned phasing actual geometric and structural design solutions may change to accommodate interim ‘ties’ or minimize subsequent throw-away.

IRP team members were recently involved with a similar project (replacement and widening of a major river crossing on an interstate highway between two states) in which deferral of one of two new river crossing bridges and conversion of existing crossing bridges for one direction of travel was considered as a phased solution to an expected possible major funding shortfall. In that case, approach roadway design solutions were developed to demonstrate the feasibility and cost implications of having to resort to such phasing plan should funding not become available for the full ultimate solution.

In the context of the project there may be many different ways to approach phasing. For example, the ultimate plan may call for reconstruction of the North Portland Harbor Bridge, but its replacement may be deferred to a second phase. Similarly, individual interchange reconstruction may be deferred, and/or some auxiliary lane widening associated with deferred interchange reconstruction could also be deferred. A three-bridge solution offers potential for phasing of all bridges if significant shortfalls occur. For example, only two of the three bridges could be built initially under a range of operating regimes (one might be -- build one highway bridge slightly overwidth; operate with 8 lanes with reduced interim dimensions; build the transit and pedestrian bike bridge; perhaps operate bus rapid transit as an interim measure on the transit bridge with LRT eventually implemented; defer the other highway bridge until, say, 2035 at which point the full ten or 12 lanes would be provided).

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Construction on a new interchange at Hayden Island could be deferred until after completion of all three bridges. It is possible or even likely that significant development may be delayed as this area will be a major construction zone and may not be as desirable during first phase construction; perhaps look for developer participation in Hayden Island interchange construction and until then use Marine Drive as the initial phase access).

Note that traffic and environmental impacts may vary after implementation of an initial or interim phase from those anticipated at completion. These must be fully investigated and disclosed to stakeholders. In other examples of similar projects noted above, phasing was explicitly included in project development and covered in the Final EIS.

As currently envisioned development of the CRC is counting on full funding from multiple sources, including tolling which will be new to the community and unproven in its revenue generating potential. Failure to achieve one or more major sources of funding can make the entire project unmanageable or unaffordable in the present. The IRP is less concerned about ‘marginal’ shortfalls but more about individual funding sources and/or unanticipated cost increases representing \$0.5 B or more.

Finding

As discussed in Section 3.2 the IRP recommends evaluating and offering public review of phasing options. In conducting the phasing evaluation, the CRC should consider:

- Developing and reviewing different phasing concepts with Project Sponsors and other key stakeholder groups. This would be more than a cost cutting exercise but rather explore what a workable project might look like if, for example, only \$2.5B rather than \$3.5B were available. This exercise could be conducted using outside experts in workshop settings to brainstorm phasing solutions, with background on phasing conducted in other similar projects. Phasing in this context should include all major project components – freeway improvements, the CRC bridges, and LRT components.
- Describing and fully evaluating project phasing as part of a Supplemental EIS, assuming FHWA and FTA concurs that an SEIS is needed. This will leave options open to the Project Sponsors and avoid having to perform yet another SEIS if phasing is required due either to lack of funding or significant increased implementation costs.



5. Performance Measures

One of the important policy developments in recent years in transportation has been the use of performance measures in managing transportation system performance. First garnering attention in the early 1990s in response to the ISTEA legislation, performance measures are now being used by many state DOTs and other transportation agencies to provide important input into transportation decision making. It is to the credit of the CRC Sponsors' Council (PSC) that it has considered the idea of putting in place a corridor management concept that will far outlast the current project development activities. The PSC has discussed the concept of a "mobility council" to "assure that the project operates consistently with the expectations and with the assumptions" associated with the project. The identification and use of performance measures is inherent to the success of such an effort.

Issues / Open Items

A Performance Measures Advisory Group (PMAG) was established by the PSC to "develop reasonable and measurable transportation performance measures to ensure long-term performance and management of the Columbia River crossing." Numerous stakeholders were involved in developing a list of performance measures, as were national experts. A tentative list of performance measures has been identified relating to several goal areas: system access/mobility/reliability; financial responsibility/asset management; climate/energy security/health; safety/security; economic vitality; and land use. In addition to the performance measures a suggested set of targets were also identified. Thus, for example, in the climate/energy security/health goal area, prospective performance measures included: annual estimation of pollution emissions, annual estimation of greenhouse gas emissions, annual estimation of fuel consumption and environmental justice measures (yet to be determined). Interestingly, many of the suggested targets were simply to maintain upward or downward trends in the estimated values. The PMAG also identified required data that would be needed to monitor or estimate the recommended performance measures.

Several of the performance measure areas are particularly important for the CRC and are highlighted below.



5.1 Environmental Performance Measures

The PMAG identified three major performance measure categories as they relate to the long-term performance of the CRC corridor.

- Annual calculation of air quality emissions from measuring and monitoring in adjacent neighborhoods.
- Annual calculation of GHG-related emissions from traffic counts and modeling based on VMT, speed, speed variability, and fleet composition
- Annual calculation of fuel consumption from modeling based on vehicle counts, VMT, speed, delay, and fleet composition; and
- Environmental justice: specific measures to be determined

5.2 Freight Performance Measures

The freight-related performance measures were listed in under “economic vitality.” They included:

- Freight travel time and reliability for through movements and those on-off within BIA
- The value and volume of freight moving across the bridge annually.
- The number of truck trip turns from Port terminals to I-5 (use road link # of turns daily)
- Travel time on four indicator routes:
 - Marine Drive
 - Columbia Boulevard
 - Mill Plain
 - 4th Plain

These performance measures are appropriate for the types of freight movements found in the corridor.



5.3 Congestion Performance Measures

The PMAG recommended a wide range of performance measures for congestion, although they were interspersed with measures relating to system access and reliability. These measures included:

- Corridor User Statistics
 - Person trips by mode, location, by time of day, and by season (mode split)
 - Trips eliminated or diverted to other routes
- Modal Operations Statistics (for all modes)
 - Vehicle miles traveled
 - Trip volume (by classification, including trucks) by time of day and by location
 - Vehicle travel time and speed by time of day and location (including variability)
 - Vehicle and person volume in other corridors, especially related to traffic diversion
- Observed System Performance Statistics (for all modes)
 - Duration of periods of congestion (highway and transit corridors)
 - Travel time reliability (buffer index, travel time index or other measures indicating variability in travel time)
 - Recurring delay (for all modes, including freight)
 - Non-Recurring, incident-induced delays (for all modes, including freight)
 - Transit schedule adherence, load factors, and related passenger measures
 - Transit vehicle and Park & Ride occupancy.
 - Interchange delay and length of queue during peak and non-peak periods
- Customer Satisfaction Statistics (for all modes)
 - Satisfaction with cost (toll, fares, etc) relative to system performance (reliability, convenience and frequency of transit service), level of maintenance (lighting, sweeping), safety and convenience (for users of all modes)

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- Equity Measures
 - Cost, safety and travel time for all populations to access travel options, jobs residences, and services
 - Population within half mile walk of transit stop
 - The share of the region populations that live within 20 minutes of essential destinations by bicycle and public transit
 - Vehicle and transit travel times between residential areas and selected destinations (including employment, education and commercial areas).

This list of prospective measures is comprehensive, and probably too much so. Studies have shown that the more performance measures you have, the less likely they will be used. This list needs to be pared down to the select few that are the most important. The IRP suggests that a review of purpose and need as well as the alternative screening criteria, with focus on the fundamental reasons for the project, is an appropriate place to start.

Recommendation related to Performance Measures

A set of performance measures and targets has not yet been adopted, nor has an institutional structure been established to be responsible for such monitoring. Having such a capability in place to manage corridor performance is an innovative and unique approach toward transportation system management no matter what strategy is ultimately adopted for the CRC.

With respect to performance measures, the IRP offers the following recommendation:

- **Recommendation 30: Consider a performance-oriented, system management approach to manage corridor performance over the long term based on performance measures that reflect stakeholders' desires, including developing a mobility council to establish, review and monitor performance measures.** The IRP recommends that this performance-oriented, system management approach be seriously considered for the corridor. Not only does it provide some assurance that proposed improvements are working as expected, but it also serves as an early warning

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system for identifying other problems that might reduce the effectiveness of the corridor's transportation system.

In addition to operational performance measures, the IRP suggests establishment of a set of performance measures for construction-related activities that would be beneficial to assure they meet the needs and expectations of the project stakeholders.

In forming a mobility council, development of an MOA would be beneficial in that it would establish its primary purposes, including its participants, and resolution of disagreements. It is important for the success of the CRC that the discussion surrounding the benefits and costs of the project be moved out of the NEPA framework, which will be necessary for the long run management of the corridor. The mobility council could recommend a specific set of performance measures to the PSC for transportation system operation in the corridor and monitor their success over time.

The PSC recommended that the mobility council be advisory. However, the IRP heard testimony that suggested that it should have some authority attached to it. This is something that needs to be explored and resolved by the PSC. There are several organizational models for putting in place a mobility council-like entity, ranging from simply being advisory to a new corridor-level decision making authority to manage corridor operations, including possibly the use of different tolling strategies. If something more than an advisory role is desired, legal and statutory implications of the proposal will be necessary.



Conclusion

The Columbia River Crossing Project is a significant transportation initiative in the Portland/Vancouver region and is one of the most important projects underway in the nation. The purpose and need statement used in the environmental process is sound and reflects a thoughtful assessment of those areas where the CRC could contribute to the overall quality of life for those traversing the corridor and living in the region.

For over a decade the states of Oregon and Washington and their respective departments of transportation have been working on a solution for replacing the existing two bridges that connect Portland and Vancouver. These efforts have progressed to the point where the project published their Draft EIS some time ago and is working on the Final EIS with an eye towards receiving a ROD by January 2011.

In spite of project progress, substantial discord still exists on key issues that could delay or otherwise impede the construction work itself. Recognizing the need to maintain the momentum of the CRC Governors Christine Gregoire and Theodore Kulongoski appointed an Independent Review Panel in April 2010 of eight nationally recognized experts to do the following:

- Review the project implementation plan
- Review the project finance plan
- Review project performance measures

Since April the IRP has assessed the CRC in these three areas. Their efforts consisted of extensive public briefings, community comment sessions and independent research conducted by members on specific topic areas. This report reflects the findings and recommendations of the IRP. These are summarized below.

The NEPA process has been extensive and the CRC has expended considerable effort in this regard. Because the project includes both transit and highway improvements FHWA and FTA are both involved and the project must comply with their established procedures. The public outreach efforts associated with the NEPA process have been extensive and much value has been derived from them. The IRP notes that while many of these efforts

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Columbia River Crossing



were noteworthy at their inception, today some of these groups now feel disenfranchised and a general feeling of distrust of the CRC is common.

The Locally Preferred Alternative (LPA) was identified in 2008 and each of the project sponsor organizations subsequently adopted it. At that time a total of 134 caveats were included in the various adoption resolutions by these entities. This reflects a very low level of consensus among the sponsoring entities and has resulted in substantial discord among some of them. The LPA was included in the Draft EIS that is now available to the public.

Much work remains to complete the NEPA process for this project. Outstanding work to be completed includes the following:

- Addressing the nature of modifications to the Draft EIS that will be included in the Final EIS
- The need to complete key Section 106 requirements
- The need to complete important 4(f) requirements
- Issues relating to the Native American tribes and fishing rights
- Environmental justice concerns

Since the publication of the Draft EIS the LPA has been modified considerably. Most significant of the modifications is the change in structure type for the main bridges across the Columbia River. This change from a closed box segmental design to the open-web STHB approach is substantial. It reflects a departure from a standard structure type used across the nation to one that has never been built anywhere in the world and which will require extensive testing and engineering to determine its viability for this project. The STHB accommodates the light rail transit within one of the bridges and the open-web design eliminates the confined attributes of segmental box configuration.

The IRP determined several key things about the open-web STHB including:

- The clearance issues associated with river traffic and aviation associated with Pearson Field and Portland International Airport offer constraints that make reasonable bridge solutions difficult.

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- No CEVP has been done on the current design. Past CEVP efforts were conducted on a version of the bridge that is no longer under consideration for the CRC.
- The earlier Constructability Workshop reviewed a previous version of the bridge as well.
- Current cost estimates are for a previous bridge type and thus do not reflect the actual cost of the STHB.
- FHWA and others will require substantial testing and evaluation of the open-web STHB prior to its final approval for this project.

The issues at Hayden Island have been a contentious for the CRC. The design of the interchange on Hayden Island, the number of lanes crossing the island and the river in that area are all a function of what is determined to be the future of the island in terms of land use and development. Ultimately, residents and policy makers must determine the future of the island and what it will be like in the years to come. Agreeing upon and knowing that future will then provide the framework for the kind of transportation facility that will best serve those interests. The IRP observes that some have defaulted to the CRC team and the NEPA process to design a transportation solution for a problem not of their making. The City of Portland and the residents of the island must first resolve their issues and once a unified voice and decision is made a transportation solution will emerge that will fit that solution.

The finance plan contains typical revenue sources including New Starts funding for the light rail project, grants from the Projects of National Significance program, funds from the respective legislatures, and revenues from tolls. The certainty of each one is unique to that particular source and some are more predictable than others. For example, the IRP is unable to judge whether or not the state legislatures will provide the \$750-850 million shown in the project finance plan. Tolling is seen by the IRP as essential to the viability of the finance plan proffered for the project. However, many issues remain relating to tolling including overall philosophy, how and when they are imposed, and whether their purpose is project finance, travel demand management or some measure of both.

No provision was presented to the IRP to phase the project. The IRP finds this to be unrealistic given the final cost of the CRC as well as the need to address cash flow demands

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and construction sequencing. Phasing is not part of the Draft EIS that is currently under review but should be included in the Final EIS.

The IRP is unable to assess the accuracy of the cost estimate for the project. The value of past efforts to determine an accurate cost has been largely negated due to the change in bridge type and the continuing controversy regarding Hayden Island. Until a resolution to these two issues is achieved and further completion of the NEPA process is achieved the total cost of the project is unknown with any certainty. Conducting a new CEVP and other cost estimation activities are necessary to rectify this situation.

Project risk management has received attention from the project staff. The process followed is typical of other large projects and netted useful information. Unfortunately, with the change in bridge type and the prevailing issues at Hayden Island, the project will have to conduct new risk assessments using CEVP and other tools in order to fully understand and manage the substantial risks associated with a project of this nature.

The IRP found the current efforts to reconcile the number of lanes on the CRC to be encouraging. This level of cooperation among the staff through the IPS and within the individual organizations is commendable.

Resolving the number of lanes is an important step forward for the project and its sponsors. That said, the IRP does have some concerns about the dialogue that is on-going in this matter. The design year for this project is 2030 and the opening of the new facility could be as late as 2018 or 2020. Only 10 or 12 years will pass before the design year is reached.

Of concern to the IRP is the risk of not seeing far enough into the future on this project. The new CRC bridges will last for 100 years or more. This is not simply a street widening project where a community can come back in ten years if there isn't enough capacity at that time. Traffic patterns, land use strategies, freight growth and other key inputs into existing models do not provide a robust enough vision of the future when thinking in terms of a 100 year facility. The desirability of living in the Portland/Vancouver region is not going to diminish. Populations will continue to grow. Freight growth is planned for and desired by that industry and policy makers on both sides of the river. All told, these factors and many others will influence mobility needs for 90 years beyond the design year of the project. In the context of the current 10 lane versus 12 lane discussion the IRP believes that the greatest

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risk in the decision-making process for this project is not over-sizing the bridges but rather not building enough capacity for the next 100 years.

Governance and management of the CRC has been difficult to date with the bi-state nature of the project and with the diverse ownership and sponsorship relationships that exist today. The current structure of the PSC and IPS appear to be working with some degree of effectiveness. That said, decision-making appears to be cumbersome due to the management of the effort in effect “by committee.” The IRP finds that this structure may serve the project through the NEPA process but it is not the kind of management and governance structure that should exist during construction and for the long-term management of the facility once it is open. A number of ideas have emerged around the concept of some kind of bi-state commission, interstate compact, a bridge authority or mobility council as the model that should be implemented to address this critical need. However, in spite of much discussion on this point no consensus exists among the sponsors as to the membership, role, or authority of such an entity. Time is of the essence for moving ahead and establishing this entity.

An observation about the overall CRC process emanates from this last point. The IRP has observed a pattern of decision-making on this project where difficult issues are often not dealt with in the immediate moment but they are more likely to be pushed out into the future. The future governance structure appears to be one. The adoption of the LPA in 2008 with 134 caveats to be resolved at some future date would be another.

The CRC has started a process for identifying and following performance measures during the life of the project as well as into the future. This is an important long-term strategy that deserves attention from all parties involved. Much work remains to be done here and it is too soon to render judgment concerning any particular measure or its administration.

With all this in mind the IRP has developed 30 recommendations that the members believe will assist the project in moving forward to completion, service to the community and achieving the stated purpose and need. They are numbered and categorized for future reference purposes:



Recommendations

The IRP has developed 30 recommendations to address the findings listed above. These recommendations will allow the project to move forward to completion and achieve the stated purpose and need. The recommendations are grouped by topic, as discussed in the report and are not listed in any particular order or priority; the IRP considers all recommendations to be of equal weight and importance. Having considered the CRC implementation plan, finance plan, and performance measures, the IRP offers the following recommendations:

Context Sensitive Solutions (CSS)

1. The CRC should more aggressively adopt CSS principles in the on-going project development process.

NEPA Process

2. Finalize and define the Locally Preferred Alternative to reduce ambiguity and address all related caveats.
3. Evaluate and offer public review of phasing options.
4. Educate communities about environmental justice versus general community impacts.
5. Increase detail levels associated with mitigation measures to provide decision makers with better information related to environmental benefits.
6. Consult with FHWA and FTA about whether additional environmental analyses are required, and if so, the appropriate timing of that work in light of outstanding issues including: river crossing bridge design, phasing considerations, and Hayden Island redesign.

Endangered Species Act (ESA)

7. Advance ESA consultation immediately.

Clean Water Act

8. Continue to monitor storm water requirements at the federal, state and local levels.



Clean Air Act

9: Assign risk and resources to monitoring greenhouse gas requirements.

10: Finalize outstanding issues related to impact assessment.

Section 106

11: Immediately provide the additional resources necessary to expedite the Section 106 Consultation process, before the schedule is further impacted.

12: Immediately bring the NPS, Trust and City of Vancouver into the Memorandum of Agreement (MOA) process, and actively engage in resolving concerns about necessary mitigation measures.

4 (f) [cultural/historical protection]

13: Accelerate the resolution of Section 106 and 4(f) issues.

Executive Order 12898 –Environmental Justice

14: Separate the environmental justice discussion in the Final EIS from other impact assessment categories, and limit debate to only those areas related to the federal definition of environmental justice.

Public Outreach

15: Re-invigorate public involvement and re-engage with respective working groups. Review with these groups how their respective input and recommendations have been incorporated into the current design.

16: Bring the tribes and the Columbia Fishing Commission into the MOA process immediately, and actively engage them to resolve concerns regarding the mitigation measures to be undertaken.

Interchange Design – Oregon

17: The CRC should perform sensitivity analyses using a range of growth rate assumptions for traffic volume, then estimate I-5 performance for time periods beyond 2030, including

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sensitivity of different traffic volume levels associated with Hayden Island and Marine Drive. Comparison for 8, 10, and 12-lane sections should also be done.

18: The IRP encourages ODOT to work with the City of Portland and fully develop a solution for I-5 from I-405 to I-84.

19: The Marine Drive Interchange issue needs to be resolved without delay.

Hayden Island

20: The City of Portland and CRC must commit to timely resolution of the design and transportation issues at Hayden Island.

Interchange Design – Washington

21: The CRC should consider developing one or more phased construction plans reflecting the potential for a significant funding shortfall.

Columbia River Bridge Replacement

22: Revisit the bridge type selection for the river crossing given the risks: reconsider the June 2008 UDAG recommendations concerning the possibility of a concrete segmental or steel box-girder shape for the Columbia River Bridge and an iconic shape for the North Portland Harbor Bridge.

Light Rail Transit

23: Prior to the Final EIS, immediately develop a plan resolving the LRT issues surrounding Hayden Island and operation and maintenance costs.

Constructability

24: Reconvene a panel of experts to conduct a constructability review of the bridge type once it has been determined.

Long-Term Management Structure

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25: Establish a Long-Term Project Management/Governance Structure; consider retaining legal expertise to assist in determining the best option and how to structure it between the two states.

Schedule

26: Update immediately the Critical Path Method (CPM) Project Schedule to reflect activities and events that have occurred to date as well as projecting future activities which may not currently be included in the schedule and maintain an updated CPM schedule, distributing it to the PSC on a regular (typically monthly) basis.

Cost Estimate

27: Prepare new updated cost estimates with better control of realistic financial needs once the actual bridge type and design have been determined.

Risk Management

28: Re-do the CEVP by the end of December 2010 and before submitting the Final EIS, using the selected river crossing bridge option and including any other assumptions that changed since February 2009, thus allowing information to be acquired regarding realistic schedule and cost information needed for state appropriations.

Finance

29: Accelerate receipt of FTA concurrence to the revised Baseline prior to tendering the FY2012 New Starts submission. Recalculate the cost effectiveness and user benefits associated with the project so the revised figures can be disclosed in the Final EIS as is FTA practice and the project's competitiveness in the New Starts process can be properly assessed.

Performance Measures

30: Consider a performance-oriented, system management approach to manage corridor performance over the long term based on performance measures that reflect stakeholders'

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desires, including developing a mobility council to establish, review and monitor performance measures.

While the list of recommendations is long they are not insurmountable. When completed they will enhance the overall decision-making process, improve the project outcomes, and result in a new Columbia River Crossing that will serve the region for the many generations to come.

Appendix A -Panel Member Bios

Thomas R. Warne, P.E., Chair

Areas of Expertise: Project financing and delivery; Context Sensitive Design

Location: South Jordan, Utah

Mr. Warne has over 30 years of experience funding and delivering light rail and highway infrastructure projects. For the past nine years he has worked as a consultant assisting public agencies and private companies. Clients include the Federal Highway Administration, American Association of State Highway and Transportation Officials (AASHTO), metropolitan planning/regional transportation organizations and authorities, departments of transportation and contractors. Mr. Warne is known for his work on complex projects and programs. His projects include light rail systems, significant design-build efforts, major bridges, strategic planning, partnering facilitation, process improvement initiatives, and more. Mr. Warne was one of the early leaders in starting Context Sensitive Design in the late 1990s and this was one of his emphasis areas as President of AASHTO. For the past seven years, he has been the transportation advisor to Daybreak, a smart growth development in Salt Lake County. Other projects include the Woodrow Wilson Bridge, the 35 W Bridge Replacement in Minneapolis and University Light Rail in Utah. While serving as the Executive Director of the Utah Department of Transportation, he was responsible for delivering the \$1.325 billion I-15 Reconstruction project three months ahead of schedule and more than \$30 million under budget. He has an M.S. in Civil Engineering from Arizona State University and a B.S. in Civil Engineering from Brigham Young University.

Rodney L. Brown, Jr.

Areas of Expertise: Northwest environmental issues; environmental law and land use; National Environmental Policy Act (NEPA)

Location: Seattle, Washington

Mr. Brown is an environmental lawyer with over 20 years of experience advising clients and decision makers in Washington and Oregon. He serves on Washington Governor Christine Gregoire's Climate Action Team, a group charged with reducing the state's dependence on greenhouse gases, increasing a clean energy economy, and moving toward energy independence. With a law degree from the University of Texas School of Law, Mr. Brown represents clients on issues related to environmental impact statements and permits; pollution control and waste management regulations; Endangered Species Act requirements, and environmental liabilities. Mr. Brown is a member of the Washington Department of Ecology's Regulatory Performance Advisory Group, and served on the Blue Ribbon Commission for Transportation. Best Lawyers in America named Mr. Brown "2010 Lawyer of the Year" for environmental law in Seattle. He is President of the Washington Environmental Council, a member of the Cascade Agenda Leadership Team, and serves on the board of the Pacific Northwest Pollution Prevention Resource Center. Mr. Brown is a founding partner of Cascadia Law Group PLLC.

E. Robert Ferguson

Areas of Expertise: Bridge construction; contracting methods

Location: Palm Desert, California

Mr. Ferguson is a nationally and internationally recognized construction professional with over 50 years of experience in the execution of major civil engineering projects. His major concentration has been transportation infrastructure, including highways, bridges, tunnels, airports, ports and railroads. Special emphasis has been in the continued development of concrete placement techniques and concrete bridge innovations. He has conducted value analysis, developed cost estimates and recommended contracting methods for projects around the country. Mr. Ferguson has worked as an International Infrastructure Consultant for the past 12 years. Additional experience includes acting in executive management positions for 29 years in some of the nations largest infrastructure companies serving as Regional Vice President, President, Chief Operating Officer, Chief Executive Officer, and Chairman of the Board. Mr. Ferguson has a B.S. in Civil Engineering from the University of Michigan and has served in the United States Marine Corps as an Engineering Officer on active duty and in the Reserve.

Dr. Patricia D. Galloway, P.E., CPENG, PMP, MRICS, CFCC

Areas of Expertise: Performance measures; project and risk management; mega-project planning and delivery

Location: Cle Elum, Washington

Dr. Galloway is an internationally recognized leader in the civil engineering and construction arenas with over 30 years of experience managing project delivery and providing advice to public agencies, industry and private sector firms on significant infrastructure projects. Her management consulting experience includes performance and management audits, strategic advice regarding governance, management structures and processes, performance operations, contract development, project/program management, project controls, contract administration, and others. She has worked on multiple rail, transit, roadway, and bridge projects, including the Sound Transit Light Rail program in Puget Sound, Australia's Melbourne Citylink project, Phoenix, Arizona's Light Rail Transit program and the Tsing Ma Bridge in Hong Kong. Prior to joining Pegasus-Global, Dr. Galloway was the Chief Executive Officer and principal of the Nielsen-Wurster Group Inc., an international management consulting firm specializing in management consulting, risk management and dispute resolution. Dr. Galloway has a Ph.D. in Infrastructure Systems Civil Engineering from Kochi University of Technology in Japan, an M.B.A. from the New York Institute of Technology, and a B.S. in Civil Engineering (double major in Structures and Construction Management) from Purdue University in Indiana.

Diana Mendes, AICP

Areas of Expertise: Federally funded transit project planning; environmental analysis and management

Location: Washington DC

Ms. Mendes is a Senior Vice President with AECOM with over 25 years of experience working in the transportation industry. She is a nationally recognized expert in the development of major multi-modal and transit projects, and specializes in the land use and environmental management aspects of the design and implementation of major capital projects. She has extensive experience in the environmental analysis and management for large-scale, federally funded transit improvements, and has successfully coordinated controversial projects with government agencies, interest groups, and citizens. Ms. Mendes has served as project manager on several major corridor studies and planning processes for New Starts projects nationwide, and has a proven track record working with multidisciplinary teams to design sustainable transportation systems and improvements that meet agency needs, are well integrated into the community, are environmentally responsible, and are acceptable to the public. She is a leader in the field of environmental streamlining and stewardship, and developed the environmental management system to support the redevelopment of \$4.5 billion of transportation projects needed to rebuild Lower Manhattan in the aftermath of September 11. Ms. Mendes has an M.A. of City Planning from the University of Pennsylvania and a B.A. in Sociology from Mount Holyoke College in Massachusetts. She is a certified planner through the American Institute of Certified Planners.

Dr. Michael D. Meyer, P.E.

Areas of Expertise: Transportation engineering; public works economics and finance; environmental impact assessments and greenhouse gas analysis

Location: Atlanta, Georgia

For the past 40 years, Dr. Meyer has worked in the transportation field, including five years as the director of the Bureau of Transportation Planning and Development for the Massachusetts Department of Public Works. He has also been an associate professor for the Massachusetts Institute of Technology and a professor for the School of Civil and Environmental Engineering at the Georgia Institute of Technology. Recent research and consulting includes incorporating greenhouse gas analysis into transportation decision making, developing non-traditional performance measures, congestion pricing, revenue estimation and freight planning. He is a member of the Institute of Transportation Engineers Steering Committee on Transportation Operations and has served on dozens of national committees, peer review panels and professional advisory groups. In 2006, he was chairman of the executive committee of the Transportation Research Board. Dr. Meyer is currently the director of the Georgia Transportation Institute and an advisor to Parsons Brinckerhoff, Inc. His degrees in Civil Engineering include a Ph.D. from the Massachusetts Institute of Technology, an M.S. from Northwestern University in Chicago, and a B.S. from the University of Wisconsin-Madison.

Timothy Ray Neuman, P.E.

Areas of Expertise: Context Sensitive Design and Solutions; Urban freeway and interchange design

Location: Chicago, Illinois

With over 34 years of experience, Mr. Neuman is a nationally recognized expert in Context Sensitive Design/Solutions and urban freeway and interchange design. He authored the widely-used reference on Context Sensitive Design and Context Sensitive Solutions published by the Transportation Research Board National Cooperative Highway Research Program, "A Guide to Best Practices for Achieving Context Sensitive Solutions," and served as technical editor for the American Association of State Highway and Transportation Officials (AASHTO) on "A Guide to Achieving Flexibility in Highway Design." He is a member of the Transportation Research Board Task Force on Development of a Highway Safety Manual and has served on the National Thinking Beyond the Pavement/Context Sensitive Design Action Plan Committee by AASHTO. Mr. Neuman has served as senior consultant, technical director or project manager for planning and preliminary design studies for complex urban highway corridors and interchanges across the country. Currently, he is Vice President and Chief Highway Engineer for CH2M HILL. Mr. Neuman has a B.S. in Civil Engineering and an M.S. in Engineering from the University of Michigan, and is a Registered Professional Engineer.

Mary Lou Ralls, P.E.

Areas of Expertise: Bridge design and construction

Location: Austin, Texas

Ms. Ralls has more than 25 years experience, include bridge design, structural engineering, project management, and accelerated bridge construction. She was the project manager for development of the FHWA Framework for Prefabricated Bridge Elements and Systems (PBES) Decision-making and PBES Cost Study and is currently a course instructor for the National Highway Institute. Her research and expertise is nationally recognized and she has served on multiple independent review panels and advisory groups for projects in Maryland, Massachusetts, Rhode Island, and others. Ms. Ralls has received numerous awards including the Administrator's Public Service Award from FHWA, the AASHTO President's Award in Research Category, and the Design Award for Best Bridge with Spans Greater than 135 feet, presented by the Precast/Prestressed Concrete Institute. Prior to her current position of Engineering Consultant with Ralls Newman, LLC, she directed the Bridge Division of the Texas Department of Transportation. Ms. Ralls has an M.S. in Engineering, Structures, and a B.S. in Civil Engineering with Highest Honors from the University of Texas at Austin.

Appendix B – Letter from the Governors



OFFICES OF THE GOVERNORS

CHRISTINE O. GREGOIRE
WASHINGTON

THEODORE R. KULONGOSKI
OREGON

February 16, 2010

The Honorable Tim Leavitt, Mayor
City of Vancouver
P.O. Box 1995
Vancouver, WA 98668

The Honorable Sam Adams, Mayor
City of Portland
1221 Southwest 4th Avenue, Room 340
Portland, OR 97204

The Honorable Steve Stuart, Chair
Board of Clark County Commissioners
P.O. Box 5000
Vancouver, WA 98666

The Honorable David Bragdon, President
Metro Council
600 Northeast Grand Avenue
Portland, OR 97232

Dear Mayors Leavitt and Adams, Commissioner Stuart, and President Bragdon:

Thank you for your letter of January 19, 2010 and your continued commitment to the Columbia River Crossing (CRC) project. We value your advisory role in shaping a project that is essential to maintaining our economic vitality and enhancing the livability of the communities in our two states. Interstate 5 is a major economic corridor for both states and the entire West Coast. We feel strongly this project must move forward without delay.

Working with your communities, Oregon and Washington have invested years and millions of dollars studying and planning this project. It will alleviate congestion, reduce greenhouse gas emissions, and improve the safety and freight mobility of important commerce traveling through our states. These investments have resulted in a one-of-a-kind project ready to receive significant national support. The Oregon and Washington federal delegations are positioned in key leadership roles to leverage substantial federal resources for this project as Congress begins to debate key appropriations and reauthorization bills.

We believe the CRC is an important investment that will strengthen the economy of the entire Pacific Northwest because of its critical importance as the major north-south transportation link of the western United States. This project will improve the flow of commerce and goods, and create green transportation alternatives for commuters. In addition, it will create more than 20,000 critically-needed jobs in the region. This project cannot afford delays. We are directing our Departments of Transportation to move forward, as scheduled, to deliver a published FEIS in early fall to allow a Record of Decision on the refined Locally Preferred Alternative as planned.

The Honorable Tim Leavitt
The Honorable Sam Adams
The Honorable Steve Stuart
The Honorable David Bragdon
February 16, 2010
Page 2

All of the CRC project partners share your goals of assuring the public trust and confidence in this project. As you have indicated, the project is complex and has a broad variety of partners and stakeholders. We have heard concerns from other partners and stakeholders regarding implementation and the time and costs associated with your proposals to restructure project delivery.

In order to accomplish the goal of building public trust and confidence, we will convene an expert review panel, similar to that used in Washington State to review the Alaskan Way Viaduct and State Route 520 projects in 2006. The panel will be asked to assess the financial and implementation plans for the CRC. It will also review and evaluate key objectives and associated performance measures in order to guide decisions on the project and its operation after construction. Panelists will include national experts with experience in design and management, cost estimation, mitigation planning, and management of large urban transportation projects. We believe this process will respond to the goals stated in your letter and will do so in a way that does not delay the project schedule. Our Departments of Transportation have also assured us that they will continue to work collaboratively with project partners to address the technical issues listed in your letter.

The citizens of this region have watched our two states discuss and plan for a new bridge for over 20 years and they expect us to proceed. We look forward to working with you and are available to meet and discuss this project with you at any time.

Sincerely,



Christine O. Gregoire
Governor, State of Washington



Theodore R. Kulongoski
Governor, State of Oregon

cc: Members of the Project Sponsors Council



OFFICES OF THE GOVERNORS

THEODORE R. KULONGOSKI

OREGON

CHRISTINE O. GREGOIRE

WASHINGTON

NEWS RELEASE **FOR IMMEDIATE RELEASE** **April 13, 2010**

Media Contact:

Washington Governor's Communications Office, 360-902-4136

Oregon Governor's Communications Office, 503-378-6169 or 503-378-5040

Governors Kulongoski and Gregoire Announce Independent Panel to Review Columbia River Crossing Project

Oregon and Washington Governors Announce Eight Panel Members

Salem, OR/Olympia, WA – Oregon Governor Ted Kulongoski and Washington Governor Chris Gregoire today announced the appointment of eight transportation experts to an independent panel to review the Columbia River Crossing project. The governors convened the panel to ensure that key project assumptions and methods are reasonable for this one-of-kind transportation project.

“Replacing the bridge over the Columbia River is essential to maintaining the economies and enhancing the livability of the communities in our two states. The project combines light rail, bike and pedestrian facilities, and will improve the movement of people and goods all in a little over five miles,” said Gregoire. “The independent expert review will provide us assurance that the project has the implementation and financial plans in place to get the job done on time and on budget.”

“The CRC is an investment that is critical to the economy of the entire Pacific Northwest because of its importance as the major north-south transportation link of the western United States,” Governor Ted Kulongoski said “We have selected the members of this panel because they each bring key areas of expertise to assess this unique project and ensure the project meets our goals of improved flow of commerce and goods, new green transportation alternatives for commuters, and improved safety at the most dangerous interchange in Oregon.”

The panel has been asked to:

- Assess the implementation plan for the CRC project
- Review the financial plan for the project
- Review and evaluate post-construction performance measures

The panel will meet for the first time May 19-20, 2010, and will meet at least three more times throughout the summer. The panel is charged with reporting its findings to the governors by July 30, 2010.

Panelists include experts with national and international experience in project financing and delivery, environmental law and land use, risk management, transit project planning, context sensitive design, and bridge design and construction.

The panel will be chaired by Tom Warne, a civil engineer and with expertise in transportation project financing, project delivery and context sensitive design. Mr. Warne has over 30 years of experience funding and delivering light rail and highway infrastructure projects. For the past nine years he has worked as a consultant assisting public agencies and private companies. His projects include light rail systems, significant design-build efforts, major bridges, strategic planning, partnering facilitation, and process improvement initiatives. Warne is known for his work on complex projects and programs such as the Woodrow Wilson Bridge in the Washington D.C. area, I-35W Bridge Replacement in Minneapolis and University Light Rail in Utah.

Also serving on the panel are:

Rodney L. Brown, Jr. - Areas of expertise include Northwest environmental issues; environmental law and land use; National Environmental Policy Act (NEPA)

E. Robert Ferguson - Areas of expertise include bridge construction; contracting methods

Patricia D. Galloway, P.E., Ph.D - Areas of expertise include performance measures; project and risk management; mega-project planning and delivery

Diana Mendes, AICP - Areas of expertise include federally-funded transit project planning; environmental analysis and management

Michael D. Meyer, P.E., Ph.D - Areas of expertise include transportation engineering; public works economics and finance; environmental impact assessments and greenhouse gas analysis

Timothy Ray Neuman, P.E. - Areas of expertise include context sensitive design and solutions; urban transportation design

Mary Lou Ralls, P.E. – Areas of expertise include bridge design and construction

The design of the Columbia River Crossing project began in 2005 to address existing and growing safety and congestion problems on I-5 between Portland and Vancouver. In 2008, local

and regional governments decided to replace the I-5 bridge over the Columbia River and extend the regional light rail system into Washington.

More information is available on the project Web site, www.ColumbiaRiverCrossing.org

Full biographies of the appointments are below:

Thomas R. Warne, P.E., Chair

Areas of Expertise: Project financing and delivery; Context Sensitive Design

Location: South Jordan, Utah

Mr. Warne has over 30 years of experience funding and delivering light rail and highway infrastructure projects. For the past nine years he has worked as a consultant assisting public agencies and private companies. Clients include the Federal Highway Administration, American Association of State Highway and Transportation Officials (AASHTO), metropolitan planning/regional transportation organizations and authorities, departments of transportation and contractors. Mr. Warne is known for his work on complex projects and programs. His projects include light rail systems, significant design-build efforts, major bridges, strategic planning, partnering facilitation, process improvement initiatives, and more. Mr. Warne was one of the early leaders in starting Context Sensitive Design in the late 1990s and this was one of his emphasis areas as President of AASHTO. For the past seven years, he has been the transportation advisor to Daybreak, a smart growth development in Salt Lake County. Other projects include the Woodrow Wilson Bridge, the 35 W Bridge Replacement in Minneapolis and University Light Rail in Utah. While serving as the Executive Director of the Utah Department of Transportation, he was responsible for delivering the \$1.325 billion I-15 Reconstruction project three months ahead of schedule and more than \$30 million under budget. He has an M.S. in Civil Engineering from Arizona State University and a B.S. in Civil Engineering from Brigham Young University.

Rodney L. Brown, Jr.

Areas of Expertise: Northwest environmental issues; environmental law and land use; National Environmental Policy Act (NEPA)

Location: Seattle, Washington

Mr. Brown is an environmental lawyer with over 20 years of experience advising clients and decision makers in Washington and Oregon. He serves on Washington Governor Christine Gregoire's Climate Action Team, a group charged with reducing the state's dependence on greenhouse gases, increasing a clean energy economy, and moving toward energy independence. With a law degree from the University of Texas School of Law, Mr. Brown represents clients on issues related to environmental impact statements and permits; pollution control and waste management regulations; Endangered Species Act requirements, and environmental liabilities. Mr. Brown is a member of the Washington Department of Ecology's Regulatory Performance Advisory Group, and served on the Blue Ribbon Commission for Transportation. Best Lawyers in America named Mr. Brown "2010 Lawyer of the Year" for environmental law in Seattle. He is

President of the Washington Environmental Council, a member of the Cascade Agenda Leadership Team, and serves on the board of the Pacific Northwest Pollution Prevention Resource Center. Mr. Brown is a founding partner of Cascadia Law Group PLLC.

E. Robert Ferguson

Areas of Expertise: Bridge construction; contracting methods

Location: Palm Desert, California

Mr. Ferguson is a nationally and internationally recognized construction professional with over 50 years of experience in the execution of major civil engineering projects. His major concentration has been transportation infrastructure, including highways, bridges, tunnels, airports, ports and railroads. Special emphasis has been in the continued development of concrete placement techniques and concrete bridge innovations. He has conducted value analysis, developed cost estimates and recommended contracting methods for projects around the country. Mr. Ferguson has worked as an International Infrastructure Consultant for the past 12 years. Additional experience includes acting in executive management positions for 29 years in some of the nations largest infrastructure companies serving as Regional Vice President, President, Chief Operating Officer, Chief Executive Officer, and Chairman of the Board. Mr. Ferguson has a B.S. in Civil Engineering from the University of Michigan and has served in the United States Marine Corps as an Engineering Officer on active duty and in the Reserve.

Dr. Patricia D. Galloway, P.E., CPENG, PMP, MRICS, CFCC

Areas of Expertise: Performance measures; project and risk management; mega-project planning and delivery

Location: Cle Elum, Washington

Dr. Galloway is an internationally recognized leader in the civil engineering and construction arenas with over 30 years of experience managing project delivery and providing advice to public agencies, industry and private sector firms on significant infrastructure projects. Her management consulting experience includes performance and management audits, strategic advice regarding governance, management structures and processes, performance operations, contract development, project/program management, project controls, contract administration, and others. She has worked on multiple rail, transit, roadway, and bridge projects, including the Sound Transit Light Rail program in Puget Sound, Australia's Melbourne Citylink project, Phoenix, Arizona's Light Rail Transit program and the Tsing Ma Bridge in Hong Kong. Prior to joining Pegasus-Global, Dr. Galloway was the Chief Executive Officer and principal of the Nielsen-Wurster Group Inc., an international management consulting firm specializing in management consulting, risk management and dispute resolution. Dr. Galloway has a Ph.D. in Infrastructure Systems Civil Engineering from Kochi University of Technology in Japan, an M.B.A. from the New York Institute of Technology, and a B.S. in Civil Engineering (double major in Structures and Construction Management) from Purdue University in Indiana.

Diana Mendes, AICP

Areas of Expertise: Federally funded transit project planning; environmental analysis and management

Location: Washington DC

Ms. Mendes is a Senior Vice President with AECOM with over 25 years of experience working in the transportation industry. She is a nationally recognized expert in the development of major multi-modal and transit projects, and specializes in the land use and environmental management aspects of the design and implementation of major capital projects. She has extensive experience in the environmental analysis and management for large-scale, federally funded transit improvements, and has successfully coordinated controversial projects with government agencies, interest groups, and citizens. Ms. Mendes has served as project manager on several major corridor studies and planning processes for New Starts projects nationwide, and has a proven track record working with multidisciplinary teams to design sustainable transportation systems and improvements that meet agency needs, are well integrated into the community, are environmentally responsible, and are acceptable to the public. She is a leader in the field of environmental streamlining and stewardship, and developed the environmental management system to support the redevelopment of \$4.5 billion of transportation projects needed to rebuild Lower Manhattan in the aftermath of September 11. Ms. Mendes has an M.A. of City Planning from the University of Pennsylvania and a B.A. in Sociology from Mount Holyoke College in Massachusetts. She is a certified planner through the American Institute of Certified Planners.

Dr. Michael D. Meyer, P.E.

Areas of Expertise: Transportation engineering; public works economics and finance; environmental impact assessments and greenhouse gas analysis

Location: Atlanta, Georgia

For the past 40 years, Dr. Meyer has worked in the transportation field, including five years as the director of the Bureau of Transportation Planning and Development for the Massachusetts Department of Public Works. He has also been an associate professor for the Massachusetts Institute of Technology and a professor for the School of Civil and Environmental Engineering at the Georgia Institute of Technology. Recent research and consulting includes incorporating greenhouse gas analysis into transportation decision making, developing non-traditional performance measures, congestion pricing, revenue estimation and freight planning. He is a member of the Institute of Transportation Engineers Steering Committee on Transportation Operations and has served on dozens of national committees, peer review panels and professional advisory groups. In 2006, he was chairman of the executive committee of the Transportation Research Board. Dr. Meyer is currently the director of the Georgia Transportation Institute and an advisor to Parsons Brinckerhoff, Inc. His degrees in Civil Engineering include a Ph.D. from the Massachusetts Institute of Technology, an M.S. from Northwestern University in Chicago, and a B.S. from the University of Wisconsin-Madison.

Timothy Ray Neuman, P.E.

Areas of Expertise: Context Sensitive Design and Solutions; Urban freeway and interchange design

Location: Chicago, Illinois

With over 34 years of experience, Mr. Neuman is a nationally recognized expert in Context Sensitive Design/Solutions and urban freeway and interchange design. He authored the widely-used reference on Context Sensitive Design and Context Sensitive Solutions published by the Transportation Research Board National Cooperative Highway Research Program, "A Guide to Best Practices for Achieving Context Sensitive Solutions," and served as technical editor for the American Association of State Highway and Transportation Officials (AASHTO) on "A Guide to Achieving Flexibility in Highway Design." He is a member of the Transportation Research Board Task Force on Development of a Highway Safety Manual and has served on the National Thinking Beyond the Pavement/Context Sensitive Design Action Plan Committee by AASHTO. Mr. Neuman has served as senior consultant, technical director or project manager for planning and preliminary design studies for complex urban highway corridors and interchanges across the country. Currently, he is Vice President and Chief Highway Engineer for CH2M HILL. Mr. Neuman has a B.S. in Civil Engineering and an M.S. in Engineering from the University of Michigan, and is a Registered Professional Engineer.

Mary Lou Ralls, P.E.

Areas of Expertise: Bridge design and construction

Location: Austin, Texas

Ms. Ralls has more than 25 years experience, include bridge design, structural engineering, project management, and accelerated bridge construction. She was the project manager for development of the FHWA Framework for Prefabricated Bridge Elements and Systems (PBES) Decision-making and PBES Cost Study and is currently a course instructor for the National Highway Institute. Her research and expertise is nationally recognized and she has served on multiple independent review panels and advisory groups for projects in Maryland, Massachusetts, Rhode Island, and others. Ms. Ralls has received numerous awards including the *Administrator's Public Service Award* from FHWA, the *AASHTO President's Award in Research Category*, and the *Design Award for Best Bridge with Spans Greater than 135 feet*, presented by the Precast/Prestressed Concrete Institute. Prior to her current position of Engineering Consultant with Ralls Newman, LLC, she directed the Bridge Division of the Texas Department of Transportation. Ms. Ralls has an M.S. in Engineering, Structures, and a B.S. in Civil Engineering with Highest Honors from the University of Texas at Austin.

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Columbia River Crossing Independent Review Panel Kickoff Meeting Agenda

Date: May 19

Location: Portland Expo; Rm. D-201

TOPIC	<i>Presenter</i>	<i>TIME (Approx)</i>
Introduction of Panel Members	<i>Tom Warne, IRP Chair</i>	<i>8:30 – 8:45 am</i>
The IRP Model	<i>Dave Dye, COO & Deputy Secretary of Transportation, WSDOT</i>	<i>8:45 - 9:00 am</i>
IRP Charge	<i>Tim Nesbitt; Deputy Chief of Staff; OR Gov. Office</i> <i>Teresa Berntsen; Executive Policy Advisor; WA Gov. Office</i>	<i>9:00 – 9:30 am</i>
IRP Scope and Workplan	<i>Tom Warne, IRP Chair</i>	<i>9:30 – 9:45 am</i>
Break		<i>9:45 – 10:00 am</i>
Project Overview	<i>Matt Garrett, Director, ODOT</i> <i>Dave Dye, COO & Deputy Secretary of Transportation, WSDOT</i>	<i>10:00 – 10:20 am</i>
Technical Briefings by CRC Staff	<i>CRC Staff</i>	<i>10:20 - 11:20 am</i>
Agency Views	<i>Jeff Hamm, C-Tran Executive Director (11:20 -11:40 am)</i> <i>Larry Paulson, Port of Vancouver Executive Director (11:40 – noon)</i>	<i>11:20 am – Noon</i>
Lunch Break		<i>Noon – 1:15 pm</i>
Agency Views continued	<i>David Bragdon, Metro President (1:20 – 1:40)</i> <i>Catherine Ciarlo, Transportatin Director; Office of Mayor Sam Adams (1:40 – 2:00 pm)</i> <i>Kathryn Williams, Manager, Business and Rail Relations, Port of Portland (2:00 – 2:20 pm)</i>	<i>1:20 – 2:40 pm</i>
Break		<i>2:45 – 3:15 pm</i>

This agenda is current as of May 18, 2010, and may be revised prior to or during the meeting on May 19th.

Agency Views continued	<i>Jeanne Harris, City of Vancouver (4:00 – 4:20 pm)</i> <i>Alan Lehto, Director of Project Planning; TriMet (4:20 – 4:40 pm)</i>	3:20 – 5:00 pm
Wrap up and Adjourn	<i>Tom Warne, IRP Chair</i>	5:00 – 5:15 pm

This agenda is current as of May 18, 2010, and may be revised prior to or during the meeting on May 19th.



Meeting Summary

Title: **Independent Review Panel Meeting**
Date: May 19, 2010 at 8:30 a.m.
Location: Portland Expo Center, D-201
Reference: CRCReview.org

IRP Members Present: Tom Warne (Chair)
Bob Ferguson
Dr. Patricia Galloway
Diana Mendes
Dr. Mike Meyer
Mary Lou Ralls
Tim Neuman

IRP Staff Present: Jennifer Vachon (Administrator)
Adam Brown (Notetaker)

Introduction of Panel Members

Tom Warne, Independent Review Panel (IRP) Chair, offered an introduction and explained that the Columbia River Crossing (CRC) Project staff would lay groundwork for explaining the work they have done, and that today's presentations and project overviews will set the stage for subsequent meetings with more specific, detailed topics. Mr. Warne introduced the panel members and indicated that detailed biographical information can be found at the panel's website, CRCReveiw.org, and that public comments and notes from these meetings will also posted on this site. He indicated the panel is pleased to be involved and specified that they are here as independent representatives.

The IRP Model

Dave Dye, COO and Deputy Secretary of Transportation at the Washington State Department of Transportation (WSDOT), stated that several mega projects including the SR 520 Bridge Replacement and SR 99 Alaskan Way Viaduct Replacement projects have benefited from IRP's, including help with tough decisions and providing fresh eyes and ears, and that he looks forward to the same benefits for the CRC Project. He welcomed any validation, suggestions, and recommendations for improvement.

Tom Warne pointed out that the Independent Review Panel (IRP) process is long established, with extensive use in Washington, use in California, and cited the Woodrow Wilson Bridge as a good example of an early use of the IRP model.

IRP Charge

Tim Nesbitt, Deputy Chief of Staff, Oregon Governor's Office, read a letter from the Governor of Oregon, (Appendix A) appreciating the expertise and independent review and investigation of the panel, and the importance of the project for the region.

Teresa Bernsten, Executive Policy Advisor, Washington Governor's Office, commented that safety, commerce, congestion, quality of life, and freight movement are all important issues, and that the project will strengthen the region for commerce, commuters, jobs, and cannot afford delays. She added that the Governor requested the panel review all comments, and is appreciative of the panel's time.

Tim Neuman asked if the IRP was requested by both states, and both **Tim Nesbitt** and **Teresa Bernsten** stated that it was.

IRP Scope & Workplan

Tom Warne discussed building confidence and trust in the project, and using national expertise to review and evaluate project assumptions and decisions. He explained that the panel would report findings by July 30, 2010, and that the day's meeting would be a project overview, with an outreach meeting this evening for community members to communicate their views on the project. The May 20th meeting will focus on design issues, and NEPA discussion will occur when the IRP meets on June 1st and 2nd with panel member Rod Brown present (not attending today). Community outreach meetings will continue, and meetings will be held on both sides of the river, in public venues. Tom indicated the panel will look at schedule, risk, value engineering context sensitive design, the financial plan, tolling, performance measures, modeling, environmental issues, freight issues, community needs, and project goals, and that all meetings will be open to the public. He closed with a reminder that the panel's charge is from the Governors, that the panel serves all the citizens of Washington and Oregon and the panel will report back to the Governors.

Project Overview

Matt Garrett, Director of Oregon Department of Transportation (ODOT), offered a welcome and appreciation for the panel's independence and expertise, as well as the unique and collaborative nature of the project. I-5 is a critical west coast corridor and CRC is a Project of National Significance. A virtual tour of the project was provided via slide show (Appendix B), and the importance of the project to the region was reiterated. Regionally identified I-5 problems noted included growing congestion, limited public transit, poor bike & pedestrian facilities, freight paralysis, earthquake risk, and high crash rates. He indicated CRC is a long-term solution and does address these issues and provide environmental and economic improvements.

Dave Dye commented that this is a Project of National Significance due in part to the numerous partners involved, and discussed WSDOT's past efforts to learn from significant projects around the country. Some of the lessons learned were the value of co-located consultant and employee teams, strong ownership of projects, the value of communication and public involvement, strategic funding (including risk evaluation and multiple funding sources), and early identification of environmental, permitting, and right of way needs and roles in project schedule.

Tim Neuman asked about the decision-making process used, and why there are still questions about the project if a transparent decision making process was used.

Matt Garrett responded that some folks are against projects of this nature, others have questions about the project, and others that agree with the project, and indicated that the goal is to address the concerns of the people of the region.

Tim Neuman asked if the decision-making roles have been clearly designated and articulated, and **Matt Garrett** responded that the roles have been clearly designated. **Dave Dye** added that the project has many elements and benefits, and consequently many impacts, and opportunities for differing opinions. He also mentioned the funding needed to complete the project, and the variety of partners who need to be onboard. **Dr. Mike Meyer** commented that access to Hayden Island is a critical issue, and **Matt Garrett** agreed and added that it is an opportunity for the community to grow. **Tim Neuman** asked why Hayden Island is still a significant issue, and **Matt Garrett** indicated the issue bloomed late and had many ideas and questions brought up. **Dave Dye** added that questions about realistic levels of funding did cause some scale back of project elements, which may have contributed to outcry. **Dr. Patricia Galloway** asked how critical project issues were being elevated to high level attention in the DOTs, and **Dave Dye** indicated there are groups and cultures in place to elevate issues sooner rather than later. **Tom Warne** asked about the future of the path the Hayden Island interchange is taking and the path the overall project is taking. **Matt Garrett** sees the two paths converging at some point, and hopes the panel addresses all relevant issues. **Dave Dye** added that the project team is working on technical details, and multiple groups are engaged, including the Project Sponsors Council.

--Break--

Technical Briefings by CRC Staff (Appendix C)

Richard Brandman, Oregon Director, CRC, discussed that this is not just a single bridge project, as it contains more than 50 structures and many important points within the project including Hayden Island, the Expo Station, and Delta Park. He reiterated that there are many interchanges very closely spaced with high volumes, which significantly impacts the project. There is a large amount of traffic merge and weave in short distances, and bicycle and pedestrian facilities are unattractive, unsafe, and difficult to access. The bike path is only 4 ft wide, making it difficult for a pedestrian and bicycle to pass each other. Marine drive is the most used and

congested interchange in the State of Oregon, and connects to the port, as well as rail and warehouse facilities. The traffic is backed up hours a day, into Portland. The current proposed design replaces a single point urban interchange with a future northbound direct truck access in Phase 2, forecast not to be necessary for up to 20 years. A braided ramp to the south would also be part of phase 2, and expected to be needed in 10-15 years. Hayden Island is the highest accident location in Oregon, with two times the expected collision rate, and serves both residential and commercial traffic. The northbound on ramp is a pinch point with nearly no merge distance. Hayden Island is accessible only via freeway with no local access and limited transit. The proposed Hayden Island interchange is complex due to trying to meet a variety of enhancements, including safer merge access (a split diamond is proposed), and some residents desire a local connection to marine Drive, separate from I-5. The project will bring light rail to Hayden Island in the middle of the Island with the location to be determined (still working with residents on this). Portland takes transit-oriented development very seriously, and a plaza and redeveloped commercial area are planned at the station. A community connector at Tomahawk Drive is being considered to provide connection for local neighborhoods on the island (while avoiding congested areas), and bicycle and pedestrian improvements are planned as well. The design evolved with over 15 or so designs having been examined, and Hayden Island does have a development plan that was considered.

Don Wagner, Washington Director, CRC, stated that the Columbia River is a state dividing line and physical barrier with limited crossing options, and that I-5 is the lifeline for Clark County and the only immediate option for crossing the river. Don explained the original bridge from 1917 was a toll bridge, and the second bridge was constructed with a hump to allow medium sized watercraft to pass under without requiring a lift. During high water the tows have a difficult time lining up with narrower bridge openings up river (swing opening structure). He added that the IRP toured yesterday witnessed an accident involving a semi at a merge point, which is a common accident. The current northbound structure does not have a load limit and can carry super loads. By 2030 they expect about 180,000 vehicles per day, and I-5 is the only options for busses, with very little HOV options. Traffic does run about 50-55 in off peak hours but trucks slow down significantly due to the grade over the humps creating a large speed differential. The bike path is difficult and was experienced by IRP during the tour (narrow, windy, bikes passing pedestrians). The crossing is in the landing path for air, rail, and water traffic, including Portland International Airport (PDX). The river is a shallow water barge waterway upriver from bridge, and a deep waterway down river. The new bridge would stay under Pearson Air Park air traffic path, and minimum bridge clearance over the river will be about 100 feet. Pearson Air Park traffic was improved by moving bridge towers. A desire for an iconic bridge design has been expressed, but options are limited by vertical limitations due to Pearson air traffic. Bicycle and pedestrians will be on the lower level of the new structure with views of the river and mountains upriver through the open box web structure. The deck width allows for commute bikers, recreational bikers, and pedestrians. Transit will be on the lower level of the other structure. SR 500 brings traffic from a growing area into I-5,

and it's intersections with traffic signals have been replaced by interchanges, and the SR 500/I-5 interchange is a very congested, high accident location. The SR 14 interchange creates significant back ups and high speed differentials, in addition to safety issues with merge and weave distances. The new design brings traffic in earlier, and SR 14 and downtown traffic later with a much longer weave difference on a flatter grade for reduced speed differentials. Mill Plain interchange has significant directional differential (about 5:1), and the main truck access point is uphill due to the topography and starting below the structure. Freight would prefer to increase elevation earlier and use I-5 to access points east (they currently cut through downtown to avoid I-5). The proposed plan flattens and widens access for freight, and adds a 3 story park and ride structure (the largest in the Portland transit system) with northbound and southbound access ramps. The proposed will create a full interchange to SR 500, which is currently only an interchange to the south (northbound access requires use of city streets). The question of how to maneuver light rail through Vancouver was determined to be a local issue, and a board recently approved a one way couplet via Broadway and Washington Streets, then over 17th Street to the park and ride.

Richard Brandman commented that benefits include a reduction in the number of autos crossing the river if the project is constructed due to tolls and the addition of a light rail option. Transit ridership is expected to more than quadruple from current numbers. Reduced greenhouse gas emissions, reduced energy consumption, better air quality, reduced congestion of up to 70%, expanded stormwater treatment, earthquake protection, significantly reduced crash rates, and improved bicycle and pedestrian facilities extending into communities are further benefits. He noted the project is expected to cost between 2.6 and 3.6 billion dollars, a range due to evolving design and inherent cost risks. The project team has done ongoing value engineering and evaluating of options, and has identified a number of opportunities to reduce costs, which are represented in the numbers presented here. They are pursuing Federal funding including FTA New Starts and Projects of National Significance Funding. The project will have all electronic tolling (not toll booths), and a tolling study was conducted in 2009, but rates and policies have yet to be set. Revenues are expected to be in the neighborhood of 1-1.4 billion dollars. State funding contributions will be narrowed down as Federal and tolling funds become clear. The DEIS (Draft Environmental Impact Statement) has been complete for some time, with construction expected to start in 2012.

Bob Ferguson asked if fill would be used on Hayden Island, and told that some ramps and access points would be on fill. **Dr. Mike Meyer** asked why the directional differential is expected to change so much, and if reversible lanes have been considered. **Don Wagner** indicated it has been considered, but that the two structures and vacant industrial lands base (and growth) make it difficult, the Clark County job base is expected to grow, and the forecasts came from both MPOs. **Diana Mendes** asked about the operational intent for light rail, and **Don Wagner** indicated there are discussions about this currently, but that maintenance and operation of way would be generally done by TriMet, and that it seems unlikely to switch

operators at the state line. **Diana Mendes** asked how financial capacity was evaluated for New Starts FTA funding, and **Richard Brandman** indicated it was evaluated jointly with a medium rating. **Tim Neuman** asked if width was a factor in determining bridge type, and **Don Wagner** indicated it was a factor in the discussions and at that time all 6 partners had signed off on an LPA with 6 through lanes and an appropriate number of add/drop lanes.

Tom Warne indicated project staff would be available the following day with more detailed information, and several panel members expressed an interest in learning more about the reasoning and justifications for a number of design decisions.

Agency Views

Jeff Hamm, Executive Director, C-Tran, provided panel members with a 20 Year Transit Development Plan (Appendix D), and introduced C-Tran as the Washington State transit sponsor of the CRC. He said that C-Tran is publicly funded by Clark County via sales tax, has about 100 buses (TriMet has about 750), and 20% of it's service hours and ridership is express service into Oregon. C-Tran currently has a structural deficit with service reductions instituted recently and more planned for the future. They predict a slower recovery from their sales tax revenue than TriMet will see from their payroll tax, and anticipates C-Tran owning the physical assets in Clark County and contracting with TriMet for service. In July 2008 C-Tran adopted its locally preferred alternative with 4 noteworthy elements.

1. LRT terminus at Clark College
2. No displacement of existing C-Tran bus service to downtown Vancouver
3. Voters will not be asked for capital costs of LRT
4. Voters would be asked for LRT operations costs

C-Tran 2030 plan will likely ask for a three-tenths of a cent sales tax increase. Maintain service, increase service to east, increase service frequency (to 15 & 30 minutes), and high capacity transit (BRT on Fourth Plain). They are hoping to combine use of CRC facility with BRT to maximize usefulness.

Dr. Mike Meyer asked about the response to C-Tran CRC conditions and **Jeff Hamm** indicated the conditions were somewhat expected based on previous projects. **Tom Warne** asked about the interface of light rail and port traffic through downtown, and **Jeff Hamm** felt this was better answered by the city, but expects light timing to address the issue. **Jeff Hamm** did express his desire for the panel to look at the possibility of having the option of multi-use lanes (at opening or in the future) to address concerns about meeting the needs of the forecast express bus ridership.

Larry Paulson, Executive Director, Port of Vancouver, presented an overview of Freight and Goods Movement at the Port of Vancouver (Appendix E) expressed that the port has been in existence since 1912, and is governed by 3 public elected officials. He indicated Washington is the most trade reliant state in the nation, with 1 in 4 jobs tied to trade, and that the port has 2,300 direct jobs, 15,500 total, with 184,000 truck trips per year. Mill Plain Boulevard is the current primary freight route and only oversize route, with Fourth Plain Boulevard a future key access point, and at full build, the port anticipates 400,000 truck trips per year. Safety is a

port concern, particularly for trucks, which comprise 8% of the traffic but are involved in twice as many accidents. He noted I-5 functions as arterial access and through access over the river crossing. He also noted that trucks are increasingly using off peak travel times. Larry provided the panel with a letter from the Freight Alliance (Appendix F).

Tim Neuman asked how directly the port was involved in review and comment on interchange designs, and **Larry Paulson** indicated that he has been on both task forces over the past ten years and has been quite pleased with Vancouver and WSDOT, and feels like an active participant. **Dr. Patricia Galloway** asked about port involvement in risk assessments and risk mitigation plans related to freight, and **Larry** indicated he hasn't been directly involved, though others from the port may have been. **Tom Warne** asked about the letter provided, and Larry indicated it was intended to inform the IRP of the port support for the project and will be provided to the Project Sponsor Council and Governors. **Tim Neuman** asked if build out plans were held up by uncertainty in the CRC project, and **Larry** replied that they are proceeding with development of rail and the former Alcoa plant to accommodate Unitrains, but that the Columbia Gateway site development is significantly hampered until truck access to I-5 is assured. **Dr. Mike Meyer** asked where the 5 lane minimum came from, and **Larry** said that the concern is to move easily through the corridor, and that 5 lanes (3 through, 2 weave) is a compromise that the truckers think they can live with.

--Lunch Break--

Agency Views, Continued

David Bragdon, President, Metro, provided testimony (Appendix G), expressing that Metro is a representative of the people on the Oregon side and a subcontractor to the DOTs, and that this north south corridor is very important and is in need of improvement. Structures, navigation, freight, development, transit, and bicycles and pedestrian were cited as needing improvement, and he noted that solutions for complex problems need to be creative and collaborative, with transparent problem solving, and that the current proposal fails these two positions. He called for a collaborative new Plan B, with the DOTs less involved, and regaining support through redirection of the project.

He noted the region has a strong degree of local collaboration, and that it was agreed that there was a desire to replace the current bridge in the same location, that light rail would be included, and that tolls would be used for the locally preferred alternative. Various partners and communities agreed on some project aspects, but other questions have not yet been adequately addressed and listed the following areas of concern.

1. How the project impacts other transportation infrastructure
2. Proper application of modern modeling be used regarding induced demand
3. Compliance with the aspirations of neighborhoods and business districts
4. Paying for the project and impacts on the budget for other projects

David Bragdon feels these basic questions have not yet been adequately addressed, and that avenues of progress have been closed, and now all decisions are examined and made by the DOTs using their limited toolbox. David referenced several documents, which he provided to the panel (Appendix H), some of which were offers of support for the project containing suggestions and queries that he feels haven't been addressed. He indicated seeing a recent increase in response to queries, after significant delay, and suggested the IRP was hired by the DOTs with a narrow scope and consequently would not be independent. He expressed a hope that a federal judge would not decide the fate of the project, mentioned that the Metro Council will need to decide whether they will suspend their conditional support, whether they would sign off on an EIS, and must vote on the Land Use Final Order before the project could proceed.

Tom Warne clarified that the panel was appointed by and reports to the governors, not the DOTs, and that they are open to hearing all comments on the project. Tom asked David about his outlook for the Hayden Island discussions, and David indicated the two recent meetings were a vast improvement, with more openness to TDM and context sensitive design, and looks forward to mutual coming together.

Catherine Ciarlo, Transportation Director, Office of Mayor Sam Adams, indicated the mayor was hoping to attend but was busy in other meetings. She explained the mayor has been involved with the project since before the LPA, worked to keep it moving forward, and strongly believes a project is needed for several reasons, including freight mobility. Catherine reported the mayor is concerned that freight throughput will return to what it is today only 11 years after project completion, and is not convinced there is enough public support for the project (induced demand resulting in increased green house gas emission and Hayden Island impacts were cited as the two biggest reasons for a lack of support), though progress has started recently. She conveyed the mayor's concerns over funding, including cannibalizing other projects, seeing less enthusiasm for tolling north of the river than they would like, and the light rail election (and lack of funding due to lack of tolling enthusiasm). She explained that they have hired URS to provide an outside review of the project and more engagement than they were getting from the project team. URS was asked to help get to a Plan B, that is smaller, cheaper, and has the same functionality as "Plan A", and is looking at options including interchange spacing in Washington and elimination of the Hayden Island interchange. She indicated the mayor's office feels good about the collaboration they have seen and look forward to the panel's input, and that they look forward to helping people see the benefits of the project. She added that the concept of creating a mobility council is being considered to help determine how this project will fit in with remaining and future transportation needs, and look at preconstruction tolling, transit on a separate structure, TDM during construction, and others.

Diana Mendes asked to hear more about the Mobility Council, and **Catherine** offered that they knew that the project would increase flow, but wanted to address two potential problems of induced demand and a bottleneck from Victoria Boulevard south to downtown Portland. They thought it might help to create a group to monitor the project operations to make sure the new facility is managed in

a way that addresses those issues. **Tom Warne** asked for the URS timeline, and Catherine indicated they have been asked to provide their report in July, and provide interim updates to the panel.

Katheryn Williams, Manager, Business and Rail Relations, Port of Portland, made a presentation (Appendix I), and explained that the port has been involved in the CRC for many years due to their multiple facilities in the area (which help them carry out their mission) and their primary interest in the project is the Marine Drive interchange. She indicated the port feels that the project partners have done a good job of recognizing the importance and needs of freight in the corridor (I-5 is the major trade route between Canada and Mexico). The high occurrence of trucks travelling only a short distance on I-5 was noted, and it's significance that the on-off movements of a truck are so different from that of a passenger vehicle. Katheryn said the Port is a proponent of light rail, which services the airport, and appreciates the resulting reduced car trips on I-5, and that the port also supports trucks paying a higher toll than passenger vehicles.

Dr. Mike Meyer asked about the extent to which the port has provided key criteria, and how they have been adopted. **Katheryn** said the port has a seat on PMAG and feels its ideas have been well received. **Dr. Mike Meyer** asked to see graphs of expected container freight growth, if available. **Tom Warne** asked when project delay would start to affect the port, and **Katheryn** indicated customers have already brought up the issue to the port, and noted the port acknowledges there will be impacts during construction, but wants to be sure that the flyover ramp is included or can be added at a later date as future mainline congestion warrants it. She also said the port did not formally endorse the LPA, but did support it.

--Break--

CRC Context

Kris Strickler, CRC Deputy Project Director, presented a slideshow (Appendix J), providing an overview of the project including a background for the detailed presentations to follow. In the late 90's the I-5 Trade Corridor Freight Feasibility and Needs Assessment Group was put together to look at the needs of the area. In 2005, funding came in for an EIS for the project, and a community outreach effort was initiated, and the project task force was established (and in place until 2008). In 2006 a project purpose and need were developed, and a component screening process was embarked upon, looking at the multitude options for a variety of project elements, such as ways to cross the river. The alternatives were narrowed down to 12 preliminary alternative packages ranging from minimal to maximum build, and were all evaluated, and a Draft EIS was produced in 2007/2008, with the project task force involved throughout. Support for the LPA was sought in 2008, and design refinements started in late 2009.

Dr. Mike Meyer asked why the task force ended in 2008 instead of being continued through the project, and **Kris Strickler** explained that the task force worked for 3 years, and was promised an end to their time investment, and their role was transitioned over to the Project Sponsor Council. **Diana Mendes** noted that the

panel heard a lot about positive collaboration prior to 2008 but not after 2008, and asked about the changes. **Kris Strickler** cited the maturity of design elements, and confirmed that pre 2008 many large decisions were made, but post 2008 design details were developed. **Don Wagner** joined Kris to participate in answering questions, and added that the project moved from broad framework into details, and that PSC elected officials were representing large communities, instead of the earlier task force members representing smaller communities. **Tim Neuman** asked how much of the footprint and interchanges were developed prior to the DEIS, and **Don Wagner** replied that the general needs were understood, but the number of lanes or configuration had not been determined yet. **Tim Neuman** asked when the project evaluation criteria was established, and **Kris Strickler** noted that evaluation criteria was established during the component screening (to determine if purpose and need were met), and **Don Wagner** added that there was not a lot of detail and it was somewhat subjective at that point.

Kris Strickler continued, noting the purpose and need elements of safety, freight mobility, transit reliability (no current HOV facility), congestion, and earthquake risk, and explaining the project has four water bodies to consider, many 4F locations, many neighborhoods with their own desires and traffic flows, 13 listed endangered species and multiple habitat areas, tribal communities to consider, a high probability of encountering archeological sites, and many sites important to specific neighborhoods. He noted the Marine Drive interchange has many considerations, including complicated bicycle and pedestrian connectivity, short weave distances, I-5 is the only island access, and PDX airspace over the island limits clearance. Regarding the Columbia River bridge, Kris explained the existing bridge has 175 ft clearance at lift and new bridge is about 95 feet, that design speed varies but new curves on either side are 60- to 70 mph, and there are river users who require more than 95 feet, but the current proposed meets US Coast Guard standards. The SR 14 interchange issues include weave distance, interchange spacing, and acceleration distance as areas to improve. The Mill Plain interchange issues to improve include substandard ramp grades, and short weave sections. Fourth Plain interchange issues include weave distance and constraints on ramp geometry. SR 500 interchange issues include weave distance and interchange spacing (resulting in significant accidents). Kris noted I-5 northbound ramps are being delayed until stage 2, that the vertical alignment for I-5 be similar to existing with the exception of the new bridge, and that interchange spacing doesn't change in the LPA, but the movement between them will be improved with longer weave sections, and collector distributors. Kris commented that consideration was given to boat traffic users and needs, with some discussion of future needs.

Dr. Galloway asked about consideration for future boat traffic needs, and **Kris** discussed the 10 year boat survey that was done as part of the project, and **Don** noted that the marine fabrication facilities in the area are generally comfortable with the 95 foot proposed clearance. **Kris** noted light rail would be extended to Hayden Island on its own structure and continue on to a loop in downtown Vancouver, in the opened tub of the new bridge structure, rather than via an additional span. **Tim Neuman** asked about the understandings and expectations regarding the number of lanes left open during construction, and **Kris** indicated

they expect three lanes each direction on I-5 with some night time exceptions, and that communities and the project team expect that interchanges will maintain connectivity during construction, particularly for port access. **Don Wagner** brought up **Tim Neuman's** earlier comments, and expanded, saying that screening criteria has continued to evolve through the DEIS. **Tim Neuman** noted that at some point, there was an apparent switch from lots of collaboration and agreement on the problem to dissatisfaction with the project, and offered that if evaluation criteria is established after alternative selection, it results in the process appearing biased. The project team indicated there were multiple distinct designs for each project element included in the DEIS, and that these were refined during the EIS process. **Dr. Meyer** requested to hear more about the criteria used as part of the DEIS in the future, and **Dr. Galloway** requested to hear more about how decisions were made, by who, and who bought into them.

Jeanne Harris, Councilmember, City of Vancouver, expressed her excitement about a new bridge, and has long been involved but only recently begun representing Vancouver on the issue. She indicated Vancouver has planned around the bridge replacement, which has been in discussion a long time, and noted Vancouver's appreciation for their working relationship with the project partners, the project transparency, and the community involvement. She commented that a lot of time has been spent on the project and the city is ready for it to move forward. **Dr. Mike Meyer** asked if the city have an official position on what they would like to see built, and **Jeanne Harris** said they are supportive of the current proposal. **Dr. Mike Meyer** noted concerns about C-Tran funding related to the project, and **Jeanne Harris** expressed that the C-Tran board has 2 schools of thought on how to ask voters for the funding, but is committed to making sure this project is successful, as are many residents. She added that Vancouver is poised for multimodal smart growth with options for residents, and a proper job to residential ratio will be maintained so that residents have the option of working in Washington. **Tom Warne** asked Jeanne what she would do to move the project forward, and she expressed her appreciation for an attractive bridge that residents can be proud of, and noted UDAG efforts. Jeanne would also like to see funding and tolling developed further prior to construction to be sure it happens in a fair and equitable way.

Alan Lehto, TriMet, explained TriMet is a transit operator, and that transit cannot compete like it should with the current configuration with busses traveling in a congested freeway corridor (due to unreliable travel times). He commented that light rail will bring many benefits, including allowing people an option that does not interfere with freight travel, is safe and reliable, and allows for business and growth options in the corridor. He indicated light rail has been designed in collaboration with many groups now in consensus, and that the 5 transit stations to be added are in alignment with the local communities goals. Alan said there will be some bus service continued across the bridge, but other current routes will be replaced by light rail, and though there are no current plans for managed (HOV/HOT) lanes, nothing in the design precludes them and there is some discussion of them. He noted maintenance expansion opportunities at Ruby Junction and parcels identified

as possible maintenance facilities, and said that TriMet did vote for the LPA and supports it. He feels the biggest challenges for transit operating across the border are in the details, including how fares are shared, who takes care of park & rides, etc. They have done fare-sharing arrangements in the past, and there has been some experience with transit during construction as well. Allan indicated that not all the answers been settled, but anticipates no major difficulties.

Tom Warne provided closing remarks and committed to hear everyone who wants to speak at the public comment meeting later that night.

Note: Appendices to this summary can be found online at CRCReview.org.

Columbia River Crossing Independent Review Panel Design Meeting Agenda

Date: May 20, 2010

Location: Vancouver Hilton; Discovery Ballroom

TOPIC	PRESENTER	TIME (Approx)
Welcome	<i>Tom Warne, IRP Chair</i>	8:00 – 8:15 am
CRC Project Team Briefing <ul style="list-style-type: none"> • Traffic Modeling, including Managed Lanes • Design Constraints • Marine Drive Interchange • Hayden Island • Columbia River Crossing • SR 14 Interchange • Light Rail Alignment; Vancouver • Mill Plain/Fourth Plain Interchange; including I-5 from SR 14 to Fourth Plain • SR 500 Interchange 	<i>CRC Staff</i>	8:15 am - Noon
Lunch Break		12:00–1:00 pm
Agency Information Sharing / Comment <ul style="list-style-type: none"> • Traffic Modeling, including Managed Lanes • Design Constraints • Marine Drive Interchange • Hayden Island • Columbia River Crossing • SR 14 Interchange • Light Rail Alignment; Vancouver • Mill Plain/Fourth Plain Interchange; including I-5 from SR 14 to Fourth Plain • SR 500 Interchange 	<i>Jeff Hamm; Executive Director & CEO, C-Tran (1:00- 1:20 pm)</i> <i>Andy Cotugno; Metro (1:20 – 1:40 pm)</i> <i>Thayer Rorabaugh, Transportation Director, City of Vancouver (1:40 – 2:00 pm)</i> <i>Dean Lookingbill, Transportation Director, Regional Transportation Council (2:00 – 2:20 pm)</i>	1:00 – 2:45 pm
Break		2:45 – 3:15 pm

This agenda is current as of May 19, 2010, and may be revised prior to or during the meeting on May 19th.

<p>Agency Information Sharing / Comment Continued</p>	<p><i>Jane Jarrett; Executive Director – Architecture Foundation of Oregon (3:15 – 3:35 pm)</i></p> <p><i>Catherine Ciarlo, Transportation Director, Office of Mayor Sam Adams (3:35 – 3:55 pm).</i></p> <p><i>Jeff Stuhr and Walter Valenta, UDAG members (3:55 – 4:15 pm).</i></p>	<p><i>3:15 – 4:15 pm</i></p>
<p>Wrap up and Adjourn</p>		<p><i>4:15 – 4:30 pm</i></p>

This agenda is current as of May 19, 2010, and may be revised prior to or during the meeting on May 19th.

INDEPENDENT REVIEW PANEL
Columbia River Crossing



Title: **Independent Review Panel Meeting**
Date: May 20, 2010 at 8:00 a.m.
Location: Vancouver Hilton, Discovery Ballroom
Reference: CRCReview.org

IRP Members Present: Tom Warne (Chair)
Bob Ferguson
Dr. Patricia Galloway
Diana Mendes
Dr. Mike Meyer
Mary Lou Ralls
Tim Neuman

IRP Staff Present: Jennifer Vachon (Administrator)
Adam Brown (Notetaker)

Welcome

Tom Warne, IRP Chair, provided welcoming remarks and explained the panel was present to listen and learn in preparation for their recommendations and findings to the governors.

CRC Project Team Briefing

Heather Wills, Environmental Manager, CRC Project, displayed slides and referenced the project notebooks (book 1, tab D, available at crcreview.org) provided to the IRP. Heather provided a brief description of the screening criteria, since it came up the previous day, but is planning to go into it in greater detail at a future IRP meeting. The criteria was developed in 2005 and 2006 during the purpose and need development stage, and there was a lot of collaboration with stakeholders, resource agencies, and the public. They evaluated the component or alternative by determining if it met the purpose and need in a yes or no format, and did not evaluate how well it met it. This was a fatal flaw approach, in that if it didn't meet the need it didn't move forward.

She noted that the task force concurred on screening criteria, as did the resource agencies, and screening criteria was shown at the public meetings held during that time. At the IRP meeting on June 1st, Heather will go through the alternative screening in greater detail. Performance measures did become more quantitative when the 12 alternatives were being screened, after narrowing down from the many options looked at previously. She did indicate that screening reports are found in the DEIS, but the screening criteria is not. **Tom Warne** mentioned the public comment meeting the night before on May 19, and requested an update on the

status of UDAG. **Kris Strickler** explained that UDAG was commissioned by the two mayors who saw a need for unbiased urban design. They met monthly to quarterly until about 4 months ago, had no formal sunset, and Kris expects some future involvement with them. **Richard Brandman** added that UDAG met for some time looking at different possibilities along the alignment, that there are many constraints on the bridge (including marine traffic and air traffic clearance), and that they looked at many, many bridge types and came up with v type pier, and looked at different web designs for the box, and eventually settled on a bridge design. He indicated it was a comprehensive and thorough process, and UDAG unanimously recommended the current bridge type.

CRC Traffic Update

Dave Parisi & Ryan LeProwse, CRC Traffic Team

Dave Parisi, Consultant Manager for Traffic, CRC Transportation Team, provided a traffic update (Appendix A), indicating the project has 7 interchanges very tightly spaced, with lots of weaving, and traffic data was gathered for over 30,000 vehicles. During the peak period, 75% of southbound vehicles and 2/3 of northbound vehicles get on or off in bridge influence area. Dave sees the bridge and influence area functioning as one complex interchange. He indicated much time has been spent on the bicycle and pedestrian path, and there is an advisory group that met, and traffic counts were collected for the path as well. For collision analysis, 5 years of collision records were looked at, and there are many collisions at the bridge head area. Collision rates are 60% higher than you would expect on a similar facility in Washington, and Hayden Island has the highest collision rate on I-5 in all of Oregon. They looked at collision types, and relationships between collisions and congestion and found that during peak periods, twice as many collisions were typical. They looked at non-standard design features, including shoulder width, weaving lengths, acceleration and deceleration lengths, and vertical and horizontal highway alignment and found a strong correlation between substandard features and collisions. Trucks were involved in 50% more accidents than automobiles, and collisions were 3 to 4 times more likely during bridge lift. For travel demand forecasting, Metro/RTC's regional model was used, and the 7-county population is expected to increase by 46% and employment by 65%. A Metroscope analysis was done that integrates economic, demographic, land use, and transportation data.

Tim Neuman asked if this was the model used to discuss induced demand, and **Dave Parisi** told him it was. Dave continued, explaining that a pre CRC project (untolled) looked at a longer study area and 4 through lanes (as opposed to 3 through lanes in CRC) included light rail and found travel times reduced up to 50% (vs. 30% in CRC) and reduced auto trips over the river. The previous (Metroscope) project used an older data set with different land use values than the CRC modeling (which isn't Metroscope. A Metroscope model has not been run on the CRC). **Tim Neuman** asked if a forecast beyond 2030 has been done, or if there has been any discussion about the corridor farther out than 2030, and was told no modeling beyond 2030 has been done. **Dr. Patricia Galloway** asked if impacts to I-205 resulting from CRC and tolling were looked at, and **Dave Parisi** said they did modeled I-205 to understand the impacts. Dave indicated they used EMME/2, VISUM, and VISSIM

models. **Mike Meyer** asked about toll modeling, and **Dave Parisi** referenced highway design for lengths and speeds, and that a modeling working group was involved in the toll modeling. Time penalties were assigned, and details can be found in project notebook 2, tab H (available at crcreview.org).

The VISSIM model looked at 22 miles to understand the project in context, and Synchro/SimTraffic models were also used. Model results were presented on screen for the IRP and bottlenecks were pointed out.

No Build- CRC looked at the no-build alternative, which does include Rose interchange improvements and other minor improvements planned, and the biggest expected growth rate was in trucks (77%), with remainder in automobiles.

Southbound, the bridge would be the bottleneck, and traffic that got through would back up at 405 as well. Northbound under no-build, the bottleneck at the bridge gets worse with increased traffic demand and new backups developing upstream of the project. This led to the forecast for 2030 under the no-build scenario that congestion would increase from 6 to 15 hours per day (total for both directions).

Tim Neuman asked if the various groups, task forces, and stakeholders accepted this as a reasonable representation of a long range no build scenario, and **Dave Parisi** replied that it varied. The modeling working group was confident with it and studied areas that do have 15 hours of congestion a day, such as Puget Sound and San Francisco, but other people didn't see it as reasonable. **Tim Neuman** asked about the thoughts behind those that didn't see it as reasonable, and **Dave Parisi** indicated he wasn't the best person to speak to it, but thought some people just didn't think 15 hours per day of congestion was realistic. **Diana Mendes** asked how the no build alternative relates to the New Starts baseline, and **Dave Parisi** suggested the next speaker, Steve Witter, would be a better equipped to respond to the question.

LPA- There is a lot of on/off traffic in the bridge influence area and the LPA really depends on add/drop lanes, so CRC put significant effort into educating people about add/drop lanes, including what they are, where they are, and what benefits they bring. Add/drop lanes are non-through lanes that connect ramps to facilitate acceleration, deceleration, weaving, merges, diverges, and high on off volumes. The LPA has 3 through lanes, a 4th add/drop lane (often already existing), and in some locations a second add/drop lane is added for 5 total lanes. In 2030, the LPA southbound shows traffic levels south of the project very similar to today, indicating the LPA will not add significant traffic, due to tolling, adding a mass transit option, and the addition of add/drop lanes but not through lanes. NB shows a big change over no build with constraints in the bridge area removed, but Rose Quarter issues remaining. Congestion was modeled at 6 hours per day under existing conditions, 15 hours per day in 2030 under the no-build scenario, and 4.5 hours per day in 2030 under the LPA phase 1. **Tim Neuman** commented that this modeling was done to show the impacts of the LPA, and asked what modeling was done to determine what the LPA should be. **Dave Parisi** explained that this was done prior to development of the LPA and that similar models have been done for many alternatives and sub alternatives, and a technical traffic report has been produced.

Tim Neuman wondered if everyone understood and trusted the technical work that was done, and **Mike Meyer** asked if tolling was applied to all scenarios or just the LPA. **Dave Parisi** indicated that yes, a baseline tolling scenario was applied to all build scenarios. **Mary Lou Ralls** noted that one of the big improvements is safety, and asked if any studies were done on the expected crash reductions. **Dave Parisi** said yes and referenced a study done that looked at crash scenarios in a facility built to standard, and panel members expressed an interest in seeing it. **Dr Patricia Galloway** asked to clarify that Dave did technical analysis on all of these alternatives but was not involved in the decision making that resulted from his technical analysis. **Dave Parisi** clarified that not all scenarios had been modeled to the same level of detail, the results and modeling group efforts were very transparent, and that he was not involved in the decision making but just the technical analysis. **Bob Ferguson** questioned the southbound benefit if there is a bottleneck just south of the project, and **Dave Parisi** explained that there is no increased throughput to south, but improves merging, diverging, weaving, port access, Hayden Island access, and high on/off traffic. **Tim Neuman** asked if Dave did a scenario of diverting traffic onto I-205, and **Dave Parisi** thought that it had been looked at and determined not to meet purpose and need, but wasn't entirely sure. Panel members expressed interest in any work done related to the question.

Tolling- Dave Parisi continued on to discuss tolling, and explained the project assumed all electronic toll collection on the bridge itself, and had looked at variable tolling. If I-5 is tolled, most trips still stay on I-5 rather than diverging to I-205, which is congested itself. If both I-5 and I-205 are tolled some I-205 trips return to I-5, there are less total river crossings (on both bridges), but more crossings on I-5 as it is the preferred route. Many tolling scenarios were looked at and studied.

Managed Lanes- Dave Parisi indicated CRC did look at managed lanes, including HOT and HOV. 68% to 75% of bridge traffic enters and or exits within 5 miles of the project area, making an HOV lane difficult to access (on top of the already short interchange spacing and short weave distances. Many people wouldn't have time to get to an HOV lane. A southbound managed lane would terminate just south of the project, and a northbound managed lane would not offer enough time-savings to be effective. It was noted that managed lanes could be helpful if implemented in the region, but not if used just within the project.

Bicycle/Pedestrian- Dave Parisi noted the area is famous for the number of pedestrian and bicycle traffic, with very high percentages of mode share. CRC did bicycle and pedestrian modeling, and anticipate about 1,000 pedestrians and up to 5,000 bicyclists per day. **Bob Ferguson** asked about tolling options for visiting facility users versus local users, and **Dave Parisi** indicated regular users would have a transponder, and technology is available for occasional users to be billed later via license plate, or prepay via cell phone, or internet. **Richard Brandman** joined **Dave Parisi** and touched on several issues that had been asked. He noted we are in a high growth region for both population and employment, and that the Bi State Committee is a subcommittee of Metro, that looked at the land use forecasts for 6

months prior to the CRC modeling and agreed on land use assumptions for both sides of the river. They used 2030 forecasts because that is what was available, and pointed out the Metro modeling data has been highly renowned and scrutinized with a 5% to 10% accuracy. Concerns he has heard relate to induced demand and questioning if different alternatives create different land use predictions, justifying running models with different land use assumptions rather than consistent ones. Richard indicated CRC would like to model further out than 2030 but don't have the data available. There are discussion about running a Metroscope model, with benefits and concerns being considered. They hear concerns asking to make the project smaller, but also requests to look farther into future. CRC provided modeling information to decision makers in a variety of ways to inform the LPA decision, and Richard referenced a chart he believed was in the project notebooks that showed multiple number of lane options and their effects on hours of congestion, collisions, number of crossings, and the potential to incorporate HOV. Many of the issues IRP asked about today were addressed during the LPA selection process. **Tim Neuman** asked how the concern to look beyond 2030 was addressed, and **Dave Parisi** said they looked at growth rates and trends beyond 2030 to get some information, but don't have the tools to do 2040 land use forecasts.

--Break--

Extending Light Rail To Vancouver

Steve Witter, Transit Manager, CRC Project, provided a slide show presentation (Appendix B) and history of light rail in the region, currently 52 miles long. CRC is only a 3 mile extension but opens the market to 8000+ daily riders, and light rail was selected by all jurisdictions associated with the project. BRT & LRT were both examined in the DEIS, and the LPA named LRT as the preferred mode. Significant bus issues include unreliable service due to busses sitting in traffic. The no build alternative added busses, but they would still be stuck in congestion so did not resolve the issue. Alternatives looked at separate alignments for LRT across the river and Hayden Island, which used to be more of a big box retail destination but is moving away from that. The Hayden Island community has been involved, and the Portland Working Group started in May of 2009 and came up with station design recommendations, and a ring road has been looked at as well. Alternatives for the light rail alignment in Vancouver have been looked at, and a citizen advisory group met every other week from January 2009 until July 2009 to look at the alignment. They made recommendations that were passed on to the city council, who gave the green light on the current proposal after some details were worked out. Neighborhood concerns included the recent remodel of McLoughlin Boulevard, and the resulting increased popularity with pedestrians and increased parking. Steve noted TriMet has a successful construction record with minimizing downtown impacts. Operating costs will come from Clark County, and a recent poll showed 61% voter approval for increased funding, and they are seeking \$1.2 billion in Federal funding. **Tim Neuman** asked how LRT was chosen as the preferred mode, and **Steve Witter** noted reliability issues and higher operating costs associated with BRT, and that Transportation Systems Management (TSM) options were analyzed,

with BRT both in general lanes and in specific busways analyzed in the DEIS along with LRT. There were a variety of reasons LRT was chosen. It was noted the New Starts Baseline was based on the best that could be done with busses (more busses running more frequently but with less total trips than LRT due to lower forecast demand), not existing bus service. A traditional no build alternative was used for the NEPA document.

Marine Drive Through Hayden Island

Casey Liles, Highway Engineering Manager, CRC, WSDOT, provided a presentation (Appendix C) and handout, and provided a project overview, stating that in Washington, 1 in 4 jobs and in Oregon 1 in 5 jobs is related to freight. Marine Drive interchange constraints and resources noted include the Port of Portland, LRT station and Expo Center, Vanport Wetlands to the south, Delta Park to east, and a levee to the north. Concerns include geometrics, high freight movement on southbound I-5, turning left on Marine Drive, and trucks turning left again to northbound I-5 when leaving the port. The mainline weave is only 63% of standard south of the interchange southbound, with significant weave activity. The bicycle and pedestrian connectivity is complicated and routes and facilities are unappealing. Interchange spacing is very tight. In the evolution of how they got to the current design, they looked at the existing with flyover, directional, and diverging diamond. In alternatives packaging, 12 alternatives are discussed with traffic information. Cost was a consideration in the selection, rather than just considering best traffic flow. The DEIS contained 3 interchange alignment alternatives.

Tim Neuman asked what commitments and promises were made to the interchange users, and **Casey Liles** indicated DOT has always said maintaining traffic is a priority, but that there will be minor closures as necessary. Numerous options were looked at for the Bridgeton connection including gyratory, MLK roundabout, and a local roundabout. Concerns about funding led to the separation of the eastbound to northbound flyover and Victory Boulevard braided ramp until stage 2. These movements would go to the SPUI, and would see improvements when the project opened. The forecasted need for these is 10 to 15 years out. **Tim Neuman** asked if these phase 2 elements can be added at a later date without impacting traffic, whether it is a good idea to delay them, and if they are designed to added in successfully later, and it was determined this would be discussed in greater detail at the next meeting. **Dr. Patricia Galloway** requested to see the impacts to the cost estimate, particularly how much more the flyover ramp will cost if it is delayed, and it was determined this would be addressed later. **Tim Neuman** asked if the same engineers had been working on the team long term, and **Casey Liles** indicated the same general design team was in place, with some standard turnover. Casey continued, saying I-5 is the only access to Hayden Island, which contains some retail, a Safeway, PDX airspace, and the largest floating home community in Oregon. The ramp for Hayden Island to I-5 northbound is very short for acceleration and there are no shoulders across the bridge. The southbound ramp has retail at the ramp terminal. Multi modal traffic is separated by a single traffic barrier and has poor connection, route, and facilities on Hayden Island. CRC looked at several

interchange alternatives for Hayden Island including SPUI, folded diamond, and split SPUI. Of the 12 alternatives, alternatives 3 through 5 did not have an interchange on Hayden Island. The 12 alternatives were studied for over a year and led to the DEIS package, and engineering drawings exist for each alternative. The City of Portland developed the Hayden Island plan. Alternatives 3 through 5 keep the existing bridges, so the new bridge would not need a lift span for clearance, but the existing bridge still would. As a cost saving effort, CRC looked at retained fill replacing structures, which requires lowering the mainline profile over Hayden Island, and using the existing structure for North Portland Harbor. The refined package does impact Safeway, while the previous plan does not. There have been comments that the fill (versus elevated structures) cuts off the parts of the island. In the overhead plan, there will be a similar barrier effect due to the ramps and it will have a higher structure, so it isn't an ideal pedestrian facility either way.

Tim Neuman asked if a half interchange was ever considered for Hayden Island, and **Casey Liles** indicated it was not. Casey explained some of the Hayden Island community benefits include better access and safety, proposed local street improvements, improved multi-use trail, bike lanes, and a transit station and plaza. **Tom Warne** asked if there is a traffic need for the proposed Tomahawk Drive, and **Casey Liles** explained that there wasn't, that it is a central community spine issue. **Steve Witter** stepped in to explain the Hayden Island plan is to turn the big box retail center into mixed use residential for some parts. There is expected to still be some regional retail use, and there is an air traffic noise area on the island. **Dr. Patricia Galloway** noted that some of the sales traffic is expected to be Washington residents crossing the border to benefit from the lack of sales tax in Oregon. Steve Witter exited the conversation. **Tim Neuman** asked if the Hayden Island interchange were altered and Hayden Island traffic diverted to Marine Drive, would the Marine Drive interchange need to be redesigned? **Casey Liles** indicated maybe, that it would need to be looked at, and the flyover and braided ramps might be needed sooner. **Bob Ferguson** asked for information on why Tomahawk Drive is being added if it is not really needed, and **Casey Liles** explained that a 3rd east west connection is something many residents and local agencies want, so CRC has intended to include it. CRC did look at on island and off island exchange concepts. **Tim Neuman** asked about public response to the idea of not having I-5 ramps to Hayden Island, and using a West Bridge concept, and **Casey Liles** indicated the plan does have a lot of structures and is very early in design with lots of analysis still to do.

River Crossing

Frank Green, Structures Engineering Manager, CRC, provided a presentation (Appendix D) and handout, explaining there are 13 endangered species in the project vicinity. There are many piers in the water today, and CRC is trying to reduce the number, so are looking at large diameter drilled shafts instead of driven piles, and they recently submitted the Biological Assessment. There are both aviation traffic and river navigation concerns with the elevation of the bridge. The river navigation path has 3 channels, with the lift span as the primary path. The goal is to not have lifts during peak traffic, but the Coast Guard says river traffic is the

priority and shippers indicate they don't plan their trips around peak road traffic. A boat study was done and 98% of boats would be accommodated by 88 feet of clearance. 95 feet of clearance is a result of 88-foot clearance combined with varying water levels. There is a sailboat manufacturer east of the structure that has requested a higher clearance, but the coast guard is comfortable with the current project direction. The current bridge has narrow lanes and shoulders, the bike path is narrow and people don't want to use it, there is limited sight distance with the hump, and safety concerns with lift events. During the bridge design evolution, many ideas were screened, including anything with a lift, a tunnel was determined to be unsuitable due to topography on the Washington side, and high level bridges. Supplemental bridges were looked at with different variations. The DEIS version was a new bridge for southbound traffic and transit and existing bridges for northbound. The Coast Guard indicated there might be more requirements for a non-freeway bridge. Factors influencing replacement bridge alignment decisions include historical and cultural property impacts upstream, and water species impacts due to longer construction schedule, so a downstream alignment was chosen.

Tim Neuman referenced a Mississippi River bridge project, and asked if one bridge could be built now and the older bridges replaced in the future when funds are available, and **Frank Green** indicated this was looked at some.

Frank continued, explaining that a value engineering study looked at sub and super structure types, and different box girder options, and came up with the idea of using the box for transit and the bicycle and pedestrian path. DEIS alts slide 30. In late 2008, CRC got together bridge experts from both DOTs, FHWA, and other agencies to look at every bridge type. 10 of 24 options were suggested for further study. All cable stay bridges were removed, and calculations and plan sheets and contractor estimates were developed for each type. The two-bridge open web box girder option was approved by many partners. UDAG was very active until about 6 months ago, developing high clip guidelines for the entire corridor, which are included in the IRPs project notebooks, and CRC is currently working with bridge designers to develop something to show UDAG to convey what engineers can do with their concepts. **Tim Neuman** suggested this plan be communicated to UDAG, since they have expressed feeling abandoned. **Mary Lou Ralls** encouraged CRC to communicate the bridge height limitations to the public, since there are ongoing requests for a signature bridge with towers that would violate this requirement. **Frank Green** indicated they would continue and/or expand both these efforts. He also explained that the width of bridge was not a determining factor in the selection of the bridge type, but that a purely a structural approach was used. **Tim Neuman** noted that the bridge type would not allow the bridge to be expanded if demand warranted it in the future, and **Frank Green** agreed that it is unlikely the bridge would ever be expanded. **Bob Ferguson** asked if the bridge could be modified at a later date to move the bicycle and pedestrian path outside of the box to hang under the deck, and **Frank Green** indicated it could. Frank also noted that staging and constructability have been looked at as part of the Biological Assessment efforts and

in working with the Coast Guard on their concerns regarding navigation during construction. He indicated they are working closely with Coast Guard.

--Lunch--

SR 14 through SR 500

Casey Liles, Highway Engineering Manager, CRC, provided a presentation (Appendix E), and handout, and explained that SR 14 and 500 are the main east west routes in the area, and that three traffic signals on 500 are planned to be removed. SR 14 to I-5 southbound has substandard geometrics, and I-5 northbound to SR 14 eastbound is substandard for deceleration. The mainline weave is substandard, and mainline horizontal and vertical alignments are substandard. Different alternatives were looked at, and the dual loop was moved forward and is in the DEIS. There are tight vertical limitations with the Burlington Northern line underneath, the bicycle pedestrian ramp coming down, and the transit ramp from lower level to downtown Vancouver. As part of the 2009 refinements, CRC looked at the SR 14 to SR 500 connection, and changed it from an add lane to a merge lane to save structure size.

Tim Neuman asked if ramp meters were the design intent for highway-to-highway interchanges, and **Casey Liles** indicated it was, with local ramps having adequate storage. Casey continued, explaining that Mill Plain is the primary entrance for the Port of Vancouver, and serves downtown businesses. Mill Plain has many constraints, including a community center, neighborhoods, the Port of Vancouver, and cemetery. Ramps to the north have substandard grade, were recently replaced with concrete due to high maintenance costs from heavy freight traffic on the grade. The south side of Mill Plain has low clearance under I-5, and CRC looked at different interchange alternatives including SPUI, tight diamond, and diverging diamond.

Tim Neuman expressed interest in the diverging diamond, and requested more information on why it was screened. **Casey Liles** continued, explaining that the Fourth Plain SR 500 interchange is constrained by neighborhoods, a hospital, a park, and a cemetery, and that the mainline weave, ramp geometry, turning radius that does not accommodate trucks, and tight interchange spacing are concerns. CRC looked at options including folded diamond, eliminating the northbound ramp, and a braided ramp. The SR 500 interchange is constrained by a park, a school, and neighborhoods. Alternatives examined include an I-5 to SR 500 tunnel and I-5 to SR 500 flyover. Improvements include adding braided ramps, which do remove access from SR 500 to Fourth Plain interchange. Fourth Plain does provide the park and ride access, and the park and ride is important for transit ridership, so removing it from the project is a concern.

Jeff Hamm, Executive Director and CEO, C-Tran, expects a transit split of over 1/3 to express bus service, and noted that the existing short HOV lanes are critical to C-Tran. There was an HOV lane on I-5 that was eliminated in 2005, which increased travel time 40%. The LPA doesn't include HOV lanes, and Jeff doesn't think there is a design currently that allows for shoulder striping to add an HOV lane. HOV is not included because it won't save enough travel time to justify it, and C-Tran accepts

that, but feels it makes sense to have the potential to add one later, should it be warranted.

Dr. Patricia Galloway asked who will own the new park and ride, and **Jeff Hamm** indicated C-Tran will own and maintain it.

Dr. Mike Meyer asked if the flexibility for a managed lane needs to include ramps, and **Jeff Hamm** replied that, yes, it needs to work. He reiterated that he wants to have a provision to be able to add it, and is not asking for it now.

Andy Cotugno, Metro, provided some background, saying that in the 1980s Portland said they didn't want a new bridge without mass transit. In the 1990s they looked at light rail without highway improvements and Clark County said no to this, so doing both together seems right. This is an aggressive transit expansion, and double transit ridership is expected, and high bike ridership is also expected due to system enhancements. The focus on transit oriented development also helps to increase transits ridership bicycle use. Andy indicated a corridor improvement seems important, the freight needs makes the bridge bottleneck an Oregon concern not just a Washington commuter issue, as does the ability to get emergency services to Hayden Island. He understands this spot is unusual for its flows with all the feeder routes, and noted the region policy to have a six through lane solution is not set in stone. Metro wants a transit pattern that makes six lanes work, with managed lanes and good bike facilities, and is not trying to facilitate an ever increasing capacity. It is important to understand the actors in the region. Many want to make it the 'greenest' urban area, and they buffet the politicians. He indicated the number of lanes decision undermines regional policy, guessing that the current level of service is C, and that a conscious decision was made to accept some congestion rather than spend the money required for an A level of service. There are concerns the project is oversized, and about characterizing the project as 4.5 hours of congestion because this is so minor compared to existing congestion levels. He would like to see demand dampened through TDM and pricing and a corresponding lane reduction. There is a new transportation plan every 4 years, and new urban growth plan every 5 years, and they forecast increased growth each time, and CRC effects on greenhouse gas need to be studied. He supports the idea of the Mobility Council, and is concerned about Hayden Island impacts with so many structures, whether the community understands the impacts, the feel on Tomahawk Drive, displacing Safeway, and the footprint on the island. Other concerns raised include the difference in design speed on the two sides of the river, NEPA risks, community justice, induced growth, tolling, state funding contributions, and HOV fitting into a 6-lane system.

Dr. Mike Meyer asked if the auxiliary lane is a critical issue just in Hayden Island, and **Andy Cotugno** indicated the northbound mainline is light due to high Marine Drive traffic, so one could be managed, otherwise it is more of a general corridor issue. **Diana Mendes** noted there would be 4 ramps for only 2,000 residents on Hayden Island, and many of them are retired, and asked why redevelopment is focused on Hayden Island when there are obvious limitations. It was noted the redevelopment does not displace residents.

Thayer Rorabuagh, Director of Transportation, City of Vancouver, provided a presentation and handout. (Appendix F) He offered background on the city, saying the project is in a very developed area, densely populated, and there isn't much room for the city of Vancouver to grow. Population is expected to double by 2030, with growth to the north. The city is experiencing and expecting continued development downtown and along the waterfront, and planning to put the current railroad underground. He noted the importance of Mill Plain, and that the current proposed interchange at SR 14 allows for southbound on and northbound off ramps which are important because the city system will fail without these access points due to increased traffic on city streets. He noted that merging a lot of traffic in a short distance is resulting in backups impacting City of Vancouver, and that many drivers will not get into 3 through lanes due to high percent of short trips. With SR 500 coming on, there is no way to exit to Fourth Plain off, a movement that exists today but will be removed as part of the current project. It is important that movement be restored. LRT concept is the one-way urban couplet with 3 urban park and rides. At SR 14 two concepts are being considered for park and ride lots. The new bridge structure comes over the Burlington northern tracks, which provides the opportunity to extend Main Street all the way to the water. A design charrette was held with local architects and urban planners regarding what could be done at the waterfront. The city is looking forward to a lid on I-5 to reconnect the downtown with the national park at Evergreen Boulevard, and looking forward to reclaiming the space under the current bridge and creating an asset for the city to enjoy. UDAG was chaired by both mayors, included local architects, worked hard to find agreement, and will add value to the city.

Diana Mendes asked if the park and ride lots would be mixed use, and **Thayer Rorabuagh** said absolutely, citing the downtown facility could be overflow parking for the conference facility, and noted the increased need due to downtown development residential projects. **Tim Neuman** asked Thayer to comment on induced demand. **Thayer Rorabuagh** explained that when 205 was opened it was a classic example of induce demand, but they don't see this project as inducing demand. Development will happen, but demand has happened because of the school system, many would like to not pay state income tax, and Vancouver will see an increase of employment balanced with Portland.

Dean Lookingbill, Transportation Director, Regional Transportation Council (RTC), (no slides), explained RTC is the MPO for Clark, Skamania, and Klickitat Counties, with a board of 14 voting members. RTC was a signatory agency for DEIS and will be for FEIS, with some comment and suggestions for research requests. I-5 is an interstate freeway but functions as an inner-urban freeway, and he suggested looking at the design standards in the framework of urban freeway design, often in the 40mph range. Drivers in a 70mph design speed confronted with slower traffic creates a safety issue, and money might be saved if a lower design speed were used. Context sensitive design is important as discussed. There seems to be agreement on 3 through lanes. What is the context sensitive design around freight, and footprint. Extensive models were developed for the project area, and he would like to see a review of up and down stream impacts. Select link analysis was mentioned, as was

greenhouse gasses, freight, induced growth or demand, and a request for IRP to look at those issues. Finance uncertainty is another issue, with tolling, many facets to consider, and equity issues.

--Break--

Jane Jarrett, Executive Director, Architecture Foundation of Oregon, provided a DVD (Appendix G). The foundation is not typically involved in advocacy, but is concerned about how little it seemed the public knew about the project and its implications. Media coverage was not helping the public understand, and only covered cost and number of lanes. They partnered with PDXplore to increase public understanding. In March, they mounted an exhibit at the College of Art to raise conversation and over 500 attended, including their own independent review panel to provide fresh eyes. The DVD provided has a 20-minute summary of their panel's findings. She pleaded that IRP convey to the governors that the vast project short falls. She also introduced PDXplore members Rudy Barton, Mike McCulloch, Bill Tripp, and Rick Potestio. **Rick Potestio**, PDXplore, indicated we have the opportunity to elevate this project to one of global significance. It has the potential to greatly enhance Portland and Vancouver. The bridge bundles all the modes into one structure, which is not ideal for any one mode and exacerbates the interchanges, particularly at the sides of the river and Hayden Island. He believes it will induce sprawl, and facilitates modes of transport that will become obsolete, and downtown Portland will need to enhance its freeway as a result of project. Cities globally are reconnecting with their rivers, and a bridge of this stature should respond to the communities' highest aspirations. The Oregon coast has many beautiful bridges and this one should aspire to that standard.

Bill Tripp, PDXplore, feels the project scope needs to be expanded beyond a freeway project. He suggested unbundling the bridge, possibly with pass through traffic on the upper level and local traffic on the lower level allowing downtown Vancouver and Hayden Island to be saved, and allowing development, which adds to the economic vitality of the region. Portland Meadows is ideal for development in the future and the freeway should serve communities, not the other way around. Cities of Portland and Vancouver share the watershed, and ports need to be thought of as a combined entity. If the bridge embodies the values of the communities, it could be a symbol for the region. Unbundle the bridge, expand the scope, and make this a project that gives us a substantial return on investment. His interest is in shaping the project as a catalyst for the community, and the current path is not a good one.

Dr. Mike Meyer asked if there is a recent bridge they would point to as a good example of their vision, and **Bill Tripp** indicated the Orson Bridge is a precedent symbolically, but there is no precedent for the form. Freeways didn't exist when the current bridge was built, and we should build to what transportation will be 100 years from now. **Tim Neuman** asked if they were aware of the UDAG efforts, and they indicated they put their shoulder to the wheel that got the group formed, and explained that UDAG was charged with responding to CRC proposals, while PDXplore had the freedom to approach CRC from a wider angle. **Mary Lou Ralls**

asked if the type of symbolic bridge they envision could be built within the airspace constraints of the project, and PDXplore replied, yes, that they deal with constraints everyday- it is what they do, and also noted that the limitations could be revisited.

URS Status

Ron Higby, Project Manager, URS, provided slides and a handout (Appendix H), and was introduced by Catherine Ciarlo, Transportation Director, Office of Mayor Sam Adams. Ron is assisting the City of Portland with their review of the CRC project, and is utilizing URS experience from around the country. His purpose is to aid the city in decision making related to CRC, due to the city's limited highway expertise. Portland had 4 key things to look into.

- 1 Satisfactory performance of all project elements
- 2 Priority of freight mobility
- 3 Does not back up traffic from south of project area.
- 4 Is it cost-effective and fundable?

From this scope definition come questions, including can LPA be modified to a smaller facility that performs effectively in 2018 & 2030? Will the project remain effective after opening? How will I-5 south of project work in a.m. peak in 2030? Will current back up negate CRC improvements? Can Marine Drive interchange be reconfigured to accommodate Hayden Island local and freeway access? URS is 5 to 6 weeks into their work, halfway to the finish at the end of June. They reviewed current plans and traffic analysis, and identified three concepts for a reduction in the number of southbound lanes, and are working with CRC staff. They also identified three concepts for integrating Hayden Island access with a reconfigured Marine Drive interchange as well, and next steps include evaluating concepts, and reviewing traffic model.

Tim Neuman asked if URS is working with stakeholder groups, including Hayden Island, and **Ron Higby** indicated the scope allows for it, but the city is doing the majority of this outreach work with URS providing backup support. **Tim Neuman** noted the value of the URS work will be determined by whether the city stands behind it at as a solution, which requires sensitivity to the Hayden Island community. How does the URS scope allow for working with Vancouver? **Ron Higby**-it is our intent to work with integrated project staff to get to all of the stakeholders. **Catherine Ciarlo** indicated the city organized a number of outreach meetings and will continue to. **Tim Neuman** asked at what point Catherine sees the PSC making a decision on what to support, and **Catherine Ciarlo** indicated URS should be completed in June, there is a need to keep moving, and it isn't known yet what will happen in July. She explained the intent with URS was to look at other options in pursuit of greater consensus, and that ideally the PSC will discuss advantages and disadvantages rather than having URS pick an alternative. **Tom Warne** noted it would be helpful to know about the URS concepts and responses to them, for the IRP findings. Catherine and Ron expressed an interest in presenting these to IRP. **Diana Mendes** noted they have heard about a 3-year collaboration to reach the LPA, so some people must think these decisions have already been made, and **Catherine Ciarlo** responded that there was agreement on LPA on 3 through lanes, up to 3 auxiliary lanes, light rail, tolls would be used, and weaves addressed.

Portland believes that consensus is still in place and design developments haven't negated it. The community wants a project built, even if the design changes some, and part of the process is designing something that works for everyone and once a price is assigned changes may need to be made. The next PSC meeting is June 11, 2010, and IRP may be able to get feedback after that on URS's concepts.

Bob Ferguson asked if the URS concepts are plan B, and **Catherine Ciarlo** feels it is a refinement of the current plan in hopes of finding something that everyone can be happy with.

Urban Design Advisory Group

Ed Carpenter and **Walter Valenta**, from UDAG presented. Ed Carpenter replaced Jeff Stuhr who was stuck in traffic. UDAG was put together by the mayors of both cities, consists of members with urban design experience, is somewhat technical and somewhat subjective, and is charged with being critics of the project. In many ways the project has become so lean many of the guidelines don't apply. UDAG is having a hard time understanding the process currently. The project began as a traffic problem and spread to surrounding areas. Another project could start with addressing how to better use the river. There is virtually no attention to the river banks opening up for recreation, it is all about getting freight through and traffic opened up. The designer employed for the project was chosen because he was willing to give 100% of his time, which may not be the right reason to choose someone. UDAG scope was always to react, never to be proactive. **Walter Valenta** has been involved with project for ten years. The parameters of Pearson air space were accepted early on. They looked for a series of ways to reconnect what the original freeway divided. CRC has always listened to UDAG recommendations, although results weren't always what UDAG wanted. Since the south bridge has fewer height restrictions it should be the signature bridge, additionally it is smaller for reduced costs. UDAG didn't choose or have much influence on the bridge type, but Walter is happy with it. UDAG feels abandoned, insulted and dismissed after all their work and doesn't know what is happening now. **Ed Carpenter** questioned whether the project rises to the level it deserves, with gateways to two states, views of mountains, and neighborhoods that deserve to be connected. It deserves the best design in North America, but hasn't reached a level of refinement and grace and elegance it deserves partly because of a lack of high-end leadership (from governors). Ed wants to be proud of the crossing in 50 yrs. **Walter Valenta** indicated the first project was a freight problem study, regional consensus was reached to keep the same corridor, the LPA was developed, and UDAG thought this was 1% design and they'd keep working. He noted the DOTs have exercised their power to take control, so even the PSC is just advisory. It started as a citizen effort but became a DOT project.

Richard Brandman and **David Parisi** provided a handout of a chart of traffic data (Appendix I) that was used by decision makers when deciding on the number of though lanes to include. **Dr. Mike Meyer** asked if non-traffic related criteria was used in the number of lanes decision, and **David Parisi** indicated it was. David went on to explain the chart included no build, 8, 10, and 12 lane options, looked at hot

spots, and showed level F service southbound in the a.m. and level D elsewhere due in part to merge, weave, safety. Combined hours of congestion was looked at, and expected number of collisions (lower for more lanes), tolls, ADT in peak periods, transit ridership, and diversion onto 205 resulting from tolls. The add drop lane comparison shows a variety of alternatives for the 5 mile area (not the 22 mile area). Many people are confused about the limits of add drop lanes but they are shown on the handout. Hayden Island interchange expected a doubling of ramp volumes due to redevelopment planned there.

Richard Brandman, in response to Tim Neuman's earlier question about an arterial only bridge to Hayden Island, explained that CRC didn't present all alternatives to the IRP initially since they will be covered in the environmental presentation at the next IRP meeting. He noted that Portland is the city that plans, and that there are many purpose and need issues related to arterial only, including bike access, and safety. Tomahawk drive is included because the DOTs are trying to be good partners to Hayden Island. He noted the importance of distinguishing between neighborhood impacts and environmental justice issues, and not including both under the environmental justice heading. He does expect development in the corridor, hopefully around the transit stations.

Tom Warne offered closing remarks, and indicated the next IRP meeting will be June 1st at 8 a.m. with the location to be determined, with a community comment session in the evening.

Note: Appendices to this summary can be found online at CRCReview.org.

Columbia River Crossing Independent Review Panel Planning/Environmental Meeting Agenda

Date: June 1

**Location: Hilton Vancouver; Discovery Room
301 W. 6th Street, Vancouver**

TOPIC	<i>Presenter</i>	<i>TIME (Approx)</i>
Welcome and Kickoff	<i>Tom Warne, IRP Chair</i>	<i>8:00 – 8:15 am</i>
Technical Briefing by CRC Staff - Planning / Environmental: NEPA process (including stakeholder involvement) <ul style="list-style-type: none"> • Background: I-5 Partnership • CRC Notice of Intent • Scoping • Resource Agency process • Purpose and Need • Problem Definition • Vision and Values • Evaluation Criteria • Alternatives Development and Screening <ul style="list-style-type: none"> ○ Components ○ Packages ○ Alternatives for DEIS • DEIS process and hot topics <ul style="list-style-type: none"> ○ Analytical methods ○ Induced Growth analysis ○ GHG/Climate change analysis ○ Environmental Justice ○ DEIS comment period 	<i>Richard Brandman, Don Wagner, and CRC Staff</i>	<i>8:15 - Noon</i>
Lunch Break		<i>Noon – 1:00 pm</i>
Technical CRC Staff Briefing Continued...	<i>Richard Brandman, Don Wagner, and CRC Staff</i>	<i>1:00 – 2:00 pm</i>
Panel Q&A / Discussion	<i>IRP, Project Staff</i>	<i>2:00 – 3:00 pm</i>
Wrap up and Adjourn	<i>Tom Warne</i>	<i>3:00 pm</i>

This agenda is current as of May 25, 2010, and may be revised prior to or during the meeting on June 1st.

Panel Executive Work Session / Dinner	3:30 – 6:30 pm
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Community Comment Session

Location: Hilton Vancouver; Discovery Room

<i>Individuals are welcome to share information with the IRP. To be ensured a slot to talk, please sign in by 7:30 pm.</i>	<i>7:00 pm – until all comments heard</i>
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INDEPENDENT REVIEW PANEL
Columbia River Crossing



Title: **Independent Review Panel Meeting**
Date: June 1, 2010 at 8:00 a.m.
Location: Vancouver Hilton, Discovery Ballroom
Reference: CRCReview.org

IRP Members Present: Tom Warne (Chair)
Rodney Brown
Bob Ferguson
Dr. Patricia Galloway
Diana Mendes
Tim Neuman
Mary Lou Ralls

IRP Staff Present: Jennifer Vachon (Administrator)
Adam Brown (Notetaker)

Welcome

Tom Warne provided opening remarks and introduced the panel. He noted Dr. Mike Meyer is not present, and outlined the agenda for the day.

NEPA Process (Appendix A)

Jeff Heilman, CRC, indicated he will discuss the project background, including pre-Columbia River Crossing Project (CRC), early CRC, alternatives development and screening, starting the Draft Environmental Impact Statement (DEIS), DEIS commenting, and DEIS hot topics. Key studies related to CRC include the 1993 to 1998 South/North Corridor Study, the 1999 to 2000 Portland/Vancouver I-5 Trade Corridor Freight Feasibility and Needs Study, and the 2001 to 2002 I-5 Transportation and Trade Partnership Study, which included a 26 member bi-state governors' task force.

Their efforts included the MetroScope model, creating a strategic plan, community outreach, and recommending looking at the full corridor from I-205 to SR 84. They recommended new transit and vehicle capacity, three through lanes, up to two auxiliary lanes, light rail transit (LRT) across the Columbia River, balancing the on and off movements, safety considerations, and starting the Environmental Impact Statement (EIS) process. They recommended including both replacement and supplemental bridges, as well as separate and joint use bridges in the EIS. Items not recommended for inclusion in the EIS are a west arterial road, collector distributor bridge concepts, land use only changes, transportation demand management (TDM) only changes, and new bridges west of I-5 or east of I-205. They did recommend

looking at a loop LRT system (crossing at I-5 and I-205) and adding a 3rd lane in some spots outside the current project area.

They did a Metroscope analysis with four through lanes farther north than CRC, one of which was a high occupancy vehicle (HOV) lane, LRT very similar to CRC, and no toll on the bridge. This scenario reduced travel times over fifty percent compared to no-build and increased daily auto trips. It attracted employment growth and mixed-use development. They expected the improvements would encourage residential development growth in Clark County, using up the new capacity quickly, and they made corresponding land use and zoning recommendations.

The CRC EIS came 3 years later, and CRC decided to build on these past studies and re-open the process. The CRC EIS began in 2005, with a co-located team, intergovernmental agreements, formation of the CRC task force, resource agency outreach, National Environmental Policy Act (NEPA), Notice of Intent (NOI) in September 2005, and open houses in fall 2005. Early NEPA steps included finalizing the problem definition in December 2005, developing the purpose and need in 2005 to January 2006, and creating vision, values, and evaluation framework.

Significant State and Federal coordination was required. Multiple agencies were involved, with offices in both states, so the Interstate Collaborative Environmental Process (InterCEP) group was formed for early and ongoing coordination. Tribal coordination started, community involvement goals were identified, and comprehensive interaction and outreach tools were employed. Multiple citizen advisory groups were formed, including the thirty-nine member task force, intact from 2002 to 2008, and at least seven advisory groups with specific areas of focus. Before DEIS publication, CRC sponsored public input events, open houses, and interchange workshops.

Diana Mendes asked how the bridge influence area was chosen, and **Jeff Heilman** indicated it came from the strategic plan. CRC looked at widening it to the east and west to include other crossing corridors. While other crossings had merit, they wouldn't address the identified I-5 needs, so the area was focused back down. **Diana Mendes** asked how SAFETEA-LU influenced the project, and **Jeff Heilman** expressed that CRC was the guinea pig in the region. They developed the concept of participating agencies, and did have some agencies accept the invitation to participate. CRC also developed a methods and data approach, so reports exist to explain how each alternative will be evaluated.

Diana Mendes wondered about public response and how this input was incorporated into decision-making. **Jeff Heilman** indicated the information is sprinkled throughout his presentation, and he will point it out as he presents. **Tim Neuman** asked about the transfer of the project to the Departments of Transportation (DOTs), who owns the project, and who championed it, as well as that task force, it's role, who established the members, and how it was perceived going into the EIS effort. Jeff Heilman was joined by **Kris Strickler**, CRC, who

explained that following the partnership phase, funding came from both the Federal and State DOTs, which combined with project partners to start the process. At the time it was determined more detail was needed, so stakeholder involvement was sought in the EIS phase. He wasn't sure who selected the 39 members, but felt it was a broad group, due in part to its size, and he explained the intent was to represent all groups, including those not involved earlier. The task force aimed to build consensus, and was not a voting body. It helped determine where everybody stood, and served as an advisory body to DOTs and local stakeholders in the region. **Dr. Patricia Galloway** asked for a copy of the minutes from the Coast Guard outreach effort (Appendix B).

Alternatives Development and Screening presentation (Appendix C)

Jeff Heilman, CRC, explained the major steps in the CRC alternative screening process. They developed evaluation framework with a pass/fail test in Step A, and a detailed screening is Step B. They gathered ideas, applied the two screening steps, packaged the remaining ideas, and evaluated alternatives against more screening criteria, and carried the promising alternatives forward. He showed some screening criteria, and some specific performance measures. Screening discussions were had at task force workshops and meetings, public open houses, public testimonials, and InterCEP meetings.

Component Ideas presentation (Appendix C)

Frank Green, Structures Engineering Manager, CRC, explained that the CRC component ideas came from the Transportation and Trade Partnership Study, South/North Corridor EIS, public meetings, public comments, InterCEP, and CRC project staff. Component categories include river crossing, transit, bicycle, pedestrian, freight, TDM/Transportation System Management (TSM), roadways north, and roadways south.

The river crossing category encompasses twenty-three ideas, including replacement and supplemental bridge options, low, middle, and high level bridges, replacement tunnels, corridors to the east and west, and I-205 improvements. **Jeff Heilman** noted receiving public comments to look at other options, such as a tunnel, and these comments did affect the alternatives. **Frank Green** indicated the transit category had fourteen ideas, including express bus, ferry, monorail, magnetic levitation, and others. The bicycle and pedestrian related comments received included requests to enhance the existing facility, to bring it up to Americans with Disabilities Act (ADA) compliance, requests for a bicycle and pedestrian only bridge, and improved access. The freight category included freight only lanes, and ramp bypass lanes. The TDM/TSM category included new managed lanes, congestion pricing, ramp metering, and park and rides, among others. Roadways north and south ideas included refining components and connectivity.

For the Step A screening, CRC used the purpose and need statement to development six pass fail questions, and any option receiving a fail was removed from further consideration. The six questions are listed below. Does the component:

1. Increase vehicular capacity or decrease vehicular demand within the bridge influence area (BIA)?
2. Improve transit performance within the BIA?
3. Improve freight mobility within BIA?
4. Increase safety and decrease vulnerability to incidents within the bridge influence area?
5. Improve bicycle and pedestrian mobility within the BIA?
6. Reduce seismic risk of the I-5 Columbia River Crossing?

Frank Green continued, explaining that transit components were only slated against the first two questions, as those were the only two that applied. They did remove any option containing unproven technologies, requiring multiple transfers, or incompatible with existing systems. He provided several river crossing option examples, such as RC-5, a downstream high-level fixed span bridge, that doesn't satisfy question four, and has unacceptable encroachment into Pearson Airpark airspace. Other alternatives screened can be found in the project notebooks supplied to the IRP. Further narrowing removed streetcars, low-level bridges, and a supplemental tunnel, which didn't serve on/off traffic, and had high capitol costs. Topography on the Washington State side of the river made a longer tunnel necessary, reducing access and increasing cost. Following the screening, CRC undertook an effort to explain the process and results to the public and project task force.

Tim Neuman asked about the role of the task force in this screening, and whether they were presented with the technical data. **Frank Green** indicated that over several meetings, the initial six questions were presented to the task force, and the CRC team did the screening from there. The task force did vote and agreed to dismiss the alternatives screened by CRC. **Jeff Heilman** added that it was an iterative process, with the task force asking questions on many different pieces. **Diana Mendes** noted that the screening flowed from the purpose and need statement, which focused on transportation issues rather than community or land use, and wondered why this was the case. **Jeff Heilman** explained that the Step A screening was focused on purpose and need, based on Sponsor Agency Senior Staff (SAS) direction. FHWA and FTA direction focused on the transportation issues, and Step B screening reflect non-transportation issues, such as community and environmental impacts. CRC met with state and federal agencies to develop criteria, then the task force would word smith it, and CRC would go back to the agencies for consensus. **Diana Mendes** asked if other agencies were involved, and **Jeff Heilman** said that they commented on them, and that the public commented on the purpose and need too, through open houses. **Tim Neuman** asked if the task force accepted or concurred on the purpose and need, and **Jeff Heilman** indicated they did not, but were part of the problem description, which is longer and more detailed. **Bob Ferguson** asked if CRC looked at a separate pedestrian and transit bridge, apart from the freeway crossing. **Frank Green** suggested they did look at building a new freeway and separate new pedestrian and transit bridge. **Mary Lou Ralls** asked about the height restrictions on the bridge, and **Frank Green** indicated 20:1 and

30:1 are the standards. They worked with WSDOT Aviation and FHWA, and the direction is clear. **Tim Neuman** asked if the graphics presented to the IRP were representative of level of detail of options at screening. **Frank Green** indicated more engineering work had been done on each option than the presentation showed. **Diana Mendes** asked if the ideas dismissed resurfaced in the NEPA process. **Frank Green** indicated that from Step A, only the arterial options resurfaced, based on requests from local agencies. **Tom Warne** wondered what prompted re-examining these, and **Frank Green** suggested it was the Project Sponsors Council (PSC) and public comment.

Dr. Patricia Galloway asked why freight isn't included in the purpose and need, given how important it is. **Frank Green** indicated all freight ideas passed Step A to be included in the alternative packages for further development and analysis. **Tim Neuman** asked whether the term "tolling" or "congestion pricing" was used during the screening process. **Don Wagner** indicated that both terms were used. **Tom Warne** asked if cost or funding was considered in screening, and **Frank Green** indicated it was not in Step A.

--Break--

Alternative Packages (Appendix C).

Frank Green explained that CRC combined river crossing types and transit modes to model, in an effort to determine which components performed best (not to determine the one best alternative). They looked at strengths and weaknesses of each component to further develop stronger ones. The Alternative Packaging Matrix was shown and explained to the panel. CRC looked at a range of versions for each alternative, from those containing a lot of transit improvements to those with a lot of vehicle improvements. Samples of different alternatives were outlined for the panel. To facilitate approval of the alternatives packages, CRC provided technical presentations, technical memos, and a work session with all twelve alternatives presented for the task force.

Step B (Appendix C).

Frank Green explained that screening was based on a one to two percent level of design. He indicated designs were accurate but approximate, site-specific impacts will evolve, and that bus rapid transit (BRT) and LRT alignments are representative. Analysis done includes travel demand forecast modeling and conceptual design refinement.

Tim Neuman asked when dollar amounts were assigned to the alternatives, and **Frank Green** indicated some estimates were done for the alternatives, but were further developed for the DEIS. CRC developed the alternatives, and then did further estimating to determine a possible range of costs for the project. **Diana Mendes** asked if alternatives were screened for cost, and **Frank Green** indicated cost was a performance criterion, but they did not have a Step A, pass/fail for affordability. **Dr. Patricia Galloway** asked if the task force had buy in, what their input was, and about the relationship between the various groups. **Frank Green**

indicated the task force was in place at that time, and after their input design refinements were specific to individual options. CRC did hold workshops in Washington State and Oregon State, and PSC input (and resulting refinements) came later. The task force did not buy off on each design, but did buy off on the screening matrix. **Tom Warne** asked if the task force requested CRC exclude any of the twelve alternatives. **Frank Green** indicated they did not, and **Jeff Heilman** added that the task force was asked whether the range of alternatives was the right range to take to the next step, not which alternative they liked. **Tim Neuman** asked if the understanding was that one of the twelve alternatives was the solution, and **Frank Green** agreed that either one of the twelve, or a variation of the twelve was the solution.

Transit Options for DEIS Alternatives (Appendix C).

Frank Green explained that the transit analysis structured around the CRC evaluation framework, and several modes were evaluated. They produced a summary of findings that included cost differentials between the modes. CRC proposed BRT and LRT in fixed guideways to address reliability concerns. BRT has lower capitol costs but higher operating costs, and there are no separated facilities outside of the project, reducing reliability.

Analysis of river crossing options for the DEIS was based on CRC evaluation framework. Four crossing alternatives were considered, including both up and downstream options. A replacement structure performed better in most criteria, with the exception of displacement of historical features (the north bridge). The task force recommended a supplemental option be included in the DEIS, so a subcommittee was formed to look into it. The task force was interested in a lower cost and a more transit focused option.

Diana Mendes inquired about task force interaction with the general public, and **Jeff Heilman** indicated most task force meetings had public comment periods, and that task force members represented many different groups themselves. **Diana Mendes** asked how task force heard from other constituencies before making a decision, and **Jeff Heilman** suggested InterCEP was involved. CRC got InterCEP buy in on their rating and evaluation criteria, and their final ratings were based on ones InterCEP had approved. **Diana Mendes** requested a flowchart showing all of the various groups and their involvement.

Bob Ferguson asked about subcommittee members, and **Frank Green** showed a list of members. The subcommittee developed evaluation criteria, and aspired to encourage mode shift, move people and freight, and optimize interchanges. The fourth alternative is a subcommittee option, and put southbound traffic and transit on a new bridge with northbound traffic and bicycles and pedestrians on the existing structure. **Rodney Brown** asked if this alternative was designed with more aggressive TDM, and **Frank Green** indicated it was, with higher tolls and more frequent service. **Tim Neuman** noted that the option makes the lift span a permanent element, and **Frank Green** suggested the intent was for a new

northbound bridge to be a possibility in the future. **Tim Neuman** asked about the Coast Guard response, and **Frank Green** indicated the Coast Guard did have some concerns about all the supplemental options.

Tim Neuman asked for clarification on the one to two percent level of design, particularly with respect to footprint and impacts. **Frank Green** indicated they had vertical and horizontal geometry, ramp tapers, etcetera, but not drainage or structure types for the land structures. They were conceptual but detailed enough to develop footprints and impacts.

Other Options for DEIS Alternatives (Appendix C).

Frank Green explained that CRC looked at five or six interchange types for each interchange. Freight components were examined, including managed lanes, restrictions, and increased truck size, which were all screened. CRC moved forward with freight direct access ramps, bypass lanes, and enhanced highway design (which would bring the facility to standard using a truck as the design vehicle). The Freight Working Group (FWG) requested looking at highway improvements rather than dedicated freight lanes.

DEIS Interchanges (Appendix C)

CRC looked at multiple options for the Marine Drive interchange. On Hayden Island they looked at replacement, supplemental, and split single point urban interchange (SPUI) options, which split interchange traffic on to two roads rather than one. SR 14 options included left loop and dual loop. Mill Plain is a diamond interchange today, and CRC focused on a SPUI option to improve I-5 movement. Since Fourth Plain has tight physical constraints, the team looked at improving turning movements, geometry, and park and ride access. For SR 500, a tunnel was selected since a bridge would have been over a mile long.

The Bicycle and Pedestrian Advisory Committee wanted to increase safety, improve connections, improve the quality of experience, ensure adequate capacity, and preserve views. The existing route on Hayden Island is unclear, and all alternatives include bicycle and pedestrian improvements.

TDM/TSM

CRC looked at HOV issues and identified some to analyze further. **Tim Neuman** asked whether tolling was called “tolling” in the DEIS, and whether it was planned to be included or was considered an option. **Don Wagner** explained that at the time the mayor thought tolling was required, so the public understood that tolls were likely. There was not an in-depth conversation about tolling for the whole area (including I-205). Diversion was looked at and modeled, but not discussed in depth. **Tim Neuman** asked if the task force expected tolling or thought it was an option. **Don Wagner** suggested it probably varied from member to member, but that all thought it would be a part of the project in one way or another. They did not necessarily all agree on how, though. **Dr. Patricia Galloway** requested a copy of

TDM/TSM slides, and **Frank Green** indicated CRC would provide a copy (Appendix D).

DEIS Alternatives (Appendix C).

Frank Green indicated the alternatives for the DEIS are no build, replacement bridge with BRT, replacement bridge with LRT, supplemental bridge with BRT, and supplemental bridge with LRT.

Tim Neuman asked how the bridge level fit into the discussion, and **Frank Green** indicated replacement was focused on a medium level bridge. **Mary Lou Ralls** asked when the stacked transit highway option was developed, and Frank said it came from a value engineering study in early 2007, and then gained momentum with some groups. There was some concern about bicyclists, pedestrians, and transit being enclosed in the structure over the river, so the open web was developed. **Mary Lou Ralls** asked if FHWA and FTA were included in the discussions, and **Frank Green** indicated they were involved, all the options were on the table, and it did pass that screening. CRC looked at both LRT and BRT, with many alignments on the table at the DEIS stage. **Jeff Heilman** added that in notebook 2, tolls are discussed and expressed as likely to be needed.

Dr. Patricia Galloway noted that life cycle costing for BRT and LRT was discussed, and wondered if a life cycle cost comparison was done for supplemental and replacement bridge options. **Frank Green** explained that CRC worked with Oregon Department of Transportation (ODOT), owner and operator of the current bridge, to look at their expected maintenance costs, seismic retrofit costs, and 24-hour manned bridge lift costs. Documentation addressing current and new bridge costs does exist. **Mary Lou Ralls** asked if the seismic retrofit includes both substructure and superstructure, and **Frank Green** indicated it does, adding that an extensive retrofit would be required. **Bob Ferguson** asked if the DEIS includes an open web concept, and **Frank Green** indicated the concept is included, but not the bridge type. **Diana Mendes** asked if task force members were charged with gaining approval from their groups or constituencies, and **Jeff Heilman** indicated it wasn't required but some members did. **Diana Mendes** supposed that some members might be representing a single view while other members represented a group, and **Jeff Heilman** expressed a belief that members generally represented the interests of the groups they were part of.

Starting the DEIS (Appendix E).

Jeff Heilman explained CRC identified a range of alternatives, determined analytical methods, developed and analyzed alternatives, and conducted a public comment period. He indicated FTA and FHWA have some different approaches for some items, and that FTA deferred to FHWA on some items including 4(f), Section 7, Clean Air Act, Tribal consultation, and the National Historic Preservation Act (NHPA). DEIS technical reports covered many different project elements. The DEIS compared one package to another, such as no-build compared to alternative one, and it compared one component to another, such as BRT compared to LRT. A

sample comparison of river crossing types was shown. Highlights from findings noted that residences and commercial spaces are displaced, floating homes are displaced and hard to relocate, land use is consistent, transit oriented development opportunities increase, and highway noise would increase (but there are opportunities to mitigate with sound walls). An offset high capacity transit (HCT) alignment would divide the floating home community. Storm water impacts are adverse during construction but significantly improved in the long term.

DEIS Notification and Public Meetings (Appendix E)

Jeff Heilman explained that postcard notifications were mailed, hard copy and compact discs containing the DEIS were made available, public meetings were held, and about ninety neighborhood meetings were held as part of the DEIS public outreach. A public comment guide was created based on a recommendation from the Community and Environmental Justice Group. Approximately 1,600 comments were submitted, and CRC identified the top ten comment subjects. The largest group of comments was for or against an alternative, and second largest were questions about process and procedure. After that came transit related comments, climate change, and range of alternatives comments. CRC did receive formal requests to extend the comment period beyond sixty days, which FHWA declined since the period was already longer than the forty-five day standard. CRC invited comments at any time, whether they would be included in DEIS or not.

Hot Topics (Appendix E)

Jeff Heilman explained that induced growth was a very controversial issue, surrounded by uncertainty and a variety of opinions. CRC looked at how the project will change facilities and performance, local plans and patterns, what nationwide literature indicates, and what land use modeling predicts. CRC expects changes in travel performance, increased peak period throughput, fewer daily auto trips, and minimal diversion to I-205. Travel time is expected to be twenty-six percent shorter roundtrip between 179th and the I-5/I-84 interchange, but the toll negates eighteen minutes of this savings, for an effective five-minute savings. Oregon State is known for its land use planning and Urban Growth Boundary. Washington State passed the Growth Management Act in 1990, and concurrency is required to change growth boundaries.

Tim Neuman asked if current land use plans were assumed on both sides of river. **Jeff Heilman** indicated they were, but that Metroscope modeling allowed for employment and residence re-distribution. **Rodney Brown** requested specifics on the land use planning used in the DEIS, and **Jeff Heilman** indicated they would provide it. He continued, explaining the Hayden Island develop plan redevelops big box development with additional housing, among other things. Vancouver City Center Vision predicts significant downtown growth, particularly south of the railroad, which has seen very little development to date.

Literature Review

CRC did a nationwide literature search looking at factors that result in growth and sprawl, and did identify several, listed below.

1. New access to previously un-served or greatly under served areas. CRC is within an urban area.
2. New access to land on the urban edge. CRC is seven miles inside Vancouver, and thirteen miles inside the metro urban growth boundary.
3. Real estate markets that support low-density development. This is a yes and no both for CRC.
4. Travel times are improved. CRC will improve travel times, but the toll will have a time value penalty.
5. Auto trip costs are reduced. CRC will increase costs due to tolling.
6. Land use regulations do little to manage growth. The CRC project area has strong rules on both sides of river.

Bob Ferguson questioned the rationale for the toll time value. **Jeff Heilman** explained that people make a choice based on the cost of the toll versus time savings. CRC isn't proposing to toll I-205, but it could be proposed separately. HCT ridership growth of 250% is expected, as the project provides new access to land underserved by transit. Metroscope integrates economic, demographic, land use, and transportation data. CRC used the 2002 model runs because there wasn't agreement on whether new runs should be done, due to some people questioning whether Metroscope was the right tool to use.

Tim Neuman asked why Metroscope was used if it might not be the right tool. **Jeff Heilman** indicated it was available to CRC, so they took advantage of the opportunity. **Diana Mendes** asked if there was discussion about not including Metroscope in the NEPA process since the data was eight years old. **Jeff Heilman** indicated technical staff, SAS, and other groups decided it should be included, in part to help confirm or dispute claims related to structure size and other issues.

Jeff Heilman compared the differences between the 2002 Metroscope model and the 2008 CRC, including four lanes versus three, and no toll versus toll. Both included LRT. Key findings include the locally preferred alternative (LPA) reduces travel times, the 2002 model increases daily auto trips over the river, and the 2008 modeling reduces them. Metroscope found job growth closer to the I-5 corridor, in north and northeast Portland, Clark County, and downtown Portland.

Diana Mendes asked if CRC intends to use this in EIS, and **Jeff Heilman** indicated it was used a little in the DEIS, and will be used more in the final environmental impact statement (FEIS). It was less of an issue at the time of the DEIS, and there is increased regional interest in doing Metroscope now, with the major question being what scenarios should be included. When asked what he might like to see modeled, **Jeff Heilman** suggested modeling different numbers of lanes. **Tom Warne** asked what the purpose of additional Metroscope model runs is, and **Jeff Heilman** indicated they are being requested. **Tim Neuman** asked if there are people who

don't want new runs done, and **Jeff Heilman** indicated there are, but the number is decreasing.

Diana Mendes asked if other projects have used Metroscope, or if this is the first. **Jeff Heilman** wasn't sure and suggested checking with Metro.

Don Wagner addressed the IRP, explaining there is an assumption the PSC will address whether Metroscope will be re-run. If the decision is to re-run it, the project staff will work on the inputs. **Richard Brandman** added that NEPA used adopted land use, and that various committees spent six months looking at land use forecasts. The bi-state committee was involved. Corridor, transit, and highway demand need to be as accurate as possible, and considerable time was spent on this for the NEPA documents. He indicated that it is important to be clear what the growth is compared to when discussing induced growth. Transportation projects change land use patterns as they increase accessibility. If we build a lot of road capacity to unused land, growth occurs. In this area, fundamental regional growth is determined by land use plans and urban growth boundaries. Metroscope could answer the effects of increased transit, address the shift of people living in Clark County, and put factual basis behind this conversation.

Tim Neuman asked if there is enough information already to address the question. **Richard Brandman** indicated there is enough for NEPA, but may not be to satisfy local agency partners. **Tom Warne** asked what insights proponents hope to gain, and what they hope to do with that information. **Richard Brandman** explained that the proposing agencies would be the best ones to answer the question, but supposed that Oregon wants to know if transportation projects have unintended consequences that typical modeling won't show. **Dr. Patricia Galloway** asked if a new Metroscope run could help with stakeholder buy-in on the number of lanes. **Richard Brandman** indicated that is part of the current discussion, which includes running 'bookend' scenarios of both major and minor build outs. Modeling six lanes without tolls is being discussed, but CRC isn't proposing to build six lanes without tolls. The modeling may or may not help inform the discussion.

Jeff Heilman provided a comparison of I-5 and I-205(Appendix E). I-205 is much longer, and does not include tolls or transit. When built, I-205 was vacant and rural compared to I-5 in Vancouver today. He indicated CRC is unlikely to induce substantial auto demand or auto oriented land use changes.

--Lunch--

Climate Change (Appendix E).

Jeff Heilman explained that in 2007, projects were not typically estimating greenhouse gasses (GHG), so there was some discussion whether or not to include it. It was clear it was a real issue and could contribute to climate change, as well as to inform decisions and discussions about it. Duration of congestion, travel speed, tolling, mode shifts, and LRT versus BRT were all identified as areas of interest related to emissions. FTA New Starts reporting used a basic multiplier approach,

and MOVE and MOBILE6 approaches were also very limited. CRC looked at EMME/2 for travel demand, and VISSIM for operations, speed, emissions, and energy consumed for power sources. CRC does have useful, detailed speed information throughout day, and accurate traffic operations data. There were limitations, including a qualitative assessment of bridge lift impacts, crash reduction impacts, and induced growth effects. Traffic emissions were geographically limited to only the bridge crossings, and don't count all reductions, or additions due to diversion. The payback could not be calculated, speed variations for bus routes were not included, and incremental technology improvements were assumed. CRC found that every future alternative has increased emissions due to an increased population, every build alternative is lower than no build, there is a relatively small difference between the build alternatives, and congestion, tolling, and HCT do make a difference. The LPA is the lowest emission option.

Criticisms include a lack of trust, with people asking why or how a freeway project could reduce GHG. Some people felt reducing GHG over no build is not enough. CRC feels no single project can provide the entire GHG solution. Some people felt the project will induce massive auto demand. CRC found that dense development would not increase auto demand, and generally concluded the project wouldn't significantly affect climate change.

A GHG Panel was asked if the CRC findings and approach were reasonable, and if additional opportunities to further reduce GHG emissions existed. The panel met for a workshop in November 2009, and local agencies were invited to attend. The GHG Panel did suggest methodology refinements, but didn't expect the results to change. The panel indicated it was honorable to consider further GHG improvements, but felt it was not necessary. Moving towards the FEIS, CRC will upgrade to MOVES 2010 in place of energy calculations and emissions factor, for more comprehensive quantification, and further discussion of mode shifts, safety, and indirect effects. They will also look at how GHG can be reduced further.

Air Quality (Appendix E).

As part of their air quality effort, CRC looked at mobile source air toxins (MSATs), regional and sub-area emissions (particularly in north Portland and Hayden Island), and construction emissions. They found that vehicle emission technology and regulations will result in a thirty percent reduction in carbon monoxide in the no-build scenario. Benzene will be reduced primarily due to legislation removing it from fuel. All alternatives will lower emissions, but the build scenarios will have lower emissions than the no-build. During construction there will be an increase in dust and particles, a high emission impact is unlikely, and mitigations are available (including ultra low sulfur diesel (ULSD) for use in off-highway construction). There will be beneficial changes over time for any alternative.

Health Impacts (Appendix E).

The public and Multnomah County requested information regarding the health impacts of the project. These are not specifically addressed in EIS, but much of the

EIS information is directly related to human health. Physical activity and obesity is the main information not included in the DEIS, and it will be added to the FEIS to address requests. There are general beneficial impacts due to multimodal options and transit.

Environmental Justice (Appendix E).

Environmental justice (EJ) attempts to avoid, minimize, or mitigate disproportionate impacts to minority and low-income populations, ensure full and fair participation, and prevent the denial or reduction of benefits. Outreach is an important part of EJ and CRC has guidelines regarding their outreach. They identified low-income housing and reached out to minority groups. The Community and EJ Group was formed in 2006 to provide feedback on project issues and input on public outreach. They did community resource mapping, created a DEIS comment guide for citizens, EJ training, and modifications in design. Minority and low-income populations census data was examined. They did residential surveys, mailings and follow up, and met with business owners likely to be displaced to help determine job impacts. Impacts avoided include Smith Tower, wellness project and low-income housing. Displacement and relocations under the LPA include fifty-three residences, thirty-two of which are floating homes.

Diana Mendes asked how many of these relocations affect EJ populations. **Jeff Heilman** doesn't know exactly who will be living in the residences at the time, but expects around ten percent. Fifty-five businesses will be displaced, including Safeway and thirty-six others on Hayden Island. Other impacts mitigated are the payment of tolls (likely not disproportionate but there is ongoing discussion), toll transponders, air quality, and noise. Key benefits include transit improvement and jobs. CRC determined the project is not likely to have significant EJ impacts. **Diana Mendes** asked how EJ populations know their comments on the project have been addressed. **Carley Francis**, CRC Public Information, indicated the outreach effort focused on small group presentations with immediate feedback. **Diana Mendes** asked if comments from EJ groups were responded to any differently than other public comments, and **Carley Francis** indicated they followed up on common comments to address when returning to an area for outreach.

Panel Questions and Answers (Appendix F).

Richard Brandman and Don Wagner

The IRP asked for information regarding how decisions are vetted and who ultimately makes final decisions in regard to any aspect of the project. **Don Wagner** explained they have tried to make information available to partners and stakeholders throughout the project, work with many different groups, and hold public meetings. Internal staff working on the NEPA process generate information, which leads to questions. Public and working groups have asked questions which generate more questions.

Dr. Patricia Galloway asked about the hierarchy of information flow to DOTs and governors (and back). **Don Wagner** indicated it starts with blended staff taking it

up their chain of command and then coming back down to staff. Some issues arise from the task force or PSC, and the project does have a good relationship with both governors and works to answer any questions they have. **Mary Lou Ralls** asked about the process between CRC and DOT experts, and **Don Wagner** explained that they have two experts for each area, so they have had a lot of opportunities to work on that process. The general approach has been to bring experts from both states together with project staff and all work together. **Mary Lou Ralls** asked if technical issues were addressed, and **Don Wagner** indicated they are.

In terms of decision making, **Don Wagner** explained they are working toward general consensus, but the two DOTs and two transit agencies are the owners responsible for the project, and full consensus has not been reached yet. The LPA reached a high level of consensus but with many caveats, which are being worked on. Staff is answering what they can, but some issues, such as tolling, cannot be answered by the DOTs. **Richard Brandman** added that to date, there has been good consensus on the alternatives, EIS, and LPA. The DOTs have to make the final decision, but the goal is to do so with community and local consensus. **Tom Warne** asked if the metropolitan planning organizations (MPOs) will participate in the decision-making, and **Don Wagner** indicated the MPOs and ports will participate, but locally decisions have to be made by DOTs and transit agencies.

The IRP asked how the Mobility Council concept evolved, and how stakeholders feel about it. **Richard Brandman** indicated that as the project evolved, the Mayor of Portland presented the idea of a Mobility Council, based on seeing other projects get built, fill up with traffic, and not be much better than original. He wanted to ensure the project was operated in a way that maintained benefits. The idea is somewhat unusual, so a research effort was undertaken and Steve Pickerell was hired to help as a performance measure specialist. They spent six months and developed goals and objectives. Objectives include mode choice, reliability, build, operations and maintenance, and options overtime. Performance measures were discussed but not identified. A transit forecast example was provided and discussed. It is simple in concept, but detailed in the real world. There is some discussion of council members being citizens rather than elected.

Tom Warne noted the project has a performance measure document, and requested a copy. **Richard Brandman** explained mobility council members could be appointed by local governments. **Don Wagner** indicated stakeholders expressed no objection to a Mobility Council when the idea was presented. The port is interested in participating, so the group may get larger. **Rodney Brown** asked if the Mobility Council was precondition to the Record of Decision (ROD), and was told it is not.

Richard Brandman explained that a lot of the conditions are natural conditions local agencies would like to see as the project evolves. Some are detailed, and others higher magnitude. Metro asked CRC to discuss number of lanes, and CRC thought that had already been decided. The tolling study was completed at the end of 2009,

and addressed electronic tolling, toll rates, and pre-completion tolling. **Don Wagner** explained the avenue for addressing many issues is the PSC.

The IRP asked about the seismic retrofit work on the bridges. Frank Green and Rob Turton addressed the question, and **Rob Turton** explained they have looked at a scheme to retrofit the existing bridges, including tying together the substructure. They determined it was feasible to retrofit superstructure and retain historic appearance. It would be a two-phase retrofit, and the second phase is expensive, at nearly half the cost of a new structure.

Dr. Patricia Galloway asked how they calculated life cycle costs, and **Frank Green** indicated there are currently no capital improvements beyond thirty years planned. They looked at operations and maintenance costs from the past fifty years, and I-205 was looked at as an example of newer box girder bridge. **Mary Lou Ralls** noted the retrofit was half the cost of a new bridge, with half the expected life. **Frank Green** explained that no bridge in Oregon State has gone through a phase two retrofit yet, and they have all been replaced instead. **Mary Lou Ralls** asked about the expected performance in an earthquake, and **Rob Turton** indicated he expects a collapse of the existing structures without a phase two retrofit, but that a new structure or existing with phase two retrofit would withstand an earthquake. Phase one is a superstructure retrofit, and phase two is substructure. **Don Wagner** indicated a policy decision has not been made yet whether the retrofit would be phase one or two. **Richard Brandman** explained they were asked to reduce project costs, and determined the existing North Point Harbor bridge could remain. It may make sense to do just a phase one retrofit, since a major earthquake could remove that structure anyway, but a policy decision is coming. **Frank Green** indicated the collector distributors across North Point Harbor would be built to new standards, so are expected to remain even if the existing structure fails in earthquake. **Bob Ferguson** indicated he would like to hear more details on the retrofit at a later date.

The IRP asked about web to slab connection details, plans for seismic testing, and the cost estimates of open web versus closed box structures. **Rob Turton** showed a plan for a box girder with the walls replaced by a steel frame. He explained the connectivity of truss to web members would be through post-tensioned high strength rods, which is not a new design. CRC has modeling and analysis data available, and vetted the approach with the construction industry for bid-ability and build-ability. They anticipate prototype testing similar to other less typical (but not innovative) bridges. Though not the same, similar bridges have been built in the country, but are smaller with fewer modes.

Mary Lou Ralls expressed an assumption that CRC would need to do scale and full sized tests for connections, which can take years at significant costs. **Rob Turton** indicated no effort has been done by the project team to design tests, he doesn't note anything differentiating this design from other bridges that haven't done tests, and doesn't expect to need to do these tests. **Mary Lou Ralls** asked if the DOTs

believe tests are necessary, and **Rob Turton** indicated they aren't at that level of detail, and haven't discussed seismic concerns in specific terms.

Bob Ferguson noted construction is scheduled for 2012, and asked how many years the bridge is from going to bid. **Rob Turton** indicated they could ramp up design efforts and explained the schedule is conceptual, and that they don't have a ROD yet. **Don Wagner** added that the best-case scenario is an element of the project starting construction in late 2012, but that the bridge would not start in 2012. This is their best guess right now, but the schedule is still developing.

Dr. Patricia Galloway asked about other projects with similar concepts. **Don Wagner** reiterated that there are open box examples around the world, and CRC could provide details for IRP. **Dr. Patricia Galloway** requested information on these examples. **Mary Lou Ralls** asked if a nonsymmetrical design was that looked at, as recommend by the Urban Design Advisory Group (UDAG). **Rob Turton**, indicated they did look at it. The airspace requirements are less strict to the south, and could allow for a cable stay, but this would create river clearance where there is no river traffic, and the bridge would likely transition to an open web on the north end anyway. **Mary Lou Ralls** asked if CRC looked at cost savings potential from having fewer structures in liquefiable soil, and **Frank Green** indicated they did, but that the height is still limited, so they would still have some structure in that soil.

Rob Turton added that the bridge is on a horizontal curve, which further complicates any structure, and an asymmetrical bridge would also have unusual connections. **Mary Lou Ralls** asked if they have looked at transit connections to the inside of the web, and **Rob Turton** indicated they are looking at them and have paid attention to the aesthetics. **Frank Green** said they were recently submitted to the DOT structures office, and a copy of the draft response will be given to IRP.

Mary Lou Ralls noted it would be much cheaper to address security issues in design, rather than making alterations after construction. **Rob Turton** agreed and indicated they have had discussions with first responders and transit agencies, as well as a security agent review. **Mary Lou Ralls** asked if they have had an FHWA structural security review, and **Rob Turton** indicated they are not to that point yet, but agreed they would need to.

The IRP asked about geotechnical investigations and foundation design and testing. **Frank Green** explained that a lot of geotechnical investigations have been done. Within the next year, they will present final geotechnical and seismic recommendations. WSDOT Geotechnical is doing all of the geotechnical investigations and final recommendations in Washington State.

Bob Ferguson asked if holes were in the location of the piers, and **Frank Green** indicated they were in the vicinity but not exact locations. **Mary Lou Ralls** asked if the piles would be load tested. **Rob Turton** indicated they are in the process of developing load test programs for piles, and **Don Wagner** indicated they will be tested before construction.

The IRP asked about the bridge clearance related to both marine and air traffic. **Frank Green** explained that sign bridges and illumination add thirty to forty feet to the bridge height, so the current design is approaching the Pearson approach height restriction. He reiterated that marine contractors did request greater clearance over the river, but the Coast Guard is comfortable with current purposed design.

Dr. Patricia Galloway looked through the Coast Guard public hearing record and saw that marine fabricators were in process of building vessels requiring one hundred and twenty plus feet of clearance, and others requested greater clearance as well. **Frank Green** offered to provide detailed elevations of the Pearson air traffic to IRP. He explained that the vessels indicated can have their booms disassembled to reduce clearance for infrequent crossings. Schooner Creek Boat Works builds sailboats west (downstream) of the bridge, so the Coast Guard determined clearance for them is not critical. A local metal fabricator occasionally requires more than the current proposed clearance, but not often.

Mary Lou Ralls asked why I-205 was built with greater clearance upriver. **Frank Green** wasn't part of that project but supposed it may be because they didn't have air traffic limitations. **Mary Lou Ralls** asked about the expected life of Pearson Air Park, and **Don Wagner** explained it is the oldest in the area, without plans to close. He added that I-205 has a higher elevation due to the topography on the Washington State side of the river, rather than to create clearance over the river. **Richard Brandman** indicated there was discussion about how many bridges should span the river, and that it became clear there were advantages to two bridges, including reduced piers in the water, reduced shoreline impacted, and reduced visual impacts. They have goals to minimize environmental impacts and goals related to aesthetics, and while the design is unique, both DOTs have determined it is buildable.

Tom Warne adjourned the meeting, thanked everyone for their attendance and efforts, and offered a reminder that the panel would be meeting at 7:00 p.m. in the same room for a public comment period.

Note: Appendices to this summary can be found online at CRCReview.org.

Columbia River Crossing Independent Review Panel Planning /Environmental Meeting Agenda

Date: June 2

Location: Red Lion Hotel on the River - Jantzen Beach
909 N. Hayden Island Drive, Portland, OR 97217

TOPIC	<i>Presenter</i>	<i>TIME (Approx)</i>
Welcome and Kickoff	<i>Tom Warne, IRP Chair</i>	<i>8:00 – 8:30 am</i>
Technical Briefing by CRC Staff - Project Management: NEPA process (cont'd) <ul style="list-style-type: none"> • Finish up DEIS from Tuesday • Locally Preferred Alternative • Refinements to LPA Tribal Consultation Key Environmental Regulatory compliance <ul style="list-style-type: none"> • Section 106 • Section 4(f) • Endangered Species Act 	<i>Richard Brandman, Don Wagner, and CRC Staff:</i>	<i>8:30 – 11:00 am</i>
Agency Views – Planning/Environmental/ NEPA:	<i>Alan Lehto, Director of Project Planning; Tri-Met (11:00 – 11:10).</i> <i>Elson Strahan, President & CEO; Fort Vancouver National Trust; and Dr. Doug Wilson, Chief Archeologist for the NPS (11:10 – 11:25 am).</i> <i>Thayer Rorabaugh, Transportation Director; City of Vancouver (11:30 – 11:45 am)</i>	<i>11:00 – Noon</i>
Lunch Break		<i>Noon – 1:15 pm</i>
Agency Views Continued	<i>Erick Reddekopp, Hayden Island Livability Project (1:15 – 1:35 pm).</i> <i>Andy Cotugno; Metro (1:35 – 1:55 pm).</i>	<i>1:15 – 1:55 pm</i>
Panel Q&A / Discussion	<i>IRP / CRC Staff</i>	<i>2:00 – 3:30 pm</i>
Wrap up and Adjourn	<i>Tom Warne</i>	<i>3:15 – 3:30 pm</i>

This agenda is current as of June 1, 2010, and may be revised prior to or during the meeting on June 2nd.

INDEPENDENT REVIEW PANEL
Columbia River Crossing



Title: **Independent Review Panel Meeting**
Date: June 2, 2010 at 8:00 a.m.
Location: Red Lion Hotel, Jantzen Beach
Reference: CRCReview.org

IRP Members Present: Tom Warne (Chair)
Rodney Brown
Bob Ferguson
Dr. Patricia Galloway
Diana Mendes
Mary Lou Ralls
Tim Neuman

IRP Staff Present: Jennifer Vachon (Administrator)
Adam Brown (Notetaker)

Welcome

Tom Warne, Independent Review Panel (IRP) Chair, provided welcoming remarks and outlined the agenda for the day.

Draft EIS Topics (Appendix A).

Section 106

Jeff Heilman, CRC (Columbia River Crossing), explained there are many potential historic and architectural areas around the project, and ten different tribes. CRC looked at lessons learned from other projects, including the Hood Canal graving dock, as well as some of the three hundred bridges around Oregon State. They initiated consultation with parties such as State Historic Preservation Offices (SHPOs), Native American Tribes, local jurisdictions, and the National Park Service. They identified resources, including physical records, oral history from tribes, geomorphology, and developed an inadvertent discovery plan early on, to be prepared to respond when something is found. As a phase two, CRC did detailed studies, including architectural monitoring, pedestrian studies, and looking at assessing and resolving adverse effects.

Tom Warne asked about the Memorandum of Agreement (MOA) status, and **Jeff Heilman** indicated CRC is seeking the MOA, part of which is programmatic. They are working with the National Park Service.

Tribal Coordination

Jeff Heilman explained CRC met with each tribe for section 106 consultations, and the state provided a contract for oral histories. Historians provided recent history

to the project team, and tribes presented earlier history. The tribes were consulted on many project aspects. The tribes told CRC there are potential burials in the project area, they prefer a downstream alignment, an inadvertent discovery plan should be in place before the ground is disturbed, and some of them want to participate in an oral history study.

Archeological

Jeff Heilman indicated CRC looked at ethnohistory and geomorphology. The tribes used the corridor long before the freeway, and like to call the corridor their highway one. On the Oregon State side of the river, the shores are very deep, and on the Washington State side they are very shallow, which increases the likelihood of finding artifacts. Human built archeological resources include the 1917 northbound bridge (which is on the historic register), a pier, Fort Vancouver, Vancouver National Historic Reserve (VNHR), and a couple other buildings. No traditional cultural properties were identified. CRC coordinated with partners on the draft MOA, and FHWA and FTA are reviewing it now. They will finalize their reports, the MOA, and then the Final Environmental Impact Statement (FEIS).

Diana Mendes asked if the MOA was circulated with the Draft Environmental Impact Statement (DEIS), and **Jeff Heilman** indicated it was not. **Diana Mendes** asked about the plan for public review, and **Jeff Heilman** said CRC will do a separate published review of the MOA. **Diana Mendes** asked about mitigation plans. **Jeff Heilman** explained I-5 creates a barrier between downtown and the fort and historic district. There is a proposed widening of the Evergreen Boulevard crossing to create more of a community connector. It would be small enough to be subject to tunnel safety requirements. He noted there is talk of building an interpretive center to study and display artifacts found. CRC would look for reuses for the 1917 bridge, which would likely be partial in nature. The photography has been done.

Section 4(f)

Jeff Heilman explained that USDOT requires not using certain facilities, unless there is no alternative and impacts are minimized. The DEIS includes a draft 4(f) evaluation, prudent alternative analysis, and comment phase. There is no wildlife refuge within the project. CRC determined there is no prudent alternative to avoid all 4(f) impacts, so they focused on minimizing harm.

Diana Mendes asked why leaving the 1917 structure in place doesn't avoid impact. **Jeff Heilman** indicated that even adding a supplemental bridge is an impact to the existing historic structure, so CRC called in experts for interpretation. It was determined a supplemental bridge was not a reasonable alternative measure. **Diana Mendes** believes a supplemental bridge could be feasible, and avoidance. **Jeff Heilman** agreed, but indicated the focus is avoidance. Substructure and superstructure upgrades are required, and were determined to be adverse effects. He explained that CRC partnered with parks and recreation departments for both cities, Clark College, Vancouver Public Schools, National Park Service, and public.

Architectural Resources Used

Jeff Heilman explained CRC has eight de minimis impacts. At VNHR, CRC is looking at minimizing their impact through pushing the geometry and alignment. Other impacted sites include Waterfront Park and Marshall Community Center, where they are looking at a shared use arrangement for the new park and ride. Since the DEIS, CRC has evaluated additional minimization measures and sought concurrence on de minimis determinations.

Endangered Species

Jeff Heilman explained there are sixteen Endangered Species Act (ESA) listed fish species and two ESA listed marine mammals within the project. Killer whales are included due to potential impacts to salmon, their food supply. Because there are so many varieties, there are salmon in the project year round. Hydroacoustic impacts are the biggest concern. The Interstate Collaborative Environmental Process (InterCEP) was formed in 2005 as part of the National Environmental Protection Act (NEPA) process, with Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, United States Fish and Wildlife Service, and the National Marine Fisheries Service involved, discussing issues together.

In terms of impacts, CRC will reduce the number of bridges across the Columbia, reduce the number of pier sets, reduce pier size, and identified best management practices for construction. Storm water runoff will greatly improve as a result of the project, as over 90% of the existing impervious runoff is untreated. CRC will increase aquatic habitat, and provide compensatory mitigation for section 404 impacts. They have identified critical habitat to restore outside of project. The bridge foundation will be drilled shafts instead of impact driven pile to reduce hydroacoustic impacts. CRC looked at timing to avoid the more sensitive fish within the project, and will use hydroacoustic monitoring and bubble curtains.

Diana Mendes asked if the mitigation measures add eighteen to twenty-six months to the schedule, and **Jeff Heilman** said they do, explaining that fisheries prefers longer duration lower impact construction to shorter duration higher impact construction. **Frank Green** added that this impacts the bridge construction schedule but not the approaches, so the overall project schedule is affected by about a year. It comes down to the availability of the window for doing water work, which is currently four months. **Dr. Patricia Galloway** asked if CRC is working with the tribes on tribal fishing rights for salmon, and **Jeff Heilman** indicated they are.

Jeff Heilman continued, indicating the work window could be as short as eighteen to twenty-six months. He outlined their ESA consultation process as well. **Tim Neuman** asked if Jeff had any question in his mind whether things have been dealt with properly. **Jeff Heilman** suggested the biggest question is the resolution of the mitigation package. Formal ESA consultation begins later in June and ends in October. **Diana Mendes** asked if the Army Corps of Engineers is permitting the 404(b)(1) alternative analysis. **Jeff Heilman** indicated the Corps is part of InterCEP and concurred on the purpose and need statement. CRC has ongoing coordination

with the Corps and doesn't foresee any problems. CRC hasn't asked for written concurrence on mitigation, and the Corps commented on the range of alternatives. **Diana Mendes** asked if the plan is for them to do their own analysis, and **Jeff Heilman** believes they have cooperating agency status. **Rodney Brown** asked about wetlands, and **Jeff Heilman** indicated CRC does have wetlands with small impacts, but expects to avoid all fill in wetlands.

Local Preferred Alternative (Appendix B).

Richard Brandman, CRC, recapped NEPA and the LPA selection. The six needs identified in the I-5 corridor relate to congestion, transit, freight, safety, bicycles and pedestrians, and earthquake safety. LPA has been adopted with three through and up to three auxiliary lanes. It includes interchange improvements, LRT extension to Clark College, and bicycle and pedestrian improvements. Selection was based on the DEIS, input from the task force, DEIS comments, and local partner input. Technical analysis of a replacement crossing (compared to a supplemental crossing) found less congestion, less cut through traffic on local streets, greater safety improvement, improved marine mobility, bicycle and pedestrian connectivity improvements, water quality improvements, and reduced expense to operate and maintain over time.

Diana Mendes asked about seismic advantages. **Kris Strickler** indicated a new bridge will have a higher level of seismic safety. **Tim Neuman** asked about the documented advantages of a supplemental bridge crossing relative to a replacement. **Kris Strickler** replied that supplemental allows for cheaper construction costs and less impact to service during construction. **Richard Brandman** added that the supplemental option was taken off the table when the LPA was selected. **Diana Mendes** asked for confirmation that the LPA is preferred from a federal perspective, and that a supplemental is an option since the ROD hasn't been issued. **Kris Strickler** indicated the federal partners have no discomfort with the project direction.

Richard Brandman continued, explaining LRT was selected over BRT for reliability, greater ridership, reduced operating and maintenance costs, and greater transit oriented development opportunities. In June of 2008, the task force adopted the LPA by vote. All six local sponsor agencies voted in favor of LPA. CRC has ongoing agency, tribal, and community involvement, to increase understanding of impacts. They go to fairs and visit communities rather than just holding meetings for the community to come to. CRC has held hundreds of meetings since the LPA decision was made.

In June 2009, the Project Sponsors Council (PSC) requested CRC look for design refinements that reduce cost and maintain benefits. In September 2009, CRC presented to PSC on cost saving measures. In November 2009, CRC undertook public outreach on their recommendations, potentially saving \$650 million. CRC believes they have a finance plan in place to secure that funding, which includes tolls, New Starts, federal, and state funds.

Tim Neuman asked about the cost and funding information available at the time the LPA was voted on. **Richard Brandman** indicated the finance plan was intact and tolling was expected. CRC and the Departments of Transportation (DOTs) have an assumption that tolls are necessary to construct the project and they will be included. **Tim Neuman** asked if others had the same assumption, and **Richard Brandman**, indicated they hadn't developed the DEIS yet, and didn't have a final cost or finance plan. Tolls are included in the DEIS, and DOTs have consistently indicated tolls are necessary. **Tim Neuman** asked if the thirty-seven yes votes for the LPA knew tolling was included. **Richard Brandman** replied that he wasn't on the project at the time, but understood tolling was included as it was part of the discussion. Tolling did become a larger political issue. **Don Wagner** indicated the question is where did we fall off the cart with tolling. During the task force period, there was an understanding that elected officials believed tolling would be included, and it was discussed many times in front of the entire panel. New officials have been elected since then, including the Mayor of Vancouver. The old mayor was a toll fan, but the new mayor campaigned on not having tolls, so the issue was elevated and reopened.

Diana Mendes asked if the cost reduction measures listed in the project notebook Tab I summarizing the cost reduction measures of \$650 million is current. The list includes retain north Portland bridge, reduce add/drop lanes, narrow bridge deck, defer SR 500, defer braided ramp, and defer flyover. **Richard Brandman** indicated it is. **Diana Mendes** asked if there is a list of environmental impacts to these changes, and **Richard Brandman** indicated it is being defined in the FEIS. He indicated the impacts from these removed project elements will be included in the FEIS. **Don Wagner** suggested they are blending the FEIS to include some revisions. **Jeff Heilman** added that the FEIS carries supplemental bridge analysis forward. CRC was asked to include impacts of alternatives for comparative purposes, but not to present alternatives as options moving forward. **Diana Mendes** asked if they could pick any alternative going forward, and **Jeff Heilman** indicated they could.

Bob Ferguson sees value in including some of the removed project elements now, and asked if it was a possibility. **Richard Brandman** indicated CRC has a process called Integrated Project Staff to look at concerns of local partners, the Hayden Island interchange, and a local arterial bridge. They are looking at the number of auxiliary lanes, and Rose Quarter backup impacts, among others.

Diana Mendes asked when the choices will be finalized so the FEIS can be completed, and **Richard Brandman** indicated the process evolution continues. There is hope for consensus from PSC in July. The basic LPA is not under discussion, and they are determining details, not the overall project. **Tim Neuman** commented that Hayden Island is not a detail, and Portland is looking at options. He asked if that plan is changed, whether it would still be the LPA or something different. **Don Wagner** suggested it depends on the function and form, and how large the change is. There is not agreement on the island now. If a new approach is agreed on, CRC

will address the degree of change. It is a critical path decision and will affect project schedule if it takes longer than a couple months.

Bob Ferguson asked if it is possible that Vancouver could stop the light rail extension. **Don Wagner** explained they could stop it. Washington State requires any light rail be put to a vote, and that has not happened yet. C-Tran is preparing for it and expects it to go to a vote in 2011. If the district wide 2011 vote failed, it could be taken to a sub-district vote, but that won't be allowed until 2012 by law.

Tim Neuman noted that a portion of the \$650 million in savings is actually deferral (not savings), and asked how this was reflected in the finance plan. **Richard Brandman** indicated there are two finance plans, one each for phase one and phase two. Other items have been removed permanently. **Diana Mendes** asked how affirmation of LPA refinements occurs. **Richard Brandman** indicated through the PSC, which includes the local governments, in June and July. **Diana Mendes** asked if CRC would take changes to InterCEP, and **Richard Brandman** suggested many changes wouldn't require that kind of analysis, and are happening through committees addressing specific portions. He noted that InterCEP is ongoing. **Diana Mendes** asked how many RODs CRC will pursue? **Don Wagner** indicated CRC has had a lot of conversations with Federal partners, and it is likely they will have one ROD with FHWA and FTA.

Tom Warne asked if the environmental justice (EJ) group and UDAG have run their course. **Don Wagner** explained that UDAG was a sub group that completed its charge and ran its course, but would like to remain involved in some issues. **Carley Francis**, CRC, indicated the EJ group was not disbanded, but they struggled with how to form and reform. They have operated with a facilitator, a CRC staff lead, and a citizen lead. CRC did provide training for them. Most recently, an outside independent individual was hired to interview group members and was creating a report to capture the issue. **Diana Mendes** asked about the "pencil down" or completion date for design, and **Richard Brandman** explained it is not his decision, but he would choose June 30th if it was.

Tim Neuman asked what the two or three most pressing project schedule issues are. **Richard Brandman** indicated the Hayden Island design and number of lanes on the bridge need resolution. Another issue is the Rose Quarter impacts downstream. The downstream difference between build and no build is minimal. Congestion levels are decreased from no build in 2030. The bridge influence area (BIA) has six hours of congestion southbound today, and three hours in the LPA. Rose Quarter projects have been discussed, but it has been difficult to reach state and city agreement. CRC puts slightly fewer cars through, due to tolls and transit. **Don Wagner** feels we need local consensus on what project is, including Hayden Island and downstream affects. Without consensus, it would be difficult for the project to continue. The second issue is finance. Without local consensus, they don't have congressional funding support. **Tim Neuman** asked which issues are most critical for local consensus. **Don Wagner** indicated number of lanes and those

Richard brought up. He indicated finance is a second step deal killer, because without local consensus the finance plan doesn't matter.

--Break--

Frank Green, Don Wagner, and Rob Turton handed out draft bridge details. (Appendix C). Not yet printed. **Frank Green** indicated CRC has been working to determine the dynamic envelope of the box for transit clearance. The minimum width of the bridge is ninety-one feet near the middle, and accommodates five lanes to standard or potentially six with a substandard shoulder in the future. A bridge of this type is unlikely to be widened. An easier to widen structure would have more piers in the water. CRC is working on the bicycle and pedestrian facility, but doesn't know if the members will be concrete or steel yet, or what shape they will be. Prestressed composite bridge examples include the Kinokawa in Japan, Boullonais Viaduct in France, and Oresund Bridge between Sweden and Denmark, which has similar spans and heavy rail running underneath the deck. **Mary Lou Ralls** asked for follow up on structure tests done on the Kinokawa Bridge, and **Frank Green** indicated they would provide it.

Casey Liles and Steve Witter
Hayden Island Plan (Appendix D).

Steve Witter explained the purpose of the Hayden Island plan is to mitigate the moratorium on development initiated when Wal-Mart wanted to put in a store. The plan was created to remove the moratorium put in place to delay Wal-Mart, since the current freeway can't support the traffic. Hayden Island residents may not have realized the scale of the proposed interchange. The plan was adopted in 2009. Pages twelve and thirteen of the plan are CRC specific, and ask for an LRT station and arterial improvements, including Hayden Island to the north, Jantzen Beach to the south, and Tomahawk Island Drive through the center. The north and south would provide ramp access, and the center for transit and regional retail. It also asks for reuse of staging areas for public park space. CRC improvements to the interchange were always included in the Hayden Island plan.

Frank Green explained he attended a four day design charrette before the DEIS. CRC was tasked with providing technical information and visuals to convey the plan. The group didn't want to hear about a supplemental bridge, and were focused on the interchange and split single point urban interchange (SPUI). Transit was a big piece of that plan. Hayden Island preferred transit be as close to the freeway as possible to avoid marginal space between the two. There were questions about Tomahawk Island Drive. CRC showed visuals to help describe how it may not be a great connection for island, and that it would be depressed below grade.

Tim Neuman asked if anyone suggested removing the interchange and providing other access. **Frank Green** indicated they did not ask the interchange be eliminated, but did ask about locations for an arterial connection. The focus was on having the best interchange possible, and where an arterial could be added later.

Steve Witter explained residents consistently wanted interchange and arterial access until the PSC introduced the idea of removing or reducing the interchange. **Tim Neuman** asked about the context of the PSC discussion. **Steve Witter** indicated there was a notion to remove the Hayden Island interchange and downtown Vancouver ramp in an effort to reduce the number of lanes on the bridge. **Tim Neuman** has heard from the public that most Hayden Island residents stay on the island and don't commute. There is retail there today, but it doesn't have to stay. He wonders if the access is necessary. **Steve Witter** explained that Hayden Island is diverse with maritime industry, marine recreation, and light industrial. **Tim Neuman** asked if the plan is endorsed by the city, and **Steve Witter** said it is. To help clarify the major developers intent, he offered that the owner of the Jantzen Beach Supercenter indicated the street grid in the Hayden Island plan was developed conceptually with the owner knowing the grid wasn't suited to big businesses. The zoning allows for mixed and residential use. He is in negotiations with current tenants, and noted redevelopment takes time and is slow right now.

Marine Drive Flyover panel inquiry

Casey Liles indicated the Marine Drive flyover ramp idea appeared early on, and carried forward as the preferred alternative. It will be needed by 2030 but is not needed today. As part of the 2009 refinement, CRC looked at removing the flyover and worked with the port on the impacts. The port is very interested in the issue and wants it today if money is not a concern. They do not want the ramp precluded from later addition, at least. CRC is currently analyzing how to connect a future flyover. Not building the flyover now saves about fifty million dollars, not including the cost of inflation. They are also looking at using walls to retain fill and minimize structures.

Tim Neuman asked if the analysis is predicated on a Hayden Island interchange, and **Casey Liles** said it is. The Hayden Island design group includes the port and they are very interested in the issue. **Tom Warne** asked if it was possible that the flyover and braided ramp would have to be added back in as part of operational analysis. **Casey Liles** indicated it is possible, and that a working group is doing that analysis now. He noted the Hayden Island public is not concerned about the flyover.

Agency Views

Tri-Met

Alan Lehto, Director of Project Planning, Tri-Met, has been involved with CRC for a long time. He notes that it feels familiar right now, like we are close to making a decision so we are taking a second look. It has been a thorough process, with anything conceivably viable brought up and considered, documented, and packaged. They have looked at ferries, streetcars, and comprehensive options requiring significant time to prepare for the DEIS. He feels the process made sense and hopes it is transparent, and believes the final decision is harder not because of project merits, but the political technical intersection.

Fort Vancouver National Trust

Elson Strahan, President and CEO, Fort Vancouver National Trust, provided testimony (Appendix E) to the panel. **Elson Strahan** is a task force member and is pleased to support the process. He has worked with CRC staff and two project groups, and believes the legal requirements have been met by CRC. He commends CRC for their professional approach to a complex project. CRC began to identify negative impacts to taking acreage, architectural elements, noise, and cultural impacts. CRC is approaching each impact individually rather than to consider the large total impact. He is very interested in the proposed community connector (Appendix G), and provided IRP with a copy of the remarks he submitted for the DEIS (Appendix F).

When I-5 was originally built, it severed the connection between the fort and downtown Vancouver. Reconnecting the two has been repeatedly established as a goal. The CRC impacts required mitigation, and the National Park Service has stated CRC needs to improve pedestrian access and mitigate noise with a culturally appropriate solution. CRC can reconnect the fort and downtown to increase park use. Noise and visual abatement are also areas of interest. An invitational design competition was held to create mitigation suggestions. The results were presented to many people and groups, including the governors and DOT executives. An architect with an outstanding record led the competition, which was completed in 2009. Approval of the design was awarded, and the National Park Service determined it substantially meets all requirements. National Park Service evaluated all designs, and the one selected establishes a community connection and celebrates the historic and cultural significance of the site. The National Park Service feels the community connector is superior to the CRC proposed sound wall, and they fear that CRC will diminish the selected design and not fully mitigate the impacts. He urged IRP consideration and support to fully include the community connector.

National Park Service

Dr. Doug Wilson, Chief Archeologist, National Park Service, supports the community connector even though it lands on city land. There is a commitment to reuse the barracks, and the hospital is critical to the historic reserve concept. If the hospital is lost through the project, the freeway opened up to the west barracks. The fort is not just a regional park, but is nationally significant and sees twenty thousand students visiting the site per year, over half of which are from Oregon State. He is concerned about the hospital and the village, as it was the first community at the fort, and had residents from a variety of cultures involved in the fur trade. Restoring the village is important, but they are waiting to see how extensive the CRC impacts will be. Local tribes and Hawaiians have expressed interest in the site from the beginning, as they had ancestors who lived and died there. The National Park Service is also interested in a museum and curation facility expansion, as they have nearly two million artifacts, with very few on display. Most of these items came from the I-5 and SR 205 projects, and they expect many more from CRC.

Tom Warne asked for a summary of where they are in the CRC process. **Dr. Doug Wilson** just received a technical report of standing structures, and is working with CRC. He has been to a number of meetings, but hasn't seen an FEIS or other mitigation documentation. **Diana Mendes** asked how much time is reasonable before reaching a decision, and **Dr. Doug Wilson** indicated he would like to have specifics in the MOA, and have city and park agreement. **Diana Mendes** asked if the discussion could be wrapped up in two or four months. **Dr. Doug Wilson** indicated it depends on the negotiations. **Elson Strahan** added that they have been working on it a long time, and invited IRP to visit the facility and see the artifacts on display. He noted they have taken artifacts on with no compensation for some time, which is very costly. **Tim Neuman** asked if there were funding or design conflicts. **Dr. Doug Wilson** indicated they have worked closely with CRC and are satisfied with last design presented. **Elson Strahan** added that the National Park Service could have narrowly interpreted the standards and shifted the burden to downtown Vancouver. He commends them for splitting the burden.

City of Vancouver

Thayer Rorabaugh, Transportation Director, City of Vancouver, explained Vancouver is interested in many aspects of CRC, beyond making sure the bridge happens. They work closely with the fort trust, and to represent the desire of the community. They would like to reconnect the void created by I-5. It has been a lengthy process, and the governor helped finance the study of a community connection. The connection is proposed at a tight point in the project with the old hospital on the east, and new library on the west in a new development. The wall of a new parking structure will be the edge of project, and they are delighted everything will fit.

The project will have a profound development impact on downtown, and they look forward to continuing to work well with CRC on it. He noted downtown Vancouver streets fail without the SPUI, according to operational analysis, and expects to minimize impacts through collaboration. There are a number of benefits for Vancouver too, including lowering the railroad, extending Main Street, and realigning Columbia Way. They held a design charrette with local architects and CRC to recognize opportunities. He is confident CRC collaboration will continue, and asked IRP to recognize the opportunities for the fort and historic reserve.

Tim Neuman asked if he is satisfied with CRC staff and the design. **Thayer Rorabaugh** indicated it is not as good as it can be, but is pleased to be working with CRC. They are still working on how light rail will land, and asked CRC to review alternative park and ride locations to accommodate more dual purpose and mixed use. He considers it a work in progress, and is optimistic about working together on the final solution.

--Lunch--

Hayden Island Livability Project (Appendices H & I)

Erick Reddekopp and Pamela Ferguson

Pamela Ferguson, President, Hayden Island Manufactured Home Community Home Owners Association, explained their community is the largest on Hayden Island, with around one thousand five hundred residents. About sixty percent are senior citizens, and many residents have mobility issues, fixed incomes, and mixed ethnicity. The Community and Environmental Justice Group (CEJG) was formed as an EJ group with rights, privileges, and process. They started with good intentions and went through EJ training, but as trained members left over time, they were replaced with individuals without EJ training and the focus shifted to engineering issues. They became known as the CEJG, moved away from EJ issues, faced stalling and stonewalling from CRC, and asked same questions with no answers. It took six to eight months to get new EJ training, then when the group caused a stir, they were disbanded and still are. CRC called in an independent to find out what happened with the group. She feels the group was a failure, and CRC just did what they needed to cross EJ off their list.

Erick Reddekopp, Chair, Hayden Island Livability Project (HILP), is concerned about the effects of construction on mobile homes, particularly since they are sitting on cinder blocks on sand. CRC has promised to be there for residents, but they don't know what that means, and feel broad livability concerns have not been addressed, so they formed HILP. He feels CRC is lot of bright people, but they have failed the community. He noted that the possibility of closing of Safeway prompted HILP, and that the mobile home community is an EJ community, with low income, senior, ethnic diversity, and mental and physically handicapped residents. He believes CRC has done a lot of outreach, but lacks meaningful out reach. Residents need more than a flyer about an open house. CRC is now part of the Hayden Island redevelopment plan, which also didn't reach out to the community.

Many residents planned to live out their lives in the community. They aren't opposed to change, better transportation, or solving the problem, but are opposed to five years of construction and a loss of the services they rely on. HILP is working with CRC and Metro to look at alternative interchanges, but it should have happened years ago. Hayden Island is easy to pass and forget, and requested IRP examine the issues and not let the Hayden Island community be demolished.

Tim Neuman asked about the progress being made, and whether having more time would be helpful. **Erick Reddekopp** feels they have done a remarkable job given the amount of time they have had, but feels another month would do a lot. The city has brought forward ideas and tremendous progress is being made, but there are still a lot of questions. They are relying heavily on CRC for engineering realities for these ideas, and both options are better than the current CRC twenty-two lanes. **Pamela Ferguson** most wants to see information on how construction will impact livability, homes, and the ability for residents to walk to the businesses they relay on. **Erick Reddekopp** wonders what the plan will be if Safeway closes before a new store opens.

Diana Mendes asked if the current process meets the need for meaningful public input. **Pamela Ferguson** explained the effort is about engineering design, and doesn't address EJ needs. **Erick Reddekopp** would like more answers about construction impacts, services, and how people will live and function during construction. **Pamela Ferguson** feels they don't have any confirmation on anything. **Erick Reddekopp** wants to know what impacts the pile installation will have. He noted that a scrap metal business shakes his home from all the way across the river, so is concerned about pile installation much closer.

Metro

Andy Cotugno, Metro, will speak about Metroscope, tolling and greenhouse gas (GHG) analysis, and the mobility council. He has concerns about the Metroscope presentation provided to IRP, and is unsure where the fifty percent improvement in travel times came from. He wonders why an improvement of half that amount wouldn't also induce growth. He explained many options were modeled showing a variety of benefits, but that the Metroscope model showed only a five percent improvement in travel time. If the benefits are close to five times that, he expects the induced growth to be higher as well. He feels the qualitative information available is good, but recommends running additional models to allow for quantitative analysis, in hopes of resolving some current discussion items. There are many scope and toll options on the table, but he suggests running bookends of no build, the current proposed project, and a maximum build scenario of twelve lanes with LRT and no toll to allow for anything in between to be inferred.

Tim Neuman questioned running a model without tolls if there is no project without tolls. **Andy Cotugno** indicated it was to provide a benchmark to measure other scenarios against, as the tolling study did, to test and quantify the assertion that tolls mitigate growth, and to allow the infinite range of possibilities to be inferred from the maximum and minimum models. **Diana Mendes** asked how long it would take to model the bookends, and **Andy Cotugno** indicated six weeks for all three runs.

Andy Cotugno commented that neither the tolling or GHG analysis include the affects of induced growth, so qualitative induced grow the information would shed light on these issues. He indicated Metro assumes tolls will be included, and noted CRC has done a good job gathering information but it isn't clear how it translates into decisions. He wonders if demand can be mitigated to reduce the number of lanes necessary, and notes a mobility council would monitor the facility for adequate performance into the future. They may utilize tolls, vanpools, employer programs, or other transportation demand management techniques.

Tim Neuman asked if tolling was included for financing or demand management, noting the toll structure would be different between the two. **Andy Cotugno** indicated it is intended to serve both. He recognized that tolls are being crushed politically nationwide, and that the Tacoma Narrows Bridge has a group in place to keep tolls and costs down. It is one thing to have a good tolling analysis, another

how that information is used to make decisions. He indicated the mobility council is a good advancement and tool to manage the facility in the future. It could provide objective performance measures, address and respond to diversion, and may employ actions beyond the control of DOTs.

Tom Warne asked if CRC was moving forward with developing the performance measures, and **Richard Brandman** indicated a mobility council couldn't perform its function yet, and would likely form close to the new facility opening. **Tom Warne** asked if Metro pictured a similar timeline, and **Andy Cotugno** suggested the timeframe sounds appropriate, but the actions and responsibility of the group is critical to the agreement and would need to be set ahead of time. He indicated it would be helpful if IRP could give input on alternative Hayden Island options as well. **Tim Neuman** asked about the chance of success, and **Andy Cotugno** explained there is a good possibility of improvements, difficult choices to be made, and trade offs as to which part of island will be impacted. They are doing a lot of work quickly, staying within schedule but may reach a point where additional work needs to be done to get to an appropriate level for the FEIS.

Tom Warne provided closing remarks, inviting everyone to attend the next IRP meetings on June 17th. There will be a public comment period on the evening of June 17th, and details can be found at CRCReview.org. He thanked both the citizens and groups for the information provided to the panel.

Note: Appendices to this summary can be found online at CRCReview.org.

**Columbia River Crossing Independent Review Panel
Financial Plan, Project Management,
& Performance Measures
Meeting Agenda**

Date: June 17, 2010

Location: Red Lion Hotel on the River - Jantzen Beach
909 N. Hayden Island Drive, Portland, OR 97217

TOPIC	Presenter	TIME (Approx)
Welcome and Kickoff	<i>Tom Warne, IRP Chair</i>	<i>8:00 – 8:10 am</i>
Technical Briefing by CRC Staff - Financial Plan: <ul style="list-style-type: none"> • Risk Assessment • Cost /benefit Analysis • Finance Plan • Tolling 	<i>Richard Brandman, Don Wagner, and CRC Staff:</i>	<i>8:10 am - Noon</i>
Lunch Break		<i>Noon – 1:00 pm</i>
Technical Briefing by CRC Staff Continued - Project Management: <ul style="list-style-type: none"> • State’s Role <ul style="list-style-type: none"> ○ Authority ○ Decision Making • Project Management Plan <ul style="list-style-type: none"> ○ QA/QC Highlights ○ Organization Chart • Project Delivery <ul style="list-style-type: none"> ○ Schedule Milestonss ○ Constructability ○ Sequencing ○ Traffic Management 	<i>Matt Garrett, Director, ODOT; Dave Dye, COO and Deputy Secretary of Transportation, WSDOT. Richard Brandman, Don Wagner, and CRC Staff:</i>	<i>1:00 – 2:45 pm</i>
Break		<i>2:45 – 3:00 pm</i>
- Performance Measures - Sustainability	<i>CRC Staff</i>	<i>3:00 – 3:50 pm</i>

This agenda is current as of June 16, 2010, and may be revised prior to or during the meeting on June 2nd.

Agency Views / Q & A	<ul style="list-style-type: none"> - Commissioner Peterson, Clackamas County (3:45 – 4:00 pm) - Councilor Rex Burkholder, on behalf of the CRC Task Force (4:00 – 4:20 pm) - Sharron Nasset, Third Bridge Now (4:20 – 4:35 pm) - Steve Witter, CRC Project Staff, on behalf of Tri-Met (4:35 – 4:40 pm) - Joseph Cortright, Impressa Consulting; on behalf of Plaid Pantries, Inc. and the Oregon Neighborhood Store Association (4:40 – 5:00 pm). 	3:50 – 5:00 pm
Wrap up and Adjourn	Tom Warne	5:00 pm

Community Comment Session

Location: Red Lion Hotel on the River - Jantzen Beach, Multnomah Room

<i>Individuals are welcome to share information with the IRP. To be ensured a slot to talk, please sign in by 7:30 pm.</i>	<i>7:00 pm – until all comments heard</i>
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INDEPENDENT REVIEW PANEL
Columbia River Crossing



Title: **Independent Review Panel Meeting**
Date: June 17, 2010 at 8:00 a.m.
Location: Red Lion Hotel on the River, Jantzen Beach
Reference: CRCReview.org

IRP Members Present: Tom Warne (Chair)
Rodney Brown
Bob Ferguson
Dr. Patricia Galloway
Diana Mendes
Dr. Mike Meyer
Tim Neuman

IRP Members Not Present: Mary Lou Ralls

IRP Staff Present: Jennifer Vachon (Administrator)
Sharon Smith (Notetaker)

Welcome

Tom Warne welcomed those in attendance and encouraged attendees to visit the Independent Review Panel (IRP) website, CRCReview.org for biographical information about the panel members, who have been introduced in previous meetings. He also invited attendees to the community comment session later in the evening at seven p.m. in the same location.

Technical Briefing by CRC Staff: Financial Plan

Frank Green, Structures Engineering Manager, CRC, introduced **Dr. Khalid Bekka** who delivered a presentation on the cost/risk benefit analysis and financial feasibility of the project (Appendix A).

Dr. Khalid Bekka began by provided an overview describing how his presentation on the project team's cost benefit and financial feasibility analysis process would progress. He then began his discussion of the cost risk assessment. He indicated the cost risk assessment's objective is based on the Washington State Department of Transportation (WSDOT) Cost Estimate Validation Process (CEVP) to encourage early planning and to focus the project team on mitigation planning for all the identified key risks. He explained it is meant to identify key risks, to quantify and assess them, develop mitigation strategies and then track and monitor those mitigation strategies. He indicated part of this process involves mitigation sessions to more fully elaborate on risks and mitigation strategies and a tool for tracking key risks and ensuring mitigation steps are taken. He explained the outcome of the

process is a snapshot of whatever information is available at that time. It provides a ballpark from the cost and schedule perspective and ranks the key drivers behind cost and schedule. He indicated the process helps the team to drill down to where risks reside in the project.

His presentation used examples of two scenarios showing schedule and cost analysis: 1) the Locally Preferred Alternative (LPA) Full Build and 2) the LPA Phase 1. He discussed as an example, base cost estimates from November 2009 and explained that key items of the construction process are able to be analyzed line item by line item and to assist in developing a range and the percent of likelihood for that cost. The ranges reflect the base costs, plus base cost uncertainties and risks, as presented in cost and schedule.

Tim Neuman asked for clarification on the base cost nominal year used in the examples. **Dr. Khalid Bekka** confirmed it is 2009 in millions of dollars. **Dr. Khalid Bekka** continued with an explanation of how these numbers move forward in the financial analysis. **Dr. Mike Meyer** asked two clarification questions: 1) Are these year of expenditure dollars? 2) What was the year of the construction period you assumed over the different elements? **Dr. Khalid Bekka** confirmed year of expenditure dollars for each scheduled activity were used, and that the flowchart reflects the various activities and their lengths.

Dr. Khalid Bekka continued the presentation. He provided a discussion of the ranking of key risks and then schedule assessment. He indicated the schedule assessment is completed similarly to the cost assessment and he provided example scenarios to explain the assessment process, including a summary table of the results. **Tom Warne** asked that the presentation be paused for questions from the panel.

Tim Neuman indicated the analysis reflects a lot of the base assumptions and asked about the fundamental assumptions for schedule and delivery method. **Frank Green** indicated they would present a detailed schedule later in the meeting. The schedule assumes a design-bid-build contract. There was a discussion about early completion incentives but the team hasn't gotten that far in decisions regarding schedule at this point. **Dr Khalid Bekka** confirmed the assumption is a design-bid-build and there is no acceleration and no incentives.

Dr. Mike Meyer asked about the estimation of 2.2 months of delay in schedule if a tax increase does not pass in one ballot measure. He asked from what basis did the 2.2 come from? He indicated that these types of issues would create more of an impact on the project schedule in terms of the months of delay. **Dr. Mike Meyer** indicated he understood the probabilistic method used in estimating but that for issues of a political nature such as this the estimation hits up against reality and that the impact of a delay is easily up to a year. **Dr. Khalid Bekka** explained that in this case, they looked at expected value and the 2.2 months example is a 50% likelihood estimation. He indicated they worked with a variety of stakeholders to assess the

likelihood estimation used in the end. **Frank Green** reiterated this point. **Dr. Khalid Bekka** continued that ninety percent likelihood is a completely different estimation and that a six to twelve month impact would indeed be the correct impact for a higher likelihood of this risk.

Dr. Patricia Galloway asked if the risk assessment was done on the WSDOT self-modeling program for risk, At-Risk, or some other risk program. **Dr. Khalid Bekka** confirmed they used At-Risk software and that each activity was modeled by itself and then combined to reflect linkages between cost and schedule. **Dr. Patricia Galloway** then asked if all the experts were internal personnel from agencies or were independent experts brought in as part of the risk assessment team. **Dr. Khalid Bekka** confirmed there was a combination of several local agency personnel, some outside independent subject matter experts (SMEs) invited, and that the process used was consensus-driven.

Dr. Patricia Galloway then asked once they had done the modeling, how did the team identify what the true impact to the project would be if the high-probability, high-impact consequence risks actually manifested. She also asked what was done with the final ten or twenty key risks identified. **Dr. Khalid Bekka** answered that the team moved risks to the mitigation session portion of the process and looked at risks individually in these sessions. He indicated the probability distribution should reflect that already. **Frank Green** further clarified that when they identified the top ten risks they worked them through the mitigation sessions with the various agencies and stakeholders involved. They went through the top ten risks in this fashion and that helped uncover more risks. They then developed mitigation plans for addressing these risks to lessen their probability. **Dr. Patricia Galloway** asked for a list of what the combined top ten or twenty risks were.

Tim Neuman asked how the assessment accounted for the economic uncertainty of the last couple of years since this was done in 2009. He also asked how the competitive nature of the industry was factored in considering the project is so large, is greater than anything the area has seen before, and that there are other large transportation projects happening in Washington at the same time. **Dr. Khalid Bekka** answered that volatility was addressed by widening the probability ranges and that they also consulted with SMEs and conducted a mitigation session on market conditions to assess whether or not various uncertainty factors were reflected enough in the escalation ranges. He indicated that in the end, they envisioned the next seven years, widened the ranges, and used the escalation factors they thought the most realistic for today.

Tom Warne requested more detail about how the team came up with cost estimates, especially unit bid prices and how they were used to come up with final price. **Dr. Khalid Bekka** indicated this was an area of tremendous debate, and many outside SMEs with various expertise were brought in to discuss. In the end, they talked about over two hundred risks at the start and addressed each of them with input from the technical team and then outside experts. **Frank Green**

indicated the estimate was detailed for this level of design down to the square footage of bridge for types of bridge, etc. This was then broken down geographically for each one of the interchanges and there was a lengthy and detailed estimate for each element. For each unit bid price, the team looked at historical bid analysis for WSDOT and Oregon Department of Transportation (ODOT), local economy, etc. **Tom Warne** asked if they did build-up estimates or if these are modifications of unit prices. **Frank Green** replied that for the river crossing pieces of the project, they are contractors based, build up estimates, and are in the type study report submitted. For other interchanges and land-side bridges, the design wasn't advanced enough at that point so are based on unit bid prices and historical build analysis.

Tim Neuman asked if the team looked at other comparable projects across the country to analyze if this project was comparable to any in terms of schedule, cost, etc. **Dr. Khalid Bekka** answered that the experts they conferred with have nationwide expertise and these types of projects should be reflected in their expertise. They did mention several other projects throughout the process and he believes this kind of thinking was part of the various discussions. **Tom Warne** commented that having expertise to discuss the ideas is different that building an estimate based on this kind of analysis.

Dr. Patricia Galloway clarified her earlier request on risk assessments, noting she would like to see the actual mitigation plans for each of these top risks and noted that these are not in the report that is in front of the panel. Secondly, she noted that drilling into the estimations, the WSDOT estimating manual has certain percents for engineering, right away, etc., and she assumed the build estimate is just for construction. She asked if the team applied the WSDOT estimating manual estimates to all other elements, and if they looked at the uniqueness of the components of this bridge. Further, she asked how the river crossing estimates, were done relative to the uniqueness of this bridge.

Frank Green replied that the team did look at both WSDOT and ODOT factors for construction management and administration to come to agreement. The team tried to look at both of these and then look at the project to see if it made sense to put twelve percent engineering on higher cost items, or if it needs more or less. They tried to determine what the correct percentage was to use, not just the exact percentages from the manual. They had contracting experts develop estimates and then applied the management and administration percentages they thought reasonable. **Dr. Khalid Bekka** added that the ranges reflect the unknowns from the unit pricing and quantity perspectives. Accounting for uncertainty is the reason for a wide range at the baseline. He recognized there are a lot of unknowns in terms of how you build up these costs.

Tim Neuman asked, about the plan going forward in terms of updating this over time and how much of this uncertainty can be closed in a year from now, as more of these questions get answered.

Frank Green replied that as part of the WSDOT CEVP process they have had three or four workshops on almost an annual basis since 2006 for each milestone. As design advances, refinement should help with the uncertainty piece of the cost estimate. **Dr. Khalid Bekka** noted the team has a tracking tool he mentioned previously that has all the risks included with their likelihood. It is used to modify, retire, and update risks as we progress. It is being used until completion to track and hopefully reduce uncertainty.

Tom Warne suggested moving onto the next topic for the morning. **Dr. Khalid Bekka** proceeded with his presentation on cost benefit analysis (Appendix A) using, as an example, the results from the LPA. He discussed the principles of the estimations and the taxonomy of the categories and benefits of the project identifying three beneficiaries in the taxonomy: transit, highway users, and community at large. The benefits presented were categorized in three areas: congestion management benefits, mobility benefits, and community development benefits.

Tom Warne asked how freight is categorized in the matrix presented. **Dr. Khalid Bekka** indicated they are represented in the highway user benefits. They tried to look at freight benefit from a reliability perspective. The Federal Highway Administration (FHWA) has not endorsed the productivity benefit as part of the highway benefit. This is listed in the report but is not included as part of the total benefits but not on the benefit side in terms of freight. Productivity will eventually be included but is not yet included in the total benefits.

Tim Neuman asked why there was no attempt in this matrix to quantify safety benefits, since they are indicated in the highway benefit impacts. **Dr. Khalid Bekka** indicated he would be covering this at a later point, but the model estimates safety under congestion benefits. He indicated congestion drives safety metrics and that this would be discussed in more detail later.

Dr. Khalid Bekka continued with the discussion of highway benefits saved over the years. He explained uniqueness of the corridor in terms of transit and highway choices. He discussed convergence theory and the Federal Transit Administration (FTA) research on strategic corridors and how this project is comparable to this research. **Tim Neuman** asked for more clarity on the table shown as part of the presentation as the speed and travel time savings do not correlate. He asked if the speed differential is less, why would the travel time be more? **Dr. Khalid Bekka** indicated it depends on volumes, and the curve is not linear. **Dr. Mike Meyer** agreed with the question and asked if the basis is a travel demand model. **Dr. Khalid Bekka** indicated it was an economic model.

There was further questioning by **Dr. Mike Meyers**, **Tim Neuman** and **Tom Warne** and it was concluded that the travel demand model was the basis for the 2030 projections but the estimates for 2040 were extrapolated because the model could

not be run for that time as there is no network for 2040. **Tom Warne** indicated the panel would probably have more questions about this but that it was best to move on with the presentation at this time. **Dr. Khalid Bekka** concluded by clarifying that a thirty-year lifecycle for investments was used, and they expanded the lifecycle to include estimates for 2040.

Dr. Khalid Bekka continued with the presentation. He discussed average savings per driver and the value of time for commuters in the region based on driver surveys indicating the numbers are a range. He indicated this has implications for later discussion on tolling. **Tim Neuman** asked if the number presented represented the number of auto trips or persons in the car. **Dr. Khalid Bekka** indicated it was the number of auto trips, one way.

He continued discussing benefits to low-income populations and transit use specific to alternative transportation availability and including reliability and travel times. **Tom Warne** asked about the level of confidence on the numbers estimated, in particular regarding the extrapolation of 2040 numbers and specific to the numbers presented for average savings per low-income rider. **Dr. Khalid Bekka** replied that ranges were used in extrapolation and that for the numbers specified by Tom Warne there is a fifty percent likelihood. He explained further that in their extrapolation, they tried to use key drivers and do sample forecasts going forward to 2040 and that this is what is being presented in terms of the 2040 numbers.

Diana Mendes asked why the focus was on low-income riders and not all riders. **Dr. Khalid Bekka** indicated it stems from the FTA framework indicating that using all riders double counts. The framework divides this into three categories of congestion benefit but recognizes that the benefit for low-income groups is not in the congestion area but in affordability. If they counted all riders, they would be double counting.

Diana Mendes noted there should be a benefit realized for all riders and questioned how it is captured in this model. She asked what percentage of users is anticipated to be low-income relative to overall ridership. She and **Dr. Khalid Bekka** further discussed this issue and she indicated she felt something was missing in not looking at the income variations of the drivers on highway but that they are doing this for transit. **Dr. Khalid Bekka** noted that the highway travel time savings is stronger than transit travel time savings and they focused on the highway time. From the transit perspective he said there are savings compared to no-build but that most savings are in the low-income group. **Diana Mendes** indicated we should see this even if it is small. **Dr. Khalid Bekka** responded they have this information but it isn't shown here. He indicated they have the full list of benefits for each cell of the benefit matrix he presented. **Diana Mendes** asked about environmental benefits and **Dr. Khalid Bekka** indicated they are under community benefits. **Diana Mendes** concluded it would be helpful to look at a full range of highway rider benefits.

There was then discussion of the summary table of benefits presented, questions from **Dr. Mike Meyer** and **Diana Mendes** about the poverty thresholds used and if these were by household or by transit dependent population. **Dr. Khalid Bekka** indicated they used threshold figures from census and transit agencies and that they used household income because transit won't have the correct income figures associated with transit dependency.

Dr. Khalid Bekka continued with a discussion of property value benefits. **Tim Neuman** asked if this was for Portland and the region and what was the basis. **Dr. Khalid Bekka** indicated it was based on Portland and the nation and based on research that is referenced in the report.

Dr. Mike Meyer and **Dr. Khalid Bekka** then discussed the idea of including proper value benefits in the cost benefit analysis. **Dr. Meyer** indicated that this was included in the benefits calculations even though traditional economic theory indicates they shouldn't be. **Dr. Khalid Bekka** indicated he understands the debate but believes that the portion of the benefit they have included here and in the report should be included in the cost benefit analysis. In his view, even if it is taken out of the cost benefit analysis it is worth including as a benefit of the investment because regarding property values and proximity to transit, studies show the benefit is not a transfer benefit but an incremental benefit.

Dr. Mike Meyer then asked several other questions about the summary table and whether the latest federal method was used for the number related to safety and congestion management, specifically how the value of human life and reduction in fatalities were estimated since the federal highway raised the value of human life. **Dr. Khalid Bekka** indicated they used the 2009 National Safety Council numbers. **Tim Neuman** noted these are different methodologies. **Dr. Mike Meyer** continued to ask questions about the numbers and metrics used in the summary table and **Dr. Khalid Bekka** clarified.

Tim Neuman asked when this analysis was done and if it was done after the selection of the LPA, or if it was part of the database of information to establish the LPA. **Frank Green** indicated an initial cost benefit analysis was completed on the alternative selected after the draft environmental impact statement (DEIS). This analysis presented today is for the actual, refined LPA we talked about in previous session. **Tim Neuman** asked if this was something to help the decision or if the analysis was done after the decision. **Frank Green** confirmed it was an effort after the decision. **Diana Mendes** sought further clarification outlining there was a first level cost benefit analysis done in the DEIS and this analysis was reflected in the DEIS. After the LPA there was a more in depth one done and then a third round after refinements. **Frank Green** stated this was correct.

Diana Mendes asked about the term "affordable mobility" and asked what changes we could expect to see if there was a line item for just total, overall mobility. **Dr. Khalid Bekka** noted that this linked back to some of Dr. Mike Meyer's previous

questions, and the danger of double counting. His worry is about tapping into other groups that have already been accounted for in travel time savings. **Diana Mendes** continued by asking if the line item travel time savings under congestion management is reflective of overall mobility. **Dr. Khalid Bekka** answered yes.

Dr. Mike Meyer, Tom Warne and Tim Neuman asked several questions related to the origination of assignments of monetary value for some factors, salvage value, disruption costs, and net present value versus annual value and percentage of project costs. **Dr. Khalid Bekka** clarified these numbers and provided explanations of what was used in the analysis. **Tim Neuman** asked how the costs compare with other mega projects nationally or that WSDOT is completing. **Dr. Khalid Bekka** indicated a comparison with other mega projects was not done but noted that nationally the highway investment rate of return was 2-3% for interstate investment in the seventies and eighties, and that this project is a much better return in his view because of the transit associated with the project. **Tim Neuman** noted that the analysis has not been done in this case. **Dr. Khalid Bekka** concluded by noting that highway cost benefit analysis erodes over time, that transit has minimal upfront benefits but as congestion goes up transit use goes up in later years and that is the sustainability of this type of solution.

--Break--

Technical Briefing by CRC Staff - Continuation of Financial Plan Presentation

Dr. Khalid Bekka presented the financial feasibility component of the technical briefing. He indicated it is preliminary and still requires scrutiny and is a work in progress analysis throughout the project. He noted there are three components of the financial plan: 1) tolling, 2) federal funding, and 3) state and local. He noted the tolling discussion is based on a tolling report from 2009. He provided the modeling assumptions and more detail about the specifics of the tolling report, including toll elasticities and explained the report presented several scenarios. He explained that the sensitivity to tolls is not so unusual based on other regions in the country. **Dr. Mike Meyer** asked a question related to total elasticities and sought clarity on the change in the number of trips presented in the example. **Dr. Khalid Bekka** provided an answer via a further discussion of the toll rate on I-5. He clarified that I-205 tolling is not part of the study due to legislative reasons that prevent tolling of I-205. He indicated the financial feasibility discusses five scenarios that were then also run for pre and post completion so there are really ten scenarios presented. **Tim Neuman** clarified they are not moving forward with any scenario that has tolling on I-205. **Dr. Khalid Bekka** confirmed they are not.

There was further presentation by **Dr. Khalid Bekka** and he indicated the scenarios may change over the years and the scenarios provide a broad range of toll rates to assess the scenarios from a feasibility standpoint to compare to various local, state, and federal funding options. **Tim Neuman** asked if the whole exercise they are going through is about revenue generation to fund as opposed to congestion management strategies in terms of tolling scenarios. **Richard Brandman**, Oregon

Director, CRC, replied no, that is not correct and indicated that scenarios include additional price points and all the options (except one) assume that there will be variable price tolling. **Dr. Khalid Bekka** indicated there is a scheduled rate change to curb congestion. **Tom Warne** reiterated the short answer is that tolls are used not only for revenue creation but also for congestion management. **Richard Brandman** answered this is correct.

Dr. Mike Meyers noted that regarding I-205, from the management of a flow perspective the project is only looking at I-5 tolling and it is clear it does not consider I-205 as part of their charge. He asked, from a broader public policy perspective, why is the project not looking at the total crossing of the river from all alternatives and at a bigger picture. **Richard Brandman** answered that the sensitivities of tolling both bridges were considered in the scenarios to assess implications of tolling both bridges. There has been a determination that for this project the tolling of I-5 would be the only bridge assumed to be included in the financial feasibility of this project. The tolling of I-205 brings up a host of other issues such as statutory, regional and political issues. It's not to say that I-205 won't be tolled at some point, or even during this project, but to be prudent and conservative we haven't incorporated these into the finance plan. **Dr. Patricia Galloway** asked for clarification on whether the costs are calculated assuming the split scenario between tolling and congestion tolling to get to the pricing curves. **Dr. Khalid Bekka** confirmed they are, and that these are partial congestion pricing.

Dr. Khalid Bekka continued with the presentation and the financing scenarios and the debt coverage. He indicated they are a summary of what is going into the financial model. **Tom Warne** and **Dr. Patricia Galloway** asked clarifying questions regarding funding assumptions and sources of existing funds. **Dr. Khalid Bekka** indicated he would cover this in upcoming discussion. He continued to discuss bond proceeds and other assumptions going forward, stressing the numbers have changed over time and will continue to change. **Tim Neuman** asked if there were restrictions on pre-construction tolling on I-5, and **Richard Brandman** confirmed pre-construction tolling can commence when construction contracts are let.

Dr. Patricia Galloway asked if there are deadlines that have to be met in order to capture the New Starts or Projects of National Significance. **Richard Brandman** confirmed these questions are political and the response from their congressional delegation is that the more work complete, the higher likelihood of receiving these funds. So, completing the environmental impact statement and record of decision increases our probability of funding. They've also been told it's not a fatal flaw if it's not accomplished by the time the bill has been re-authorized. They are targeting a record of decision in this calendar year and it's not likely the reauthorization bill will happen until sometime in 2011.

Dr. Khalid Bekka and **Richard Brandman** also clarified some points about New Starts, such as the cycles of approval and the fact that the project has been rated well in all categories that will get us a recommendation for funding. In general, the

conversations are going well but the project has to get through the process before commitments are made.

Dr. Mike Meyer asked about the historical success for projects of this magnitude and the reality of state level funding. He also commented that a large portion of estimated costs is based on assumptions of federal transit and highway funding and that state department of transportation (DOT)s will contribute too. **Richard Brandman** indicated that there are draft bills and will be requests to both legislatures in 2011 sessions, and that in conversations with congressional delegation the project was told that the amounts requested are appropriate but at upper levels. **Richard Brandman** indicated Dr. Meyer's comment is correct and the project is still in environmental assessment with design issues still in play. The project will become more secure on cost and funding as they continue to define scope and the project plan.

Tim Neuman asked what is the plan if any part of the funding is not secured, and asked about the contingency and back up plan on the sources of funding and what will happen if any of those funds are not manifested. **Richard Brandman** indicated the project would have to go back and adjust the scope if not all of the funding is received. **Dr. Khalid Bekka** reiterated that tolling looks robust enough for debt service coverage and that the financial model will be continually adjusted. **Tim Neuman** clarified that he understands the difficulty of the plan but that his questions relate to public understanding of the plan. He continued, noting there are many uncertainties, all the funding pots are competitive, and the question is whether people understand what the difficulties are, what may not get built, and other implications if funding is not secured. **Richard Brandman** stated that the financial plan has been shared with the project sponsors council and there is confidence the funding plan is understood and is transparent.

Tom Warne and **Dr. Mike Meyers** asked questions about the bonds and bond proceeds. **Bob Ferguson** asked if there is a fall back plan. **Richard Brandman** addressed the bond questions and indicated that the fall back plan is the subject of a presentation later this afternoon. There was continued discussion of the assumptions around tolling revenue, approval processes for tolling, and interest rate assumptions with **Tom Warne** and **Dr. Mike Meyer** asking questions that were addressed by **Richard Brandman** and **Dr. Khalid Bekka**.

Tim Neuman asked what is the minimum amount or threshold of total funding that is enough to have some sort of project or that allows you to move forward in some way and if there is a plan for how to address this type of scenario? **Richard Brandman** indicated that he is not prepared to address that question today and that any project at this stage is making assumptions and that this project is too far away from the scenario of the question to give a firm answer on this. He thought the DOT directors might be able to address this more. There was further discussion on this topic with **Tim Neuman** asking additional clarifying questions. The issue of how funding would come from bridge traffic was raised and there was a discussion of

transponder technology and potential license plate registration processes. **Richard Brandman** and **Dr. Khalid Bekka** addressed these questions and topics and **Tom Warne** introduced **Dave Dye**, COO and Deputy Secretary of Transportation at WSDOT, who added clarification and detail on the transponder questions and related license plate processes, and addressed additional questions from **Tim Neuman**. **Tom Warne** and **Tim Neuman** asked additional related questions of **Richard Brandman** and **Dr. Khalid Bekka**. **Tim Neuman** asked a final question about the implementation components and which are most critical. **Richard Brandman** confirmed that on some they have a high degree of confidence and others they are still working to accomplish.

The presentation concluded and **Tom Warne** indicated the panel would proceed with the early presentation of the afternoon's topic.

Technical Briefing by CRC Staff - Project Management Roles and Responsibilities
Matt Garrett, Director, ODOT and **Dave Dye**, COO and Deputy Secretary of Transportation, WSDOT, gave a presentation of state roles on the project (Appendix B).

Matt Garrett indicated the state DOTs own this project and hold the various responsibilities that come with this. **Dave Dye** provided an overview of WSDOT's organizational structure and authority, indicating that WSDOT reports to the Governor, and describing the Transportation Commission's responsibilities. **Matt Garret** discussed the organizational structure and authority of ODOT and the Transportation Commission and their working relationships.

Matt Garrett discussed that in terms of the CRC project, there is not a separation between the two DOTs. The Governors and Transportation Commissions between the states communicate regularly about the project, so there is a full partnership between the two.

Dr. Mike Meyer asked who is part of the executive management group and **Diana Mendes** asked if transit was represented in this group also. **Dave Dye** addressed the questions and indicated that upcoming parts of the presentation would provide more details. **Diana Mendes** had an additional question about the structure for project partners and that structure. **Dave Dye** confirmed there is another structure for partners and that their presentation is just showing the structure between the two states in the project.

Rodney Brown asked where funding responsibilities lie, which state is the recipient or issuer of bonds, and which state is obligated for each, compared to who has management authority. **Dave Dye** indicated there will be a structure for this down the road, but the vast majority of the funding for the project would come to the DOTs and later down the road the transit pieces would go to the transit pieces. **Tom Warne** asked additional questions about governance over bonds and tolling. **Dave Dye** replied that some of these are open questions about tolling and how these

will be secured and who has authority. They've had discussion and have agreed to continue talking. They will need to work out agreements.

Dr. Mike Meyer asked if the presenters could speak about the feasibility of the assumption of funding and the likelihood that the state legislatures will come up with funds. **Matt Garrett** and **Dave Dye** provided their thoughts, which were mostly positive but with an indication that conversations will continue with legislative representatives.

--Lunch--

Technical Briefing by CRC Staff - Continued Project Management Briefing - Decision Making Processes

Tom Warne introduced **Don Wagner**, Washington Director, CRC, and **Richard Brandman** for the next part of the briefing presentation.

Don Wagner continued the project management briefing (Appendix B) and presented a discussion of decision-making processes for the project, categorizing them as of a technical (inter-DOT decisions) or executive (policy related) nature. He provided more details on the project partners and stakeholders and the various responsibilities and communication flows.

Tim Neuman, **Tom Warne**, and **Diana Mendes** asked various questions related to the types of executive decisions, requesting clarification on the number of decision-making bodies, the relationship of the transit agencies' decision making in relation to the DOTs, and the role of the project sponsors council. **Don Wagner** confirmed that transit is very involved in the project's decision making, described the various decision-making levels and responsibilities, and described the project sponsor council's role.

Don Wagner then presented the decision-making process timeline using the example of how decisions were arrived to proceed with the open-web box bridge type. **Tom Warne** asked clarifying questions around the process and communication flows and **Tim Neuman** asked questions about the project sponsors and owners and sought clarification on how these groups relate as well as about how the two federal highway divisions fit in this structure. **Don Wagner** and **Richard Brandman** provided additional details and addressed the various questions. **Don Wagner** continued with the presentation, describing the quality assurance and quality control processes for deliverables and decisions as well as the escalation process up to FHWA and FTA. **Tim Neuman** asked about the role and involvement of entities like the City of Portland and other technical stakeholders and **Richard Brandman** confirmed they are part of the integrated project staff and he and **Don Wagner** concluded their presentation.

Continued Project Management Briefing - Project Management Plan

Frank Green with **Kris Strickler**, CRC Deputy Project Director, began the presentation of the project schedule and a discussion of the level of effort and work involved in building and maintaining the schedule. **Frank Green** discussed how the schedule is maintained and provided a milestone chart. **Diana Mendes** asked if the project team considers the record of decision to be on the critical path, and **Frank Green** confirmed that they do. **Diana Mendes** also posed questions related to FTA approval for the application to apply for final design and asked for clarification about how the timeline for this is depicted in the schedule. **Frank Green** and **Kris Strickler** addressed her questions.

Tim Neuman asked about the timeline around resolutions for the Hayden Island issues and the impact of that decision on the schedule in particular the changes if the locally preferred solution is decided. He also wondered if there are similar, additional decisions of this nature still outstanding. **Frank Green** provided information about the decision and **Don Wagner** indicated as soon as more is known about design there will be a better idea of the significance to changes in project schedule. **Don Wagner** also indicated there are some other issues that are on the critical list but those are closer to being resolved. They provided details on the nature of these issues.

Dr. Patricia Galloway asked if the durations, especially in the construction phase, are based on modeling done in the fiscal assessment that had delay impacts and how are those reflected in the schedule. **Frank Green** provided details. **Dr. Patricia Galloway** asked additional questions related to CEVP and whether this would have to be updated to reflect upcoming decisions and reevaluation before inclusion in the final environmental impact statement (FEIS). He indicated they didn't plan on running another CEVP workshop before the FEIS, but that it will probably happen shortly after.

Dr. Mike Meyer commented that a lot of the decisions and activities are showing short time periods and asked about the project team's confidence on how realistic this schedule is in terms of the earlier stages and the 2010 and 2011 activities, not the construction timeline. **Don Wagner** answered that the project team recognizes this and indicated they have been working very closely with the various resource agencies for two years or better on the schedule. The agencies have been holding windows of opportunities for our reviews. If these are missed they know they add to that review timeline. He indicated they clearly understand what the panel is saying and that these are aggressive timelines, but they are closely managing these reviews. **Dr. Mike Meyers** continued with a comment that the assumption is that issues will be resolved easily, but a lot of the issues depend on everything falling into place. It is more of an observation than a question. **Don Wagner** concluded by saying he appreciates the comments and has similar concerns but on the optimistic side, the project sponsor council realized the timelines are tight and they have escalated their meeting times and level of communication with the project team.

Dr. Patricia Galloway requested the panel receive a printed, simple critical path schedule. **Diana Mendes** asked for clarification about the legal sufficiency review decision in the project schedule. **Chris Strickler** indicated he would have an answer about the date from the environmental team by the end of the day.

Frank Green proceeded with a management review of Constructability. He presented several staging plans that have been developed to illustrate the constructability process and the various phases. These examples include the River Crossing staging, the Hayden Island/SR14 staging, and the Marine Drive Flyover Ramp conceptual staging. His presentation included a discussion of the questions they asked to determine sequencing and how to break up contracts. **Don Wagner** added that this process is part of the technical building blocks to help the project answer the questions posed earlier by the panel related to how we will plan if the project does not get all of the expected funding.

Frank Green talked more about contracts and indicated they are investigating several scenarios. He ended with a review of the top ideas developed by the Constructability Review Panel and opened up the time for questions from the panel.

Panel Q&A

Bob Ferguson asked the project team to provide the names of those on the Construction Review panel and **Frank Green** indicated they would. **Tom Warne** asked about alternative delivery methods since they are not always available later. He also asked about the timeline of the light rail projects and how they are sequenced in construction, since they are short projects overall. Related to alternative delivery methods, **Frank Green** clarified the project team is looking at new methods right now and funding will play a part in determining the contract types. He also clarified that light rail projects are shown separately because of the different types of construction. He noted they are still determining if these projects will be under one contract or not.

--Break--

Sustainability (Appendix C)

Carolee Roalkvam, WSDOT Environmental Services Policy Manager and **Margi Lifsey**, ODOT Sustainability Program Manager, introduced themselves and described their role as part of the sustainable technical committee for the project's sustainability strategy. They presented the sustainability strategy work to date.

Carolee Roalkvam indicated their challenge is to think about sustainability from the project level and they are still in process on this. **Margi Lifsey** talked about their process of involving partner agencies and looking for crossovers in sustainability plans. She indicated they have the results of this work available if the panel wants to see the comparisons. **Carolee Roalkvam** discussed their review of various policy documents to arrive at a series of principles that were applied to the project elements and a determination made of how the project addresses the eleven

principles. **Margi Lifsey** discussed their work on contracting questions and their challenge of balancing a broad strategy with specific commitments to sustainability.

Dr. Mike Meyer asked if design is driving the sustainability components or if they are determining sustainability issues that are then to be included in the project? **Margi Lifsey** indicated that the “ask” and the need came together. The CRC was up and running so the project purpose and need had already been defined and the environmental strategy team had to determine the needs now and how to go forward with developing a strategy.

Carolee Roalkvam continued with the presentation, noting the project facilitates local and regional goals. **Margi Lifsey** provided information on ODOT's sustainability plan, lessons learned they have brought to their program, and that they are determining how to bring those to the project. **Carolee Roalkvam** discussed the next steps to get the draft strategy back out to the technical committee and their preparation for the next stages after that.

Dr. Mike Meyer suggested including equity and economic impacts into the strategy where possible, instead of just environmental impacts. **Margi Lifsey** added there are three aspects to the equity impacts: 1) internal workforce, 2) external workforce and partners, and 3) true community participation.

Tim Neuman asked if there is a plan to include in special provisions or requirements in contracts that might deal with means and methods, and if so, which body will decide what ultimately gets done. **Margi Lifsey** indicated these are the types of issues they are still working through. **Carolee Roalkvam** indicated they are at a critical stage and don't want to overpromise. They are working on recommendations but the strategy won't be the technical details. It won't be their committee that completes the exact wording for contractor terminology.

Tom Warne asked about performance measures and goals, and if these are in the plan. **Carolee Roalkvam** indicated that right now there is a place where measures will get placed and accounted for but they are not working on individual performance measures that are based on the strategy. **Margi Lifsey** followed up that there has been conversation on the advisory committee and some places like operations areas where this makes sense but that they haven't gotten there yet.

Performance Measures

Ron Anderson discussed his role on the Performance Measures Advisory Group and provided a presentation of the group's work on the project (Appendix D). His presentation discussed the work the committee accomplished and provided a description of the interim report they developed (included in materials given to the panel). He provided information on the composition of the group and their approach to performance measures. He reviewed the six performance goal areas (system access mobility reliability; revenue generation; climate, energy, security, health; safety and security; economic vitality; land use) and indicated their targets

moved more into the policy area. He mentioned the final report was delivered in January 2010 and that at this point they made no recommendation in terms of measures and actions. He indicated the group did as much work as could be done without further decisions at the policy level and that there is a need to look at actual implementation.

Tim Neuman asked for a description of the other tools or actions envisioned to be implemented, aside from tolls and toll rates. **Ron Anderson** indicated there are many tools available, including an aggressive TDM and TSM program, parking pricing, subsidizing, and incentives for transit ridership. **Tim Neuman** asked for further clarification as follow up whether the group could provide for any given area, recommendations to one or the other DOTs, or one of the other cities or it could be a land use option. Is that the vision? **Ron Anderson** confirmed that is the case. **Tom Warne** noted one of the goals was to define targets where feasible. **Ron Anderson** confirmed it is, and indicated the group looked at potential targets, but that this is getting into policy issues. The group made recommendations but not formal decisions.

Agency Views

Commissioner Peterson, Clackamas County, provided a statement (Appendix E) to the panel in which she indicated she has been supportive of tolling in the past, but has concerns about the long run impact in terms of systems management. She discussed concerns about freight movement and its importance to Clackamas County. She detailed their dependency on I-205 and her concern about the need for interchange improvements needed, as well as addressing the bottleneck of I-205. She presented questions she hopes the panel will consider related to financial, local systems concerns, regional systems concerns, and the project management structure and process. She also hopes they will identify how conditions have changed since inception and ask what core assumptions may no longer be valid.

Dr. Mike Meyer asked if she cares to comment on the question of regional management of project issues and how she sees the I-205 potential tolling issue in the context of the I-5 project? **Commissioner Peterson** indicated it is not just a two state issue and not just a two MPO issue. The project has opened the door to having discussions on how to manage the system and she believes there has never been the conversation with the entire region at the table. **Dr. Mike Meyer** referred back to her project management structure comments and asked what she envisions. There is an implication there is something better. **Commissioner Peterson** indicated there are two elements. One is the actual management of who is the neutral third party to establish the trust that slipped during this process. The second is how to have co-ownership between project sponsors council members. Right now it's an advisory committee. Some would say this is acceptable and some would say we want an equal vote with the DOTs. How do we equalize the voting and how do we bring all the problems and the solutions to the table?

Tim Neuman asked for more clarification on the changing assumptions she mentioned. **Commissioner Peterson** indicated the largest one is the economy. The other would be the deadline by which the re-authorization dates moved. Another is the assumption previously of one bridge.

Rex Burkholder, Metro Councilor, CRC Task Force, provided a testimony as an eye-witness account from someone involved throughout the project process. He is an elected official representing his district for the past ten years. He provided some background to how he came to the project including his past advocacy work and gave background on various stages of the project planning as the task force pursued options based on the data available at the time. **Dr. Mike Meyer** asked if he represents Hayden Island, and **Rex Burkholder** indicated he does. **Dr. Mike Meyer** asked about initial plans proposed and asked for Mr. Burkholder's sense of the LPA and what is now proposed. **Rex Burkholder** expressed his excitement that plans are coming to some resolution rather than just remaining ideological. He indicated some of the initial questions have been addressed. There are still unanswered questions of what jurisdiction is going to take responsibility for the bridges. There is hesitancy to take responsibility for the bridges because of the questions of funding.

Tom Warne asked what is the single greatest contribution the task force made. **Rex Burkholder** indicated it was bringing together the leadership of the two sides of the river. He stated that we are one economic region but don't always think about our shared concerns. We can't do what was done in Portland with ten bridges, so we are bringing the two sides together to see we have a shared economic and social future, and that we have to solve our transportation problems. It has paid some good dividends in terms of joint economic development work.

Sharron Nasset, Third Bridge Now (Appendix F), provided an overview of her background with transportation projects and her interest and concerns about the project. She stated that the Columbia Bridge meets the needs right now and still has fifty years of life. She presented details about the North Portland Passage and Vancouver Lake areas, including the St. John's Bridge. She advocates for a third bridge to be included in the project plans and presented information in support of this position. She presented that this particular option has not been studied and believes the project cannot go forward without the full assessment of this option. She presented the impact to the involved communities in the region would be huge due to removal of properties and jobs.

Bob Ferguson asked if she has an estimate of the cost from I-5 in Vancouver to the landing at Marine Drive. **Sharron Nasset** indicated there is a breakdown she can provide. **Dr. Mike Meyer** asked for clarification on the idea that light rail can be included on the third bridge, and indicated it is quite a distance from downtown Vancouver. **Sharon Nasset** indicated Vancouver is undergoing revitalization and that area where the bridge would be is much closer to that area.

Joseph Cortright, Impresa Consulting, on behalf of Plaid Pantries, Inc. and the Oregon Neighborhood Store (Appendix G), introduced himself and provided an overview of his background and the reason for his presentation, stating he had been asked by Chris Girard, President of Plaid Pantries, Inc., to prepare a report. He then presented on the financial impacts of the Columbia River Bridge on the economic development in the area. He summarized the three challenges of his analysis: 1) accuracy of traffic models, 2) toll revenue estimates, and 3) careful analysis of the risks. He then detailed areas of concerns and provided supporting information about these concerns. The areas of concern are:

- 1) Concern that project forecasts are based on outdated data.
- 2) Concern about the accuracy of toll forecasts
- 3) Concerns about risk assessment analysis

He presented three key take aways:

- 1) Revisiting traffic forecasts is needed to ensure the right data is used.
- 2) Undertake a full investment grade stress tested toll revenue analysis right away.
- 3) Fully evaluate the laundry list of risks.

Dr. Mike Meyer indicated there are many good issues identified. Regarding the cost overrun issue, he indicated that the comparison to draft and final costs can't be done at the design point. He also asked for clarification from the project team about the values used for the valuation of time and the dollar amounts used. **Dr. Khalid Bekka** confirmed that the value range used in the cost benefit analysis. **Dr. Mike Meyer** also asked if Mr. Cortright looked at the 205 bridges in terms of volume numbers. **Joseph Cortright** indicated he did. **Dr. Mike Meyer** then talked more about the investment grade analysis suggested and asked for more clarification on this recommendation. **Joseph Cortright** indicated the project is two years past DEIS and with the states as the investors the public should ask that the same type of due diligence be done as with their own money. He indicated he appreciated it was more complex than the work done to date and there is a lot of scenario work to comprehensively do if not a full detailed bond analysis.

Tom Warne adjourned the meeting, thanked everyone for their attendance and efforts, and offered a reminder that the panel would be meeting at seven p.m. in the same room for a public comment period.

Note: Appendices to this summary can be found online at CRCReview.org.

Columbia River Crossing Independent Review Panel Tribal Consultations & Freight Meeting Agenda

Date: July 7, 2010

Location: Clark College T-Building, 1933 Fort Vancouver Way
Vancouver, WA

TOPIC	<i>Presenter</i>	<i>TIME (Approx)</i>
Welcome and Kickoff	<i>Tom Warne, IRP Chair</i>	<i>8:30 am – 8:40 am</i>
Technical Briefing by CRC Staff - Tribal Consultation - Freight	<i>CRC Staff</i>	<i>8:40 am – 10:10 am</i>
Agency Views	<i>TBD (10:15 – 11:00)</i> <i>- Metro Councilor Robert Liberty (11:00 – 11:20)</i> <i>- Mara Gross & Tom Buchele; Coalition for Livable Future, Columbia Riverkeeper, NW Environmental Defense Center (11:20 – 11:40 am)</i> <i>- Corky Collier, Columbia Corridor Association (11:40 am)</i>	<i>10:15 am – Noon</i>
Wrap up and Adjourn	<i>Tom Warne</i>	<i>Noon</i>

This agenda is current as of June 29, 2010, and may be revised prior to or during the meeting on July 7th.

INDEPENDENT REVIEW PANEL
Columbia River Crossing



Title: **Independent Review Panel Meeting**
Date: July 7, 2010 at 8:30 a.m.
Location: Clark College, T Building, Room 237
Reference: CRCReview.org

IRP Members Present: Tom Warne (Chair)
Rodney Brown
Bob Ferguson
Dr. Patricia Galloway
Diana Mendes
Mary Lou Ralls
Tim Neuman

IRP Staff Present: Jennifer Vachon (Administrator)
Adam Brown (Notetaker)

Welcome

Tom Warne, Independent Review Panel (IRP) Chair, provided welcoming remarks and explained the panel was present to listen and learn in preparation for presenting recommendations and findings to the governors. He noted that detailed panel member biographies and details from prior meetings are available at CRCReview.org.

Technical Briefing by CRC Staff

Tribal Consultation

Megan Cotton, Tribal Liaison, Columbia River Crossing Project (CRC), noted that CRC had a number of state and federal requirements to comply with (*Appendix A*). They recognized that early, good faith consultation is very important and has been an issue on other projects. CRC is working with up to ten different tribes for the project, and originally invited thirty-five tribes to participate. Additional tribes recently requested consultation regarding the project. CRC sent formal letters to tribal leaders, and conducted technical coordination with tribal agencies. Chinook is not a federally recognized tribe, but their consultation has been same as those of tribes that are federally recognized.

The early consultation came earlier than it has on any other Washington State Department of Transportation (WSDOT) project. CRC meets with tribes in person at regular project milestones. A few years ago, a history seminar was held, where the majority of the CRC staff listened to historical perspectives from tribes and non-tribal sources to help understand the cultural significance of the area. The inadvertent discovery plan has been developed and outlines what to do if artifacts

or human remains are discovered during construction. Seventeen agencies were involved, including tribes and State Historic Preservation Offices (SHPOs). CRC has offered to meet individually with groups within tribes, but primarily the intertribal meetings have been the most popular.

CRC has heard concerns about constructions impacts on aquatic resources, and requests and recommendations on landscaping with native plants. To address input and concerns received, CRC hired a tribal liaison, ensured ongoing consultation, made design refinements based on tribal input, developed an inadvertent discovery plan, agreed to monitor ground disturbing work, and contracted with tribes to produce oral history studies. Future steps include reviewing tribal comments on the Biological Assessment (BA), consultations on the Final Environmental Impact Statement (FEIS) and Memorandum of Agreement (MOA), and face-to-face meetings about the FEIS.

Dr. Patricia Galloway asked about tribal fishing rights and any discussion related to having multiple or different bridges. **Megan Cotton** indicated they did discuss and heard a priority preference for a minimal number of piers in the water, as well as concerns about old bridges collapsing, and the foot print size on land impacting cultural sites. **Dr. Patricia Galloway** asked about work window discussions, and **Megan Cotton** indicated the tribes supported a work window extended beyond four months, and that the tribes had shared data and mitigation ideas with CRC. **Dr. Patricia Galloway** asked what the MOA will contain, and **Megan Cotton** indicated sites, impacts, and mitigation measures will be included, and draft will be available very soon. **Diana Mendes** asked about the time frame required to reach agreement on the MOA. **Megan Cotton** explained many tribes have expressed interest in consulting on the MOA, but not in signing it. The signature process often takes two months after general agreement is reached, but varies widely. This is a unique process, and the early consultation is expected to help.

Rodney Brown asked if there has been any discussion with tribes about potential changes to the Hayden Island design. **Megan Cotton** indicated they discuss all predicted changes with tribes. **Tim Neuman** asked if the MOA will contain the current plan, and **Megan Cotton** replied that cultural studies have been done for the project area, so as long as changes are within the current project area they should have a good idea about potential impacts resulting from changes.

Freight presentation (Appendix B).

David Parisi, Traffic Manager CRC Project, explained that both state economies are highly freight dependent, including one in five jobs in Oregon State and one in four jobs in Washington State. Truck traffic is up to twenty five percent of traffic at peak freight time, and truck traffic is expected to grow by seventy-seven percent by 2030. CRC looked at the entire corridor within five-mile limits, including when and where truck traffic goes. Safety was a focus, and in five years of crash data a very high percentage of accidents involved trucks. Many were sideswipes due to tight ramp spacing. The existing facility impedes freight with lane drops, a lack of auxiliary

lanes, substandard merge and weave distances, substandard shoulders, substandard vertical and horizontal alignments, substandard vertical clearance, and bridge lifts (which are allowed during peak freight traffic).

The freight working group (FWG) has worked with many partners, discussing global freight issues down to project specific issues. They have looked at designs that would enhance truck mobility on the bridge and in other areas, including bringing various project elements to standard. A few locations focused on are Mill Plain Boulevard, which accesses Port of Vancouver. Currently, trucks go through downtown Vancouver because they can't go through this interchange as it is built. The existing Marine Drive interchange is Oregon's heaviest truck traffic interchange and is very confusing. A single point urban interchange (SPUI) is proposed, with an improved northbound on ramp, and a southbound off ramp to provide free flow movement. CRC did a comparison of existing and proposed, and looked at delaying the flyover ramp construction.

The Port of Portland is interested in potential impacts of further developing Terminal 6 and the Rivergate industrial area, so this was looked at. Trade and freight are critical to the area, suffer under current conditions, and will worsen. Project partners and stakeholders have provided important feedback.

Tim Neuman asked about the FWG current status and predicted response to Hayden Island interchange changes. **David Parisi** indicated the FWG meets whenever there is something to discuss, and at times specific partners are asked to meet to discuss specific topics. He doesn't expect significant pushback as long as members are well informed and receive adequate responses to questions about safety and movement. **Casey Liles** joined David and added that there isn't consensus on the Hayden Island concepts yet. CRC has looked at high level concerns but not to the detailed level of the locally preferred alternative (LPA) yet. **Bob Ferguson** asked if Port of Vancouver property development was included in the sensitivity analysis, and **David Parisi** indicated it was. **Tom Warne** asked if the level of service expected with the LPA is typical for WSDOT, and **David Parisi** explained that it was good, above the typical target level D, but was for specific pieces not the overall project.

Agency Views

Ron Higbee, URS Corporation, provided a summary of bridge analysis work they have been doing for the City of Portland (Appendix C). Portland's goals are to make sure I-5 performs satisfactorily, is compatible with the city transportation system, and is cost effective and fund-able. Primary areas of focus are the number of lanes across the Columbia, Hayden Island, and north Portland. URS found that a ten (permanent) lane bridge performs comparable to a twelve-lane bridge, so recommended ten lanes. The performance measures they used have been used frequently throughout the project. Hours of congestion, throughput, and accident rates are similar between ten and twelve lane bridges.

Tim Neuman asked if URS looked outside of the project area, including the Rose Quarter. **Ron Higbee** indicated that was not part of their scope and CRC staff would best respond to Rose Quarter queries. URS relied on bridge influence area (BIA) data. They looked at an eight lane permanent bridge, and found that available capacity was significantly reduced. Consequently, they are not recommending an eight lane bridge be analyzed or considered further. They did find that if the Hayden Island and Marine Drive interchanges are combined, there is an opportunity to make the bridge work better as a whole, and staff reports are available on the topic. Reducing the Hayden Island interchange creates an opportunity to save a significant amount on right of way costs as well. Truck mobility was an important criteria in evaluation, and they have suggested using freight design guidelines as the project moves forward.

Tim Neuman asked about the impacts of combining Marine Drive and Hayden Island traffic. **Ron Higbee's** understanding is that there will be an alternative with an interchange at each location studied and modeled.

Bill Wyatt, Executive Director, Port of Portland, expressed his appreciation for the panel's efforts, and provided a brief background on the Port (Appendix D). The region is very trade dependent, with Oregon the ninth most trade dependent state in the country. All modes are affected by this project, and the region is an established trade hub. CRC is a strategic regional investment, with I-5 serving well beyond the region, including Canada and Mexico. The port owns a linear alignment including the former Alcoa plant, four marine terminals, two railroads, the deepening Columbia River channel, and Portland International Airport (PDX). The Columbia River is the largest wheat export hub in the United States. Portland is the largest auto import gateway on west coast, with many cars going to the Midwest. The port is the largest land owner in the Portland area.

Currently no trucks come to the gate between 3:00 p.m. and 5:00 p.m. due to traffic, a significant limitation. PDX cargo feeder traffic increased significantly in the early 1990's with the growth of e-commerce. The Port is in negotiations with Portland to annex the west end of Hayden Island into Portland. The railroads cannot absorb much more growth, which will push more freight to trucks. Unless we have significant improvements there will be major impacts to mobility, air quality, and economic health of region.

Bob Ferguson noted there has been discussion of an additional bridge to Marine Drive from Hayden Island. **Bill Wyatt** indicated there is actually a stub on an overpass to allow for a connection at the west end of Hayden Island. The opportunity and development costs for west Hayden Island are significant. Their only concern with using Marine Drive as the principal interchange is making sure the freight and passenger traffic is combined in a way that works well. **Mary Lou Ralls** asked for a comment on the number of lanes. **Bill Wyatt** explained he is interested in volume and velocity, but not number of lanes specifically. They want to see something built that provides a long-term solution.

Tina Kotek, Oregon State Representative, thanked the panel for their expertise and the opportunity to speak (Appendix E). She indicated the project is important to the region, as is transparency. Residential, business, and environmental concerns all meet to create challenges. People want the project to happen, but it is a perfect storm of competing interests. We need to get to next step because people want it and the region needs it. People agree with the goals, but not the current plan. A safer, tolled facility with improved transit and first class bicycle and pedestrian facilities is a must.

CRC has its flaws but will continue to improve, with Hayden Island as ground zero and significant improvements coming recently. Hayden Island saw nominal interest from the city for many years, until it became a potential Wal-Mart location. The structure of the neighborhood association has left some residents feeling under-represented. CRC has done significant outreach, and has done work to minimize impacts, but there is still work to be done. She would like to see more flexibility from the Oregon Department of Transportation (ODOT). Residents formed the livability project to raise awareness about CRC impacts. This year there have been many discussions about the footprint. We are close to a solution, and she favors an on-island, reasonably sized interchange, as well as the formation of a formal group to maintain focus on livability for residents. She hopes for recommendations for the project going forward, and wants a bi-state committee for ongoing facility management.

Rodeny Brown asked for a comment on funding. **Tina Kotek** indicated the funding faces challenges, but they are surmountable. She would like an FEIS with a solid cost estimate to move forward, and is a fan of pre-construction tolling.

Katy Brooks, Community Planning and Outreach Manager, Port of Vancouver, is focused on the performance of freight and passenger vehicle movement. She has seen recent progress and feels CRC is moving in a positive direction. Southbound a.m. peak travel time benefit is not as significant as northbound p.m. benefit. The bridge currently acts as a meter, slowing traffic. The travel time difference between a ten and twelve lane bridge is not significant. A ten-lane bridge could be a viable option if it is strictly managed. They are working on safety differences between ten and twelve lanes to present at the next project sponsors council meeting, but there are increased accidents with reduced lanes. The cost benefit analysis is a moving target at this point, and will be stabilized in part with a finalized Hayden Island plan. She is satisfied with the Port of Vancouver's level of involvement, and that their concerns are being heard.

Mara Gross, Policy Director, Coalition for Livable Future, explained the coalition has been involved for years, and supports improvements to I-5, but not the current proposal. They feel the project fails to meet the region's expectations and induces vehicle demand. Other parts of the freeway system should be considered as part of CRC, as should available funding, and tolling I-205.

Environmental justice (EJ) populations should be considered. Environmental Protection Agency (EPA) comments on the project included needing to address EJ impacts. Greenhouse gasses will be increased by CRC, affecting global warming. The CRC process has been more of a sales impact than a true outreach. Oregon State's EJ task force found there were limited opportunities for citizens to interact in a meaningful way. A ten lane bridge functions nearly as well as a twelve lane bridge, so the Departments of Transportation (DOTs) were either incorrect or disingenuous when they indicated a twelve lane bridge is required. Mara feels we need to back up and look at reduced design speeds and additional transportation demand management (TDM), and that making a decision based on a five year funding cycle is short sighted.

Tom Buchele, Managing Attorney, Pacific Environmental Advocacy Center, represents a number of groups in relation to this project (Appendix F). He feels twenty minutes only scratches the surface of CRC, but appreciates getting more than three minutes to speak. The CRC focus from beginning has been to avoid or minimize National Environmental Policy Act (NEPA) requirements, and decisions about making changes to the LPA are based on whether or not they would trigger a supplemental environmental impact statement (SEIS).

NEPA requires the Draft Environmental Impact Statement (DEIS) to include a range of alternatives and provides an opportunity for the community to comment on them, and the FEIS provides the opportunity to see what changes were made. A supplemental DEIS is necessary because the DEIS is inadequate and significant changes have been made since it was issued. CRC has failed to offer the complete analysis of impacts in a single document, and this cannot be done in the FEIS. The DEIS doesn't include enough baseline data to offer a comparison. There are no footnotes in the technical report, even though they are required. This is a serious issue. Including these details in the FEIS fails the purpose of allowing the community to comment. CRC has repeatedly misled the public regarding the number of lanes. Since the DEIS, the current LPA has been changed and the public doesn't know what it is. The majority of the information provided to IRP has probably been created after the DEIS was issued. A supplemental, truly comprehensive report has been requested and is necessary.

Diana Mendes asked if there was sufficient opportunity to comment prior to the DEIS. **Mara Gross** indicated they requested additional time to comment on the DEIS due to the size of the document, and noted that the LPA decision was made prior to the end of the comment period. **Diana Mendes** requested clarification on EJ concerns. **Mara Gross** explained that it is hard to know if sufficient analysis was done based on the limited information in the DEIS. **Tom Buchele** added that the freeway goes through a low income and neighborhood of color. The air pollution analysis is not sufficient. **Diana Mendes** noted that projects of this size do have impacts, and asked for clarification on how they are disproportionate. **Mara Gross** commented that EJ communities live close to the freeway and are consequently

disproportionately impacted by air quality and reduced safety from increased cut through traffic. She noted that the EJ groups would be the best ones to voice their concerns. **Rodney Brown** asked if there is a specific alternative they would like to see used as a baseline in an analysis of greenhouse gasses. **Tom Buchele** said there is not, as reducing emissions and vehicle trips were not defined as a purpose of the project. **Tom Warne** requested documentation supporting the claim of increased asthma in children along I-5, and **Mara Gross** indicated she would provide it.

Robert Liberty, Metro Council Member, District 6, is familiar with transportation projects and analysis (Appendix G). He supports finding a smarter, cheaper, greener solution to moving freight and people. He questions restricting the area of study to the project area given the impacts on traffic outside the project, impacts on I-205, land use patterns in Vancouver, impacts on job locations outside the area, excluding the rail crossing to the west, the opportunity for more affordable long distance freight improvements outside the project, and the opportunity for commuter rail on the existing Burlington Northern San Francisco rail line.

Financing questions were raised as well, including whether taxpayer contributions are realistic, the likelihood of a gas tax, Washington State transportation priorities, the likelihood of tolls in the current political climate, and the size of the Federal contribution. Land use questions include whether it is reasonable to assume future land use patterns are fixed, and to not look at how alternative land use could address project goals. Seismic questions include whether the current bridges really need to be replaced, whether a 2,500 year earthquake is a reasonable event to plan for, and whether the bridge would even be accessible after such an event, should it survive. Other bridges on I-5 are rated more poorly and are not being proposed for replacement.

He noted that different but reasonable assumptions could have been made, that led to a different but equally valid solution, and the project should be looked at in comparison to the costs and benefits of other transportation projects.

Mary Lou Ralls asked if he looked at liquefaction, and **Robert Liberty** indicated he looked at the report, but his primary question is whether a 2,500 year event is reasonable to build to. He noted another potential solution could include demand management on I-5 and I-205, which would not be popular but could be sold as an eighteen month experiment. The money could be spent on widening, and the I-5 bridge money could be spent on improving interchanges in Washington State. Aligning the swing span and bridge lift section for maritime traffic would only cost about half of what has been spent so far. A supplemental crossing, likely an arterial, could be used to increase capacity, and Hayden Island access from I-5 could be restricted during rush hour. You might find something cheaper, phased, and greener. If there is no tolling there is no project, and demand management should be in place if there is tolling.

Tina Kotek addressed the panel again, noting that air quality impacting people living near the freeway is a result of traffic not moving. She feels the panel's questions about the proportionality of EJ impacts are appropriate, adding that we do not know if the impacts are disproportionate yet, but do need to find out.

Dave Hunt, Oregon House Speaker, via speakerphone, expressed appreciation for the panel's efforts. The long-term economic health of Oregon and Portland is important, and residents in other parts of Oregon talk about the importance of this crossing. Most people forget that this crossing is the only stopping point between Canada and Mexico. The project makes important improvements including traffic flow, reduced emissions, and light rail, and is good for the economy and environment, with strong support from all over the state and from many different groups. The longer it is delayed, the more it will cost and the fewer options there will be. Some people are starting to fear the project won't happen, but it is possible.

Tom Warne asked about local funding. **Dave Hunt** indicated allocating the resources will not be easy, but that the current legislature has shown a strong, ongoing commitment to transportation projects.

Corky Collier, Columbia Corridor Association, noted that transportation infrastructure is critically important to the region (Appendix H). There are many transportation modes, but trucks make up a significant portion and are expected to increase. The 2005 Cost Of Congestion study predicted \$844 million in annual costs to Portland. The light rail system in Portland should include Vancouver, and a great bicycle and pedestrian facility should be available as well. Auxiliary lanes should be added to I-5 since the interchanges are spaced so tightly. Freight only lanes were looked at, but were dismissed early on as fiscally irresponsible.

Transparency of process is important, and there have been over twenty FWG meetings all open to the public. FWG appreciates the candid conversation and adequate responses to questions from CRC. When re-designing the bicycle and pedestrian facility, FWG worked through the issues with bicycle and pedestrian groups. They also met with property owners, and many other individuals, with all meetings open to the public. FWG came up with a concept for the Marine Drive interchange, the most economically important interchange in Oregon State. A stakeholder group was formed and consultant hired to look at using a different alignment. FWG had already looked at other alignments, but participated in all of these discussions again in the name of transparency. Ultimately, the conclusions were similar. The ideas have generally all been looked at.

The Hayden Island community should consider the local streets necessary to make any alternative work, since they have ruled out alternatives based on local street impacts in the past. FWG is happy to share the Marine Drive interchange with Hayden Island, with the understanding that freight is the priority. He is impressed with the work done to make the ten lane bridge option work. Seventy percent of vehicles in the bridge influence area get on or off in the bridge influence area. There

is a limited amount of industrial land, and it is accessed by Marine Drive. Existing brownfields will be developed over time. Through put is a primary concern, and paramount to the number of lanes. Tolling is an important demand management tool, and freight companies understand the cost of vehicles moving down the road. They generally support variable tolling, in pursuit of traffic flow. One specific concern is making sure tolls are varied over the years to ensure the facility maintains ongoing flow.

Tim Neuman asked if their position on the number of lanes will change if the Hayden Island plan changes. **Corky Collier** indicated that he doesn't expect any Hayden Island changes to warrant a change in position on the number of lanes, but would want the engineers to look into it. Their argument for an additional lane is purely operational to allow for heavy vehicle merging, not for additional throughput. **Tom Warne** expressed interest in the FWG supporting tolls since nationally, trucking typically favors gas taxes. **Corky Collier** expressed that tolls will become an increasingly important demand management tool in the coming decades as hybrid and electric vehicle use increases.

Adjourn

Tom Warne provided closing remarks, thanked everyone for presenting and attending, and suggested checking CRCReview.org for records of previous meetings or future panel updates.

Note: Appendices to this summary can be found online at CRCReview.org.

INDEPENDENT REVIEW PANEL
Columbia River Crossing

