NOTEBOOK 2

TAB H: LOCALLY PREFERRED ALTERNATIVE FOLLOW-UP (2008 – 2009)

FURTHER DEFINING AND REFINING THE LPA

Following the adoption of the LPA in July 2008, the project team continued to evaluate and solicit input from the public, other stakeholders, and project sponsors on other elements of the project that would help further refine and develop the LPA.

The following issues were raised by local partners during the LPA resolution process and are discussed in this section of the notebook:

- Conduct an expert review of travel demand model and land use assumptions
- Conduct an expert review of greenhouse gas analysis
- Form a project advisory council composed of partner agency representatives
- Select the number of lanes on the replacement I-5 bridge
- Further development of project costs and financial information

TRAVEL DEMAND REVIEW PANEL

During the selection process for the Locally Preferred Alternative, local partner agencies requested an independent review of the model used to estimate the future number of vehicles using the highway and transit system in the Columbia River Crossing project area. Local partner agencies also requested a review of the potential for CRC to lead to additional development and traffic growth.

A panel of independent experts reviewed and evaluated the travel demand model and the results presented in the Draft EIS. The Travel Demand Model Review Panel found the CRC analysis and conclusions to be valid and comprehensive. The Panel also found that the CRC project would have a low potential to induce growth because the project is replacing a facility located in a densely-built urban area. The detailed findings can be found in the Travel Demand Model Review Panel Report, which is provided in this section of the notebook.

GREENHOUSE GAS REVIEW PANEL

During the selection process for the LPA, some local partner agencies also requested an independent review of greenhouse gas emissions analysis conducted by the Columbia River Crossing project.

A panel of independent experts reviewed and evaluated the greenhouse gas emissions analysis presented in the project's Draft EIS. The Greenhouse Gas Emissions Expert Review Panel found the CRC analysis and conclusions to be reasonable. The Panel agreed with the CRC finding that the Locally Preferred Alternative would generate lower greenhouse gas emissions than the no build alternative. Suggestions were provided to refine the calculations for the Final EIS. The Panel's detailed findings can be found in the Greenhouse Gas Emission Analysis Expert Review Panel Report, which is provided in this section of the notebook.

The primary purpose of CRC's greenhouse gas emissions analysis was to compare alternatives presented in the Draft EIS. The methodology used to calculate greenhouse gas emissions was based on energy consumed during construction and operation of the CRC project and the associated carbon dioxide that results. For example, the combustion of diesel to power buses through the project area emits carbon dioxide and other gases as a byproduct. Carbon dioxide is the primary component of greenhouse gases.

PROJECT SPONSORS COUNCIL

The governors of Oregon and Washington formed the Project Sponsors Council (PSC) after the CRC Task Force sunset to advise the departments of transportation on project development. Members include two citizen co-chairs; the directors of the Oregon departments of transportation departments; elected officials representing Vancouver, Portland, Metro, C-TRAN; and the TriMet executive director.

PSC recommendations are made after considering technical information, receiving input from advisory groups, and considering public comments. The council has met 12 times since 2008.

The governors have charged this group with advising the project on the following issues:

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

PROJECT SPONSORS COUNCIL RECOMMENDATIONS

The council has made recommendations for the number of lanes across the bridge, the creation of a Mobility Council and Performance Measures Advisory Group, and agreed with project advisory group recommendations for the number of bridge structures and the bicycle and pedestrian pathway location. Each of these topics is described in more detail in this section of the notebook.

NUMBER OF LANES ON THE RIVER CROSSING

The Draft EIS evaluated highway alternatives with cross-sections ranging from 8 to 12 lanes at the river crossing. Following the July 2008 adoption of the LPA, the CRC Project Sponsors Council (PSC) met several times to discuss the number of lanes, noting concerns and interests about this design element of the project. The discussion included how the number of add/drop lanes relates to safety and mobility, traffic diversion, greenhouse gases, congestion, how they might indirectly affect traffic demand and land use, as well as the need to build this bridge to meet long-term regional needs.

During this time period, 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 the positions Metro and Portland PSC representatives brought back to the PSC conversation.

On March 6, 2009, the PSC voted unanimously to recommend that the replacement bridges be constructed with adequate width to accommodate up to six lanes in each direction to provide for safe operations between interchanges and efficient movement of people and goods. Three lanes on each bridge would be “through lanes” for traffic traveling through the project area, while the additional lanes on each bridge would be “add/drop lanes” that would accommodate traffic entering or exiting I-5 at one of the several closely spaced interchanges immediately north and south of the river.

NUMBER OF BRIDGES OVER THE COLUMBIA RIVER

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

Several advantages of the two-bridge design were identified in the Draft EIS, including fewer piers with less in-water structure, smaller surface area generating less stormwater runoff, and a more compact crossing with less imposing visual obstruction of the river. However, the nature of this bridge configuration – operating light rail beneath one highway bridge deck and providing a pedestrian and bicycle path under the other deck, both within the bridge's support structures – is an uncommon design, and required further engineering and evaluation of this design to determine its feasibility. Since the publication of the Draft EIS, the agencies sponsoring the project have worked with the project's federal lead agencies (FTA and FHWA) and determined that the two-bridge design is feasible. The project's Urban Design Advisory Group and Pedestrian and Bicycle Advisory Committee provided recommendations to the PSC to move this design forward and PSC agreed with these recommendations. Therefore, the two-bridge design is now part of the LPA included for analysis in this Final EIS.

DEVELOPMENT OF A FUTURE MOBILITY COUNCIL

Also on March 6, 2009, the PSC voted to support creation of a local Mobility Council to advise the state departments of transportation and transit districts on how to manage demand and performance of the I-5 bridges. This Mobility Council would provide recommendations to the departments of transportation and transit agencies on methods for actively managing the mobility of all modes of transportation using the bridges.

PERFORMANCE MEASURES ADVISORY GROUP

The Performance Measures Advisory Group (PMAG) was established by the Project Sponsors Council in May 2009 with the intention that PMAG would provide technical advice to be used by a future bi-state, multi-agency Mobility Council, the concept of which was also initiated by the PSC.

PMAG had representatives from the cities of 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 was charged with developing performance measures to help assure that the objectives of the CRC project would be realized and negative consequences would be avoided. With its primary focus on how the facility should be operated and managed over time, PMAG developed goals, objectives and performance measures that could be used by the Mobility Council to monitor and actively manage this multi-modal facility.

PMAG produced an Interim Report that identified six goal areas and goal statements and twenty-two objectives. PMAG also produced a series of draft Performance Measures and candidate Targets that could be used to help manage the corridor. It is expected that the group will resume its work to finalize the Performance Measures and Targets.

REQUEST TO CONSIDER COST REFINEMENTS

As project design and financing conversations evolved after the selection of the LPA, it became increasingly evident that there will likely not be adequate funding to construct all elements of the project in a single phase. This compelled the project sponsors and other elected officials to ask CRC staff to identify ways to reduce project costs and/or to phase construction. The project team, working with stakeholder groups, identified several elements of the project design that could be modified or postponed to reduce construction costs. These refinements are described in the next section of this notebook.

Columbia River Crossing

Travel Demand Model Review Panel Report

November 25, 2008

November 25, 2008

The enclosed report presents the findings of the Columbia River Crossing Travel Demand Review Panel, which met October 13 and 14, 2008 to review the project analysis and methodology as requested by project sponsors and the Oregon and Washington Departments of Transportation.

We were asked to respond to seven specific questions about the model and project analysis completed in the Draft Environmental Impact Statement. Our report provides findings and recommendations for each specific question as well as some recommendations outside of the scope of the project. For the reasons we explain in our report, we strongly believe the travel demand model and project analysis are valid and comprehensive.

The Review Panel would like to express its appreciation to Metro, RTC and CRC staff for providing the information that allowed us to evaluate the seven questions we were asked to consider. We enjoyed our discussions and staff's willingness to openly debate the technical aspects of the travel demand model and its application to the CRC Project.

We appreciate the opportunity to provide you with our thoughts on the travel demand model and its application to the CRC Project.

Maren Outwater, Chair
Bruce Griesenbeck
Arash Mirzaei
Guy Rousseau

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Introduction

The Travel Demand Model Review Panel (Panel) was tasked with reviewing and evaluating the assumptions implicit in the travel demand model for the CRC project. This review was requested by partner agencies in July 2008, as part of the selection of a Locally Preferred Alternative for the project. Resolutions passed by partner agencies made the following recommendations related to review of the CRC travel modeling assumptions:

- Further analysis is required of the greenhouse gas and induced automobile demand forecasts for this project. The results of the analysis must be prominently displayed in the Final Environmental Impact Statement. The analysis should include comparisons related to the purpose and function of the so-called "auxiliary" lanes. A reduction in vehicle miles traveled should be pursued to support stated greenhouse gas reduction targets as expressed by legislation in Oregon and Washington and by the Governors. (Metro Council, Resolution 08-3960B, July 17, 2008).

- The CRC project shall contract for an independent analysis of the greenhouse gas and induced automobile travel demand forecasts for the project. (City of Portland Council, Resolution 36618, Exhibit A, July 9, 2008).

- The CRC project shall contribute to a reduction of vehicle miles traveled (VMT) per capita in the bi-state metropolitan area. (City of Portland Council, Resolution 36618, Exhibit A, July 9, 2008).

- Independent validation of the greenhouse gas and climate change analysis conducted in the Draft Environmental Impact Statement to determine the project's effects on air quality, carbon emissions and vehicle miles traveled per capita (CRC Task Force, Resolution Recommendations, June 24, 2008).

The Panel met on October 13 and 14, 2008 to provide an independent review of the key travel demand modeling inputs and results related to regional modeling and the CRC project. Review of the greenhouse gas analysis requested in the resolution recommendations will be conducted as part of a separate process. This will occur after the travel demand model review process is complete.

Summary of Panel's Findings Regarding the Travel Demand Model

This report presents the conclusions and recommendations of the Travel Demand Model Review Panel prepared in response to seven specific questions. The panel's findings and general observations are summarized below. This section includes a synopsis of the responses to each question along with an overall observation of the application of the Travel Demand Model to the CRC Project and the resulting outputs. A more complete discussion of each question, topic area and the panel's discussion and conclusions is

provided in later sections of this report. Additional recommendations, outside the scope of the project, are included at the end of report.

Specifically, the Panel addressed the following questions related to the Locally Preferred Alternative resolutions:

- Are fuel price and vehicle operating cost assumptions used in the model reasonable?
- Are the tolling methods used in the model reasonable?
- Are the traffic projections for I-5 and I-205 from the model reasonable?
- Are the vehicle miles travelled results reasonable?
- Are the bridge auxiliary lanes modeled correctly?
- Was the approach used to estimate induced growth reasonable?
- Were the induced growth findings reasonable?

The Travel Demand Review Panel concluded that the Travel Demand Model used by the region is an advanced trip-based tool and that it represents a valid tool for a project of this type:

- The destination choice features of the trip distribution model used for all trip purposes is a positive and allows for fuller consideration of accessibility and policy variables in the analysis.
- The peak factors applied to skims is a better way to represent weighted averages than standard practice, which assumes peak conditions for work trips and off-peak conditions for non-work trips.
- The use of VISSIM offers a more rigorous evaluation of congestion than is possible with a regional planning model.
- The use of Metroscope as one method to evaluate induced growth is an advanced practice for a project evaluation. Normally this type of analysis is used for systemwide / regional transportation planning efforts and not specific project evaluations.

The panel also provided long-term recommendations for the Portland Metro regional travel demand and land use forecasting models, but these long-term recommendations were beyond the scope of the CRC project and were not considered to impact the outcome of the project findings. The long-term recommendations were intended to inform the next generation of models for the Portland Metro region.

Question 1 - Are fuel price and vehicle operating cost assumptions used in the model reasonable?

The Panel concluded that the vehicle operating cost assumptions, of which fuel costs are a component, used in the model for the primary travel demand forecasts were reasonable. The Panel confirmed that vehicle operating costs (which consists of gasoline and oil, tire, and general maintenance costs on a per mile basis) is the appropriate measure to use as it reflects the long-term relationship between fuel price and vehicle fleet fuel efficiency. In the Panel's opinion there was an adequate stratification of fuel cost, other costs and buildup of auto operating costs in the modeling process.

Question 2 - Are the tolling methods used in the model reasonable?

The Panel concluded that the overall approach to the tolling analysis employed by the CRC Project is within standard practice. The resulting volumes on the I-5 Bridge with tolls compared to No-Build volumes demonstrate that the tolling methods are reasonable.

Question 3 - Are the traffic projections for I-5 and I-205 from the model reasonable?

The Panel concluded that model results that indicated that the Build Alternative (LPA) volume difference relative to the No-Build Alternative (6,000 fewer vehicles per day / 3 percent reduction on I-5 and 3,000 additional vehicles per day / 1 percent increase on I-205) are reasonable, due to the fact that:

- There is a higher level of transit service and a resulting higher transit share in the Build alternative which reduces auto volumes on I-5;
- There are tolls on I-5 in the Build alternative versus no tolls in the No-Build alternative which also reduces auto volumes on I-5 and increases volumes on parallel facilities, like I-205;
- There is no added highway capacity north of or south of the project limits; and
- There are changes to trip distribution resulting in a decrease of discretionary trips crossing the river because of the toll.

Question 4 - Are the vehicle miles traveled (VMT) results reasonable?

The Panel concluded that the results showing a decrease in auto VMT on I-5 and a net regional increase (small) overall is reasonable because:

- There is a higher level of transit service and a resulting higher transit share in the Build alternative, which results in lower auto VMT on I-5; and
- There are tolls on I-5 in the Build alternative versus no tolls in No-Build alternative which results in diversion and higher regional VMT.

Question 5 - Are the bridge auxiliary lanes modeled correctly?

The Panel concluded that while the coding of a four-mile continuous auxiliary lane may be unusual in some urban areas, there are local examples of long auxiliary lanes that currently operate and are modeled similarly in the Metro region. Since this length of an auxiliary lane is consistent with regional coding (modeling) practices, this is a reasonable assumption for this project.

Question 6 - Was the approach used to estimate induced growth reasonable?

The Panel concluded that the use of Metroscope and the travel demand model results supported the national research findings. They felt that the use of multiple methods (i.e., case studies, Metroscope, national research) to evaluate induced growth was helpful. The evaluation of a worst case scenario in Metroscope (it assumed a larger build project then the LPA and no tolling) was useful and appropriate

Question 7 - Were the induced growth findings reasonable?

The Panel agreed that the conclusion of the CRC project that the highway capacity improvement would have a low impact to induce growth was reasonable for this corridor because the project is located in a mature urban area/built corridor.

Panel Members

Four experts, each with substantial experience in travel demand modeling in large metropolitan areas, served on the Panel. Each expert is currently in charge of travel demand modeling for a metropolitan planning organization.

Maren Outwater, Chair

Maren Outwater is the Director of Data Systems and Analysis at the Puget Sound Regional Council (PSRC). She specializes in the planning, evaluation, and modeling of land use, transportation and air quality systems. She has 23 years of experience in developing passenger forecast models for transit and highway systems, forecast models of goods movements, and land use forecasts for regional and state governments. She also has 18 years of progressive experience in managing complex multi-modal development efforts. At PSRC, she is leading the current efforts to integrate land use, travel, and air quality modeling to improve the agency's ability to model climate change and address pricing studies. Prior to working at PSRC, Outwater was a Principal at Cambridge Systematics. She has a Masters of Urban Planning in Transportation Planning and a Bachelors of Science in Civil Engineering from the University of Michigan.

Bruce Griesenbeck

Currently Bruce Griesenbeck is the Principal Transportation Analyst for the Sacramento Council of Governments (SACOG). He serves as the team leader for the forecasting, model operations, and model development teams. Primary areas of work for model development have been managing the development of an activity-based tour regional travel demand model, and supervision of the land use and travel network data inputs of this model. He managed the development of a "shortcut" version of the four- step travel demand model for use in modeling citizen-defined transportation alternative in a series of 13 public workshops for the 2007 Metropolitan Plan. Prior to SACOG, Griensenbeck was the project manager for various transportation and analysis and planning projects including light rail extension feasibility studies. Griesenbeck holds a Bachelors of Arts in Sociology and Psychology from Swarthmore College and a Masters of Science. in Civil Engineering and Master of City Planning, both from the University of California at Berkeley.

Arash Mirzaei

Arash Mirzaei is the Travel Model Development Program Manager for the North-Central Texas Council of Governments (NCTCOG) in the Dallas/Fort Worth area, where he has worked for more than ten years. Arash Mirzaei is responsible for travel model development, data collection and analysis activities, and transportation application projects that involve traffic and revenue analysis, preparation of environmental documents, air quality and conformity applications, roadway corridor studies, transit alternative analysis, combined land use and transportation applications, environmental justice analysis and activity-based modeling examinations. Mirzaei has a Bachelors of Science and Masters of Science in Civil Engineering from Sharif University of

Technology in Tehran, Iran, and a Masters of Science in Computer Science and Engineering from the University of Texas at Arlington.

Guy Rousseau

Guy Rousseau has over 20 years of experience working with and managing modeling and traffic engineering teams. He currently works as the Modeling Manager for the Atlanta Regional Commission (ARC). In this position, he oversees modeling of the long range transportation plan updates. This process involves network coding, trip generation, trip distribution, modal split, and traffic assignment and emissions analysis for a variety of network year analyses, as well as base year calibrations and validations involving the population synthesizer. Rousseau also manages the traffic modeling efforts feeding into air quality modeling and related emissions analysis, as well as some post-processing methodology and traffic micro-simulations. Rousseau has a Bachelors of Science. in Civil Engineering from the University of Montreal, a Masters of Science in Civil Engineering from Laval University in Quebec, and has finished all coursework at Tulane/ University of New Orleans towards a doctoral degree in civil engineering and transportation planning, with a dissertation remaining.

Peer Review Process

The Travel Demand Model Review Panel met on two consecutive days (October 13 and 14, 2008) to review and consider the seven specific questions. Background material in the form of a Travel Demand Model Review notebook was provided to each Panel member in advance of the meeting. Information included in the notebook provided background on the CRC project and the LPA as well as technical documentation and context related to the model and its assumptions.

During the Panel sessions, technical presentations from Metro, RTC and CRC staff were provided as background to each question and the Panel asked questions of staff during and following each presentation. Following the presentations, the four Panel members adjourned to a separate room to consider the information presented and to address the seven questions. Two staff members representing the CRC project were in the room with the Panel members to record the discussion and findings. They did not participate in the technical review or the formation of recommendations. The findings presented below represent the conclusions reached exclusively and by consensus by the members of the Travel Demand Model Review Panel.

At the end of the second day the review Panel members verbally presented preliminary findings and recommendations to an audience of agency staff and interested parties. The findings presented in this report represent the final conclusions of the Travel Demand Model Review Panel related to the seven specific questions asked of them.

Panel Response to Questions

The following presents the Panel's discussion on each specific question. Panel discussion on each question was preceded by a presentation by staff on the specific topic. The panel then discussed the question and asked questions of staff when necessary. The Panel's findings and / or recommendations are presented at the end of each question.

Question 1:

Are fuel price and vehicle operating cost assumptions used in the model reasonable?

Staff Presentations

Staff provided a PowerPoint presentation ("Metro Modeling Efforts – Fuel and Auto Operating Costs") that discussed the fuel and auto operating cost assumptions included in the Metro model and the research that supported the assumptions. Staff noted that the recent spike in fuel prices has lead some parties to question the fuel price assumptions, particularly in relation to the auto operating cost assumptions contained in the model.

Staff discussed that in the Metro model, fuel costs are considered as part of auto operating cost, which consists of gasoline and oil, tires, and general vehicle maintenance

costs on a per mile basis. Auto operating cost is used instead of fuel prices because it reflects the long-term relationship between fuel price and automobile fleet fuel efficiency (through technological changes, consumer preferences, and government regulations). Metro assumes the historical trend of relatively stable auto operating costs will continue into the future, as it has in the past.

Staff noted that the current fuel cost assumptions relied on national trends and averages prepared by AAA. Future fuel price assumptions relied upon the "worst-case", or highest, year 2030 forecasts provided by the Energy Information Administration (EIA), the statistical agency of the U.S. Department of Energy. Auto operating costs, which include fuel costs, are a factor in the mode choice model.

Panel Discussion

A panel member noted that his experience with the travel demand model in Sacramento indicated that the traditional four-step modeling process was not very sensitive to changes in fuel prices. It was noted that the transit model is very sensitive to fuel price. The Panel asked what impact a change in fuel pricing would have on VMT and transit use. Staff indicated that Metro tested a range ($0.05 to $0.13 per mile) and the impact on both categories was minimal.

The Panel asked if the destination choice model was based on income and, if so, what were the results? Staff indicated that this model did include income factors and the result was that the longer trip lengths were typically associated with specialty/higher income jobs. Lower income jobs tended to be associated with shorter trip lengths. Staff noted that the land use model used travel time to forecast behavior, not auto operating costs.

The Panel asked staff if you change the vehicle operating costs, what changes result in the model? Staff response was that mode share changes, transit ridership increased, but destination choices do not change.

The Panel did note that overall economic conditions are more of a factor, particularly for discretionary trips. The Panel also noted that statewide or regional (i.e., West Coast) fuel prices would probably be a better source when fuel price assumptions for the Metro area. These tend to be a little higher then the national average prices.

Panel's Findings and/or Recommendations

The Panel concluded that the vehicle operating cost assumptions, of which fuel costs are a component, used in the model for the primary travel demand forecasts were reasonable. The Panel confirmed that vehicle operating costs (which consists of gasoline and oil, tire, and general maintenance costs on a per mile basis) is the appropriate measure to use as it reflects the long-term relationship between fuel price and vehicle fleet fuel efficiency. In the Panel's opinion there was an adequate stratification of fuel cost, other costs and buildup of auto operating costs in the modeling process.

The Panel requested staff to look at alternative reasonable VMT / price elasticity relationships. The results of staff's analysis were that regional VMT could vary by minus six percent to plus six percent if fuel prices were at the lower or higher range of forecasts for 2030 as provided by the independent Energy Information Administration.

Please see "Additional Panel Findings and/or Recommendations" for long-term recommendations – beyond the scope of the CRC project – for the region to consider.

Question 2:

Are the tolling methods used in the model reasonable?

Staff Presentation

Staff provided a PowerPoint presentation ("Metro Modeling Efforts – Tolling Methodology") that discussed how tolling costs were implemented in Metro's model. Staff noted that there has been no single best-practice method identified for implementing tolls within travel demand models. Staff's research indicates that each region and project is unique and, therefore, the approaches to tolling tend to differ widely across the nation. Staff described the unique character of the CRC corridor and the lack of alternative routes. Staff noted that the model assumed peak and non-peak tolling costs and did not assume a toll on I-205. Tolling is reflected in the model as a time penalty assigned to categories of travel (auto peak/non-peak, medium trucks peak/non-peak and heavy trucks peak/non-peak).

Staff described how the tolling methodology and assumptions and how they affected destination choice, mode choice and final assignments in the model. Staff concluded with a discussion of the impacts of tolling on these three categories:

- Destination Choice: 7 percent fewer Washington-Oregon crossings and 11 percent fewer Oregon-Washington crossings;
- Mode choice: Increase in mode split from 9 percent to 11 percent; and
- Final Assignment: During the AM 4-hour southbound period with No Toll there was a 53 percent/47 percent split between traffic on I-5 versus I-205 (62,000 total trips) and with an I-5 Toll there was a 43 percent/57 percent split between I-5; and
- I-205 (59,000 total trips).

Panel Discussion

A panel member asked at what point do tolling costs come into play in the model? Staff indicated at all steps, except trip generation. Staff noted that in the model assignment

there was no differentiation between income groups, but for revenue forecasting income differentiation will be a part of the revenue assessments.

The Panel asked - what is the effective Value of Time (VOT)? The Metro model uses a value of time of $13 per hour in 2005 dollars. For a $2 toll, this translates into 9.23 minutes of additional time impedance. The destination choice model uses 25% of the toll cost and the mode choice model uses 75% of the toll cost. The panel noted that research shows that VOT does vary by income group and also other factors such as purpose of trip. A panel member noted that tolling costs do not effect distribution at all in the Atlanta regional model. It was also noted that in Dallas-Fort Worth, tolling doesn't affect their model.

The Panel asked – how many "feedbacks" (iterations) are there in the modeling process and when are tolling costs included? Staff indicated that there were six to seven "feedback iterations" for the base scenario and basically the same for each alternative. Normally two to three iterations are acceptable when running the regional model, but additional iterations were tested because this is such a saturated corridor. Staff noted that they did not see much difference in the model results between the alternatives and that transit ridership was the main difference. Staff noted that tolling costs were implemented in the "final iteration" of each alternative.

The Panel was informed that there would be tolls on I-5 at river crossing with this project and that not tolling was not an option. Bikes and pedestrians would not be subject to the toll. It was noted that there are currently tolled facilities in the State of Washington – Tacoma Narrows and a pilot HOT project.

The Panel discussion then focused on some of the technical details of tolling and the modeling process including: weighting factors, stopping criteria, speeds, micro-simulation and model assumptions related to capacity and auxiliary lanes. Staff addressed each issue in their comments.

Panel's Findings and/or Recommendations

The Panel concluded that the overall approach to the tolling analysis employed by the CRC Project is within standard practice (given the current range of limitations for modeling tolls). The treatment of tolls in destination choice (i.e., partial cost included) is an appropriate methodology. The resulting volumes on the I-5 Bridge with tolls compared to No-Build volumes demonstrate that the tolling methods are reasonable. The Please see "Additional Panel Findings and/or Recommendations" for long-term recommendations – beyond the scope of the CRC project – for the region to consider.

Question 3:

Are the traffic projections for I-5 and I-205 from the model reasonable?

Staff Presentation

Staff provided a PowerPoint presentation ("CRC Project Alternatives and Performance Results") that provided a more detailed description of the corridor, Bridge Influence Area (BIA), travel characteristics within the corridor including travel patterns, crash data, transit ridership, and peaking characteristics. Staff then reviewed the results of the extensive analysis for the No-build and Bridge Replacement Alternatives. Staff described the components of the LPA including the replacement bridge, the auxiliary lanes, and light rail alignment. Finally, Staff provided an overview of existing travel conditions and congestion levels and the VISSIM model.

Panel Discussion

The Panel asked – how did the Metro model compare to the license plate data collection conducted by CRC? Staff responded that the results matched up fairly closely, but the regional model did have some minor inconsistencies associated with dealing with the super-saturated nature of the corridor. The Panel then asked – how did the overall model results compare to the data? Staff indicated that the results for the corridors mainline matched well and that some adjustments needed to occur on the ramps to I-5, but the project was able to accomplish this. The resulting travel times and speeds on the bridge were good. In terms of model "post-processing" staff indicated that they used the NCHRP 255 methodology, using the difference method. Four screen lines were used in this 23-mile long VISSIM model area.

The Panel asked - with congested traffic traveling at 30 mph, what's your corresponding level of service (LOS) and what is the region's standard? Staff responded that the resulting LOS was E/F, but noted that traffic demands are too high to build a feasible project that could meet peak period LOS standards. The Project is trying to improve mobility and safety conditions in the corridor and reduce the duration of congestion, among other things.

The Panel asked about the use of Park-and-Ride lots and how Metro models this type of access. Staff indicated that park-and-ride is one of the modes in the model. They don't model kiss and ride directly, but from survey work staff knows that it constitutes about 15 percent. Staff also noted that the park-and-ride lots in Clark County are at capacity and identified their locations.

The Panel asked if HOV lanes across the I-5 Bridge had been considered. Staff indicated that yes they were considered during earlier screening, but because the project is only

five miles long, staff found no benefit without some larger HOV lane system. If there is future policy direction for a broader HOV lane implementation, that might be looked at. Also, with so many trips getting on and off I-5 in a short five-mile area, it becomes difficult to accommodate them with an HOV lane.

The Panel asked - what's your definition of no-build? Staff indicated that they assumed all the financially constrained projects in the RTP and MTP. Staff noted that there was just one project (SR-502 Interchange) upstream from the project in the I-5 corridor.

Panel's Findings and/or Recommendations

The Panel concluded that model results that indicated that the Build Alternative (LPA) volume difference relative to the No-Build Alternative (6,000 fewer vehicles per day / 3 percent reduction on I-5 and 3,000 additional vehicles per day / 1 percent increase on I-205) are reasonable, due to the fact that:

- There is a higher level of transit service and a resulting higher transit share in the Build alternative;
- There are tolls on I-5 in the Build alternative versus no tolls in the No-Build alternative;
- There is no added highway capacity north of or south of the project limits; and
- There are changes to trip distribution resulting in a decrease of discretionary trips crossing the river because of the toll.

Please see "Additional Panel Findings and/or Recommendations" for long-term recommendations – beyond the scope of the CRC project – for the region to consider.

Question 4:

Are the vehicle miles traveled (VMT) results reasonable?

Staff Presentation

Staff's PowerPoint presentation ("CRC Project Alternatives and Performance Results") introducing Question 3 also included information on Vehicle Miles Traveled (VMT) related to Question 4. Staff reviewed the VMT results with the No-Build and Build Alternatives. These results indicate lower VMT in both the I-5 Bridge Influence Area and the I-5 Corridor with the Replacement Bridge compared to the No-Build Alternative.

Panel Discussion

There was little discussion on the part of the Panel on this question because it was closely related to Question 3. Please see the discussion details above.

Panel's Findings and/or Recommendations

The Panel concluded that the results showing a decrease in VMT on I-5 and a net regional increase (small) overall is reasonable because:

- There is a higher level of transit service and a resulting higher transit share in the Build alternative; and
- There are tolls on I-5 in the Build alternative versus no tolls in No-Build alternative.

Please see "Additional Panel Findings and/or Recommendations" for long-term recommendations – beyond the scope of the CRC project – for the region to consider.

Question 5:

Are the bridge auxiliary lanes modeled correctly?

Staff Presentation

Staff's PowerPoint presentation ("CRC Project Alternatives and Performance Results") introducing Question 3 also included information on Auxiliary Lanes related to Question 5. Staff reviewed the purposes of and the need for auxiliary lanes in this project. Staff described how they were designed into the No-Build and Replacement Bridge Alternatives and discussed the lane capacities that were assigned to these lanes. Staff also presented various examples of existing auxiliary lanes in the Metro Region.

Panel Discussion

The Panel asked for clarification on the length of the auxiliary lanes and capacities assigned to each lane. A panel member noted that in the Sacramento region, they are having discussions about the meaning of auxiliary lanes, which sometimes mean different things to different people. Some concern was expressed about the length (four miles) of the auxiliary lanes, but it was understood that the region has examples of existing auxiliary lanes of this length. Also, the Panel was assured the coding practice was consistent throughout the regional model network.

The Panel asked - did you look at different combinations of auxiliary lanes fewer than three? Staff indicated that there is testing going on right now along those lines. Three lanes were chosen to accomplish lane balance and safety improvements.

The Panel asked if staff made use of collector/distributor roads in the project area? Staff noted that they have a limited set of collector/distributor roads within the project area, but the auxiliary lanes that are shown are part of the I-5 mainline.

The Panel asked if the land use assumptions were the same for all alternatives. Staff indicated that the land use assumptions were the same.

Panel Findings and/or Recommendations

The Panel concluded that while the coding of a four- mile continuous auxiliary lane may be unusual in some urban areas, they were presented with local examples of long auxiliary lanes that currently operate in the Metro region. Since this length of an auxiliary lane is consistent with regional coding practices, this is a reasonable assumption for this project.

The Panel also noted that the project's assignment of reduced lane capacity to the auxiliary lanes is reasonable.

Please see "Additional Panel Findings and/or Recommendations" for long-term recommendations – beyond the scope of the CRC project – for the region to consider.

Question 6:

Was the approach used to estimate induced growth reasonable?

Staff Presentation

Staff provided a PowerPoint presentation ("Induced Growth") that described the topic within the context of NEPA and the CRC Project. Staff began by defining what induced effects were and how they were evaluated in the Draft Environmental Impact Statement. Staff noted that the CRC staff conducted national research on induced effects, including reviewing case studies. Staff then discussed the conclusions of the national case studies. Staff discussed the variety of factors the national research identified as particularly relevant to induced growth, including new access to previously unserved areas, significant improvement to highway travel times, reductions in auto-operating costs, and local regulations that don't manage growth.

Staff noted two key findings particularly relevant to the CRC project and the conclusion that first, the project is unlikely to induce substantial auto travel demand or incur consequential auto-oriented land use changes and second, the project is likely to promote increased densities around new high capacity transit stations.

- Adding highway capacity in a well-planned urban area with a full range of infrastructure and services is unlikely to have substantial indirect effect on land use patterns.
- Improving high capacity transit in a location with supportive land use regulations and markets is likely to promote higher density and TOD, and improve transit mode share.

Staff provided a discussion on the land use regulatory context in Oregon and Washington that will influence the project. Staff then talked about the travel demand model results that related to factors potentially associated with induced growth. A discussion on Metroscope and its application to the project followed. Staff noted that the Metroscope analysis conducted for the project was a "worst-case" scenario – it assumed more new highway lane miles than all of the DEIS alternatives and did not assume a toll on the bridge. The key finding of Metroscope was that there was a potential for a small job growth shift (one percent) from other areas of the region into the I-5 Corridor area as a result of the CRC improvements, and a potential minor increase (less than three percent) in housing prices/demand in Clark County, Vancouver, and north Portland around the I-5 corridor.

Panel Discussion

The Panel asked - how many regional centers are included in Metro's 2040 Regional Growth Concept and how was the Urban Growth Boundary addressed in the model? Staff indicated 10 to 12 centers (combination of regional and town centers). Staff further noted that the UGB identified where the region's buildable land was and, therefore, where future growth would occur. Staff noted that the UGB is reviewed and updated every five years so the Metro region can maintain a 20-year supply of buildable land.

The Panel wanted to know if Metroscope was used for project-level evaluations. Staff indicated that Metroscope was not typically used for project-level evaluation, that it is normally used for the RTP and system-wide analyses.

The technical aspects of Metroscope and the travel demand model were explored by the Panel. They discussed the census tract level analysis Metroscope operates on the relationship of Metropscope results to VISSIM. The Panel asked for additional information on VMT and person trips (this information was provided to the Panel).

Panel discussion then focused on the likelihood for City of Vancouver support for high-capacity transit. How likely is it that the LRT portion within downtown Vancouver would be highly used and see a lot of transit-oriented development? How much support for the intra-Vancouver portion of LRT is there? Staff thought there was increased support for LRT in Vancouver. Staff indicated that given the length of the line, it's likely they'll see more of a reverse commute on LRT from North Portland than from farther north in Clark County. It will function more as a commuter route and for shorter distance intra-

downtown trips. Staff felt there was a strong potential for increased TOD development in Vancouver and noted recent higher density projects that have been built in Vancouver.

The follow-through on the stated intent by Vancouver and Clark County to focus development in the station areas will be critical to the overall success of the LRT portion of the project and the panel findings on induced growth.

Panel discussion then focused on the minor reallocation of jobs into the I-5 Corridor. The Panel wanted to know where the jobs relocated from, which areas of the region contributed to the shift of jobs to the corridor and whether, as a consequence of the shift, was the resulting shift more or less VMT-efficient. Staff indicated that the reallocation didn't come from one specific area, that it was widespread, throughout the region. Staff did note again that the potential shift was minor.

Panel's Findings and/or Recommendations

The Panel concluded that the Metroscope and the travel demand model results appeared to support the national research findings. They felt that the use of multiple methods (case studies, Metroscope, national research) to evaluate induced growth was very helpful. The evaluation of a worst case scenario in Metroscope (it assumed no toll, more new highway lane miles and more auto trips than the LPA) is useful and appropriate. The use of the year 2020 for Metroscope analysis was reasonable at the time it was conducted. The Panel felt that the overall evaluation of induced growth impacts was thorough and robust.

Please see "Additional Panel Findings and/or Recommendations" for long-term recommendations – beyond the scope of the CRC project – for the region to consider.

Question 7:

Were the induced growth findings reasonable?

Panel Discussion

The Panel discussion that occurred on this specific question occurred during the discussion on Question 6.

Panel's Findings and/or Recommendations

The Panel did conclude that the CRC project finding would have a low impact to induce growth is reasonable for this corridor because the project is located in a mature urban area. Insofar as the Metroscope analysis indicates that the project contributes to a better jobs housing balance in Clark County, the Panel believes that this is a positive outcome of the project.

Please see "Additional Panel Findings and/or Recommendations" for long-term recommendations – beyond the scope of the CRC project – for the region to consider.

Additional Panel Findings and/or Recommendations

The Panel also identified a series of long-term regional model improvements. These were not considered as significant to project outcomes at this time and are presented for information only for consideration by Portland Metro in their future enhancements of the regional land use and travel demand forecasting models:

- The Panel noted that the 1994 household survey is 14 years old and suggested that the region consider conducting a new survey soon. Typically, household surveys are conducted every ten years for regional planning purposes.
- The region should consider using the North American Industrial Classification System (NAICS) rather than the Standard Industrial Classification (SIC) codes for employment. NAICS is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. NAICS was developed under the auspices of the Office of Management and Budget (OMB), and adopted in 1997 to replace the Standard Industrial Classification (SIC) system.
- Multinomial mode choice factors in the model limits consideration compared to the use of a fully nested mode choice. Nested logit models can provide a more accurate representation of tradeoffs between modes that are similar (like rail and bus) compared to modes that are more different (like auto and transit).
- Destination choice should consider a Central Business District dummy variable instead of deleting the full cost from destination choice. This was a tradeoff identified by Portland Metro staff during the calibration of the model. The inclusion of full costs in destination choice will provide a more accurate picture of the impacts of tolls, parking costs, operating costs, and fares on traveler's decisions to make a trip across the river or not. This change will require a recalibration of the destination choice models.
- The use of fixed-time factors are a limitation for the evaluation of variable pricing. Variable pricing is designed to shift travelers from congested periods to less congested periods and these shifts are not currently represented by the fixed time factors.
- Updating the future travel demand modeling efforts to redirect the feedback loop from trip distribution to trip generation and to show effects of accessibility on trip generation should be considered. This will involve revising the trip generation model to incorporate accessibility as an input and will provide changes in trip-making as a result of changes in accessibility.

- The incorporation of auto operating and other costs to the trip generation, destination, time of day, and assignment components of the travel demand model should be considered.
- The region should consider testing the use of the activity-based model for evaluation of tolls for future analysis. There is a growing body of research that shows that activity-based models can evaluate the effects of tolls more accurately than trip-based models. This is primarily because of the disaggregate nature of activity-based models, which can identify individual responses to tolls and the value of time.
- In future modeling efforts, the region should consider the inclusion of the full cost of tolls in destination choice. As well, introducing tolls after the last equilibration model loop should be fully tested and compared to full feedback with tolls.
- The Panel felt that the Value of Time (VOT) should be segmented in the model assignment by income and purpose, and an updated VOT should be explored in light of more recent revealed choice surveys and planned CRC stated preference surveys for revenue projections.
- The region should consider "splitting-out" the transit riders without a toll from all other trips with a toll during trip distribution so that transit trips do not divert due to a toll. There is a potential for an under-estimation of transit unless this is done. (However, the Panel concluded that the potential for underestimation of transit riders would not have a significant effect on highway volumes. Staff provided additional analysis that showed that cross river transit trips would increase by about 900 daily person trips (if park-and-ride lot capacity in Vancouver was expanded substantially beyond what has been agreed to as part of the LPA), which represents roughly three percent of total daily cross river transit trips, or less than one percent of cross river auto trips.)
- The region should consider coding auxiliary lanes with lower free flow speeds. For multiple auxiliary lane segments, staff should review the Highway Capacity Manual for less-than-1/2 lane capacity coding for additional auxiliary lanes.
- Future travel demand modeling could include sensitivity testing with Metroscope to evaluate the impacts of highway capacity on regional VMT and trips. This would provide an assessment of how sensitive Metroscope is to changes in highway capacity compared to other research in this area.

Conclusion

This report presented the findings and recommendations of the Travel Demand Model Review Panel to the seven specific questions presented to them on October 13 and 14, 2008. Following the intensive two-day review session, panel members provided specific conclusions and recommendations that indicated overall agreement with the outcomes of the technical modeling process followed in the CRC Draft Environmental Impact Statement process. Specific recommendations intended to improve future travel demand modeling efforts were also provided by panel members.

Columbia River Crossing
Greenhouse Gas Emission Analysis
Expert Review Panel Report

January 8, 2009

Review conducted November 20, 2008

Kelly McGourty, Chair
Ed Beimborn, Ph.D
Kelly Dunlap, J.D.

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Executive Summary

Columbia River Crossing (CRC) is a multi-modal transportation project for Interstate 5 between Portland, Oregon, and Vancouver, Washington. The project formed a panel of independent experts to review and evaluate the greenhouse gas emissions analysis presented in the Draft Environmental Impact Statement (EIS) prior to developing a Final EIS. This review was requested by two of the local sponsor agencies during the selection process for a locally preferred alternative (LPA).

The primary purpose of CRC's greenhouse gas emissions analysis was to compare alternatives. CRC considered both short-term construction related effects and long-term effects from operations of the highway and the transit system. The methodology used to calculate greenhouse gas emissions is based on energy consumed during these activities. Emissions were modeled for diesel and gasoline used during construction and highway operations, and for coal and natural gas combustion associated with electricity generation. Model inputs for highway and transit operations included the number of vehicles traveling, types of vehicle, length of the roadway or track, and vehicle speed.

The Greenhouse Gas Emissions Expert Review Panel (Panel) finds the CRC analysis and findings to be reasonable and commends the efforts of staff to conduct a greenhouse gas emissions analysis for a single project. The Panel agrees with the CRC finding that the locally preferred alternative would generate lower greenhouse gas emissions than the no build alternative. The Panel also recommends that the project team refine the model for the Final EIS, primarily to provide a more comprehensive understanding of traffic-related emissions. The panelists do not expect implementation of their recommendations to change the relative comparison of alternatives.

The specific findings are:

Question 1: Were the methods for modeling greenhouse gas emissions in the Draft EIS reasonable?

We find that the methodology used by the CRC project to model greenhouse gas emissions to be both reasonable and appropriate.

Additionally, we find the use of the traffic modeling software VISSIM to calculate the inputs for the greenhouse gas emissions estimate to be an excellent approach.

We also find that refinements could be made to the methodology used to measure the highway-related emissions and compare the alternatives, as outlined below and under Question 3.

Question 2: Were the findings in the Draft EIS regarding greenhouse gas emissions reasonable?

We conclude that the findings in the Draft EIS regarding greenhouse gas emissions are reasonable. We also find that they likely underestimate the potential for the LPA to reduce greenhouse gas emissions relative to the no build alternative.

In addition, we find that changes to the text and summary tables in the Draft EIS would help clarify the analysis and the transit service differences between alternatives for the reader.

Question 3: Is the proposed approach for estimating greenhouse gas emissions in the Final EIS reasonable?

We find the proposed approach for the Final EIS to be reasonable, and we recommend that this approach include the changes proposed by the CRC project team and by this Panel. The approach for the Final EIS includes recommendations to: separate the transit system emissions estimates from the highway system for reporting and comparison; expand the breadth of the highway system analysis; add analysis of the effects of an electronic-only tolling system by non-residents who may have to exit the highway to pay the toll and contribute to traffic delays; and add an analysis of GHG emissions reductions that would result from removing bridge lifts and reducing crashes. We recognize that a quantitative analysis for some of the additional inputs may not be feasible given data and forecasting/modeling limitations.

Additionally, we find the use of the traffic modeling software VISSIM to calculate the inputs for the greenhouse gas emissions estimate to be excellent and recommend that it continue to be used for the Final EIS.

Question 4: Are there specific and realistic opportunities for the project to further reduce greenhouse gas emissions that should be considered in the Final EIS?

It is the Panel's belief that because there are no thresholds for greenhouse gas emissions under state and federal regulations at this time and because the project has lower emissions than the no build alternative, that mitigation measures are not needed. To the extent the measures are incorporated into the project, the Panel commends the project team.

We find that the strategies suggested by CRC to further reduce greenhouse gas emissions should be considered as part of state and regional policy.

Introduction

The Columbia River Crossing project (CRC or project) is a multi-modal transportation project for Interstate 5 between Portland, Oregon, and Vancouver, Washington. CRC will replace the I-5 bridge over the Columbia River, extend Portland's light rail system to Vancouver, improve seven interchanges, and enhance the pedestrian and bicycle pathway.

CRC released a Draft Environmental Impact Statement (EIS) in May 2008 which described the potential environmental and community effects of five alternatives, including a "no build" alternative. A locally preferred alternative of "replacement I-5 bridge with light rail" was selected in July 2008. The Draft EIS contains a section describing cumulative environmental effects. Within this section, the project's effect on climate change from greenhouse gas emissions is discussed. In November 2008, CRC formed a panel of three independent experts to review and evaluate the greenhouse gas analysis in preparation to develop the Final EIS.

The project is led by the Washington State Department of Transportation and Oregon Department of Transportation in partnership with the U.S. Department of Transportation, and local governments and transit agencies (City of Vancouver, City of Portland, Southwest Washington Regional Transportation Council, Metro, C-TRAN and TriMet).

Panel Purpose

As the Greenhouse Gas Expert Review Panel (Panel), we were tasked with reviewing and evaluating the methodology and findings of greenhouse gas emissions related to the CRC project. This review was requested by the Metro Council, the Portland City Council and the project's advisory Task Force in summer 2008, as part of the selection of a locally preferred alternative for the project. Resolutions adopted by these entities made the following recommendations related to a review of the CRC greenhouse gas analysis, travel demand modeling, and induced growth analysis:

> Further analysis is required of the greenhouse gas and induced automobile demand forecasts for this project. The results of the analysis must be prominently displayed in the Final Environmental Impact Statement. The analysis should include comparisons related to the purpose and function of the so-called "auxiliary" lanes. A reduction in vehicle miles traveled should be pursued to support stated greenhouse gas reduction targets as expressed by legislation in Oregon and Washington and by the Governors. (Metro Council, Resolution 08-3960B, July 17, 2008)
>
> The CRC project shall contract for an independent analysis of the greenhouse gas and induced automobile travel demand forecasts for the project. (City of Portland Council, Resolution 36618, Exhibit A, July 9, 2008)
>
> [The Task Force supports] (i)ndependent validation of the greenhouse gas and climate change analysis conducted in the Draft Environmental Impact Statement to

> determine the project's effects on air quality, carbon emissions and vehicle miles traveled per capita (CRC Task Force, Resolution Recommendations, June 24, 2008)
>
> [The Task Force supports] (t)he inclusion of strategies aimed at reducing greenhouse gases and reducing vehicle miles traveled per capita. The Oregon Global Warming Commission or the Washington Climate Action Team should advise the CRC project on project related aspects that will help achieve both states greenhouse gas reduction goals set for 2020 and 2050. (CRC Task Force, Resolution Recommendations, June 24, 2008).

The above resolutions related to travel demand modeling and induced growth were reviewed and addressed by a separate expert review panel on October 13-14, 2008. The "Travel Demand Model Review Panel" concluded that the CRC's Draft EIS approach to evaluating induced growth was useful and appropriate, and that the overall evaluation of induced growth impacts was rigorous. The panel agreed with the conclusion of the CRC Draft EIS that the transit and highway improvements combined with a new highway toll would promote higher-density transit-oriented development, would concentrate more development in the I-5 corridor, and would likely have little of the sprawl-inducing effects that can result from some new highway corridor projects.

Questions for Consideration

We were asked by the CRC to address the following questions in order to address the related conditions in the locally preferred alternative resolutions:

1. Were the methods for modeling greenhouse gas emissions in the Draft EIS reasonable?
2. Were the findings in the Draft EIS regarding greenhouse gas emissions reasonable?
3. Is the proposed approach for estimating greenhouse gas emissions in the Final EIS reasonable?
4. Are there specific and realistic opportunities for this project to further reduce greenhouse gas emissions that should be considered in the Final EIS?

We reviewed technical memoranda and background materials, reviewed some of the greenhouse gas-related comments received on the project, heard presentations by, and asked questions of, technical staff before developing our findings and making recommendations.

Panelist Biographies

Each panel member has experience and/or advanced knowledge in methods for estimating greenhouse gas emissions associated with transportation infrastructure. In addition, because we meet the following criteria, we fulfill the requirement that panel members be independent of CRC:

- Not working for project sponsors, lead agencies or interested agencies
- Not working for, or a member of, any entity that has commented on the CRC Draft EIS or CRC project
- Not working for a private sector company that has, or could in the future, be eligible to pursue project contracts
- No expressed or perceived interest (for, against, or otherwise) in the CRC project
- Not living or working in the Portland/Vancouver metropolitan region

Kelly McGourty, Chair

Kelly McGourty is a Principal Planner in the Transportation Planning Department of the Puget Sound Regional Council (PSRC), the metropolitan planning organization (MPO) for the Seattle/Central Puget Sound region. She is the lead staff member on air quality and climate change issues, and works closely with the region's federal, state and local air quality partner agencies. She also works on the region's Transportation Improvement Program (TIP), including the project selection process for distributing PSRC's federal funds. Prior to joining PSRC in 1999, McGourty was with the MPO in Spokane, Washington, where she performed transportation and air quality modeling and analyses. Her background also includes performing environmental assessments and inspections for both a consulting firm and an urban renewal agency. McGourty has an undergraduate degree in Environmental Policy and Assessment from Western Washington University and a graduate degree in Environmental Science from the University of Texas at San Antonio.

Dr. Ed Beimborn

Ed Beimborn is professor emeritus from the University of Wisconsin. Beimborn has worked with local, regional, state and federal agencies on projects including: the design of transportation facilities, the planning and operation of mass transit systems, analysis of the impacts of transportation systems on the environment, evaluation of transportation systems, and improvement in methodologies for transportation planning. He is past chair of the Transportation Planning section of the Institute of Transportation Engineers (ITE) and is currently secretary of the Transit Planning and Development Committee of the Transportation Research Board (TRB). He is the former Director of the Center for Urban Transportation Studies at UW-Milwaukee, served on the Governor of Wisconsin's Climate Change and Transportation Task Force, and served on an expert panel advising on analysis methods for the St. Croix River bridge project. Beimborn received his B.S. degree in Civil Engineering from the University of Wisconsin-Madison and M. S. and Ph.D. degrees in Civil Engineering (Transportation) from Northwestern University. He has been a visiting fellow at Oxford University in England and a visiting professor at the Technion in Israel.

Kelly Dunlap

Kelly Dunlap leads the California Department of Transportation Environmental Management Office in Sacramento. She serves as the NEPA and climate change analysis lead for the department. She has over 10 years environmental project development

experience, including scoping, environmental document preparation, permitting, and compliance during construction. Current responsibilities include developing and improving statewide environmental policies and procedures related to CEQA and NEPA compliance. Dunlap has a B.A. in Geography from the University of California at Los Angeles, and a J.D. from Loyola Law School.

Project Background

Overview

We understand the following about the project from the materials provided.

The Columbia River Crossing project is a bridge, transit and highway project aimed at improving travel efficiency and safety on I-5 for drivers, freight haulers, transit riders, bicyclists and pedestrians. The project area is a five-mile section of I-5 between State Route 500 in Vancouver and Columbia Boulevard in Portland, and includes the Interstate Bridge over the Columbia River.

The Interstate Bridge is composed of two side-by-side bridges that provide three lanes for travel in each direction. This facility has a lift-span for marine traffic which causes highway traffic to stop on average once a day.

The project area has six significant transportation problems that are being addressed by the CRC:

Congestion: Travel demand exceeds capacity which leads to four to six hours of congestion a day. Congested conditions are predicted to grow to 15 hours a day by 2030.

Public transit: Service is limited by congestion and travel times are expected to double by 2030.

Freight: Mobility through the project area is impaired. Truck can be 20 percent of traffic volumes during certain hours because of the presence of two international marine ports and industrial areas near the project area.

Safety: Crash rates are high due to seven closely-spaced interchanges, sub-standard highway design features and bridge lifts. The area has the highest crash rate for I-5 in Oregon. Collisions are expected to increase by up to 75 percent by 2030.

Pedestrians and bicyclists: Facilities and connections are inadequate with a bridge pathway so narrow that two bicyclists cannot pass each other without one dismounting.

Earthquake safety: The two structures of the I-5 bridge do not meet current seismic standards and are vulnerable to collapse during a major earthquake.

The Draft EIS was released in May 2008 and described the potential environmental and community effects of the "no build" alternative and four "build" alternatives. The five alternatives were:

1. No build
2. Replacement I-5 bridge with bus rapid transit

3. Replacement I-5 bridge with light rail
4. Supplemental I-5 bridge with bus rapid transit
5. Supplemental I-5 bridge with light rail

All of the build alternatives included interchange, freight and pedestrian/bicycle improvements in the project area.

Alternative 3 was selected in July 2008 as the locally preferred alternative.

The analysis of the replacement bridge alternatives in the Draft EIS assumed a 12-lane bridge structure with three general purpose (or "through") lanes in each direction and three auxiliary lanes in each direction. The analysis also assumed a tolling system with no toll booths and the use of electronic tolling where drivers would use transponders to automatically pay the toll. Drivers without transponders would need to pay in a different way, possibly by exiting the highway or through the use of license plate readers.

Greenhouse Gas Emissions Analysis Overview

We reviewed the Energy Technical Report, the section on climate change from Chapter 3 of the Draft EIS and a summary of national research on induced growth. Our findings and recommendations are based on the following understanding:

The greenhouse gas emissions analysis was conducted to consider both short-term construction related effects and long-term effects from operations of the highway and the transit system. For all three areas of the analysis, greenhouse gas emissions were a function of energy consumed. The equation was presented as:

$$EM = FC \times EF \times CDE$$

Where:

EM	=	Emissions of carbon dioxide (expressed as lbs of carbon dioxide equivalents)
FC	=	Fuel (energy) consumed during construction or operations (gallons or KWh)
EF	=	Emission conversion factor by fuel type (19.4 lbs CO_2/gal gas; 22.2 lbs CO_2/gal diesel; 2.095 lbs CO_2/kWh coal; 1.321 lbs CO_2/kWh natural gas)
CDE	=	Carbon dioxide equivalents (100/95)

(CO_2 emissions account for 94 to 95 percent of greenhouse gases emitted by the transportation sector. As a result, the U.S. Environmental Protection Agency uses CO_2 emission estimates as a representative indicator of all greenhouse gas emissions.)

The fuel consumed (FC) during construction or operations was calculated with the following equations.

Construction Energy Consumption

CRC estimated the consumption of construction-related energy with methodology developed by the California Department of Transportation (CalTrans). Energy (Btu) consumed is a function of the cost of a construction activity multiplied by an energy factor that reflects the number of Btus expended for each dollar of construction value. The equation was presented as:

$$E = C \times EF \times DC$$

Where:

E	=	Energy consumed (Btu)
C	=	Cost of a construction activity in 2007 dollars
EF	=	CalTrans energy factor in 1973 dollars (Btu/1973$)
DC	=	Conversion to 2007 dollars (1973$/2007$)

The data needs for these estimates include project cost per construction activity (e.g. installing light rail tracks, constructing a bridge), dollar conversion factor, energy sources, emission factors for each energy source and composition of energy sources to generate electricity.

Of the total energy used for construction, 70 percent was assumed to come from diesel and 30 percent from gasoline. This breakdown of energy sources was used to estimate the gallons of diesel and gasoline needed to construct the project. The result was then used to estimate carbon dioxide equivalent (CO_2e) emissions.

Highway Operations Energy Consumption

CRC estimated the consumption of energy from highway operations using methodology published in the Oregon Department of Transportation Energy Manual. Energy consumed (in Btus) is a function of the daily volume of traffic, the length of the roadway and the gallons of fuel consumed per mile based on traffic speed and vehicle type. The equation was presented as:

$$E = V \times L \times FCR \times CF$$

Where:

E	=	Energy consumed (Btu)
V	=	Daily volume of traffic
L	=	Length of the roadway (0.9 mile)
FCR	=	Fuel consumption rate based on vehicle type and speed (gallon/mile)
CF	=	Fuel conversion factor (Btu/gallon of gasoline or diesel)

The data needs for these estimates include composition of the types of vehicles in the traffic stream, fuel economies for each type of vehicle over a range of speeds, temporal changes and emission factors for each type of fuel used.

CRC estimated greenhouse gas emissions from vehicles based on the daily volume of traffic and average speeds for the 0.9 mile river crossings at I-5 and I-205. This method does not provide a comprehensive tally of all CO_2 emissions, but it does provide a relatively precise estimate for comparing the relative difference between alternatives. The daily traffic volumes were developed based on regional travel demand modeling completed by the local metropolitan planning organizations (Metro and RTC). These volumes were then processed through an operational traffic analysis model to provide greater precision to speed and congestion estimates.

Transit Operations Energy Consumption

CRC estimated the consumption of energy from buses and light rail vehicles using a similar methodology as used for highway operations. However, the size of the systems for both transit types was larger. Data were available on transit vehicle volume and average speed for the entire regional transit system under the no build and build alternatives. As a result, the alternatives were evaluated based on both nominal and relative differences.

The energy consumption estimate for buses was calculated using the same equation as used for highway operations. For light rail energy consumption, CRC estimated the CO_2 emissions associated with the creation of electricity from a combination of hydropower, nuclear, biomass, coal and natural gas combustion. The light rail operations equation was modified slightly to:

$$E = V \times L \times FCR \times CF$$

Where:

E	=	Energy consumed (Btu)
V	=	Daily volume of light rail cars
L	=	Length of rail segment (miles)
FCR	=	Fuel consumption rate based on average operating speed (kWh/mile)
CF	=	Fuel conversion factor (Btu/KWh)

Methodology proposed for the Final EIS

We further understand that the CRC team proposes to use the same basic methodology for the Final EIS with the following modifications:

- Use of updated construction cost estimates for LPA
- Inclusion of energy use associated with bridge and highway maintenance
- Expansion of study area to five miles of I-5 and I-205, if data are available
- Inclusion of bridge lift congestion and idling
- Inclusion of congestion effects from vehicle collisions
- Added level of detail from travel demand model

Panel Findings

Question 1: Were the methods for modeling greenhouse gas emissions in the Draft EIS reasonable?

Findings

We find that the methodology used by the CRC project to model greenhouse gas emissions to be both reasonable and appropriate.

Additionally, we find the use of the traffic modeling software VISSIM to calculate the inputs for the greenhouse gas emissions estimate to be an excellent approach.

We also find that refinements could be made to the methodology used to measure the highway-related emissions and compare the alternatives, as outlined below and under Question 3.

Discussion

This is one of the first transportation infrastructure projects that analyzed greenhouse gas emissions quantitatively for reporting under the National Environmental Policy Act. Similar types of analytic efforts have been conducted on a regional or statewide basis, but have rarely been done at the project level. The CRC project is doing more to calculate and reduce greenhouse gas emissions than most other transportation projects. As such, it should be recognized as a pioneering effort.

Currently, there is no industry-wide standard for estimating greenhouse gas emissions at the individual project level. The CRC project based its greenhouse gas emission estimates on long-term energy consumption rates and the carbon dioxide equivalent by-product from that consumption using data from Oregon and other state agencies. This approach differs from other greenhouse gas estimating models currently being tested in other states. Other efforts have used existing air quality models that estimate carbon monoxide and other air toxics. For example, the MOVES model developed by the U.S. Environmental Protection Agency (still in draft form) is an air quality model that is being used and tested to estimate greenhouse gas emissions.

We believe that the use of an energy analysis is an appropriate course of direction to compare project alternatives because emissions from vehicles associated with speed or lack of speed (i.e. congestion) can be captured. Two considerations may affect the use and continued development of the energy-based model: Currently, the CO_2 emissions per gallon of fuel are held constant. However, changes in the fuel mix may require a change to this factor. Second, the air quality-based models more readily allow carbon emissions to be measured for local streets, which is more difficult with the energy-based approach that uses traffic operations output from VISSIM modeling. However, some of the air quality type models show limitations in other factors such as their sensitivity to speed changes across the various vehicle classes.

When conducting its analysis, the CRC project used the same general equation to estimate emissions from operation of the highway and transit systems. More extensive travel forecasts were available for the transit system than for the highway system. Relatively precise forecasts of light rail, bus rapid transit (BRT) and other transit vehicle trips and speeds were available region-wide. However, precise forecasts of highway traffic speeds by vehicle classification and roadway link were much more limited. Thus, the Draft EIS restricted its quantification of the greenhouse gas emissions from the highway to the portion of the highway where such data were available, namely the river crossings themselves (approximately a one-mile segment of I-5 and of I-205). This is a reasonable method for comparing highway alternatives, as long as highway volumes and speeds outside this segment have a similar, ordinal relationship among the alternatives as those same metrics within the measured segment. Based on the traffic analysis results we reviewed, this appears to be true for the CRC alternatives, and therefore we would expect that including more of the highway in the analysis would not change the basic conclusions in the Draft EIS about the relative emissions for each alternative.

In the Draft EIS, the tons of carbon emitted from both the transit system and the highway system were presented as a simple total for alternative comparison purposes. Whereas in the Energy Technical Report, more detailed analysis, charts and graphs were presented on the emissions estimates from each transit option and from each highway option. We find the summation of the transit and highway results to be potentially misleading: The physical area for the analysis of the transit emissions and the highway emissions were not the same. The highway analysis did not include emissions from adjacent highways, while the transit analysis included the emissions effects of all light rail trains and buses in the region. Thus, the analysis of the transit elements and the analysis of highway elements did not use a consistent geographic scope and therefore should not be shown as a combined total.

We also note that the Draft EIS indicates that the transit-related emissions are larger than the highway emissions. The presentation of the data and the reason for this difference could have been strengthened by clearly indicating that the transit-related emissions were for the entire regional transit system and the highway emissions were solely for the I-5 and I-205 bridge crossings, as further discussed in Question 3.

Question 2: Were the findings in the Draft EIS regarding greenhouse gas emissions reasonable?

Findings

We conclude that the findings in the Draft EIS regarding greenhouse gas emissions are reasonable and likely underestimate the potential for the LPA to reduce greenhouse gas emissions relative to the no build alternative.

In addition, we find that changes to the text and summary tables in the Draft EIS would help clarify the analysis and the transit service differences between alternatives for the reader.

Discussion

The greenhouse gas emission estimates reported in the Draft EIS are based on an approach that likely understates the potential to reduce greenhouse gas emissions relative to the no build alternative. The method underestimated emissions from the no build alternative because it did not include two primary sources of congestion associated with the no build alternative as well as existing conditions: bridge lifts and collisions. As a result, the potential for the build alternatives to reduce greenhouse gas emissions also was underestimated, in particular those emissions that stem from vehicles idling on the highway following crashes, incidents and bridge lifts. We expect that the build scenarios, especially those that eliminate the bridge lifts and reduce crash-related congestion, will further reduce carbon emissions, but these reductions are not reflected in the quantitative Draft EIS estimates. The Panel also discussed that the construction emissions from the project are likely overestimated given that they are based on a Caltrans model that uses an older and less efficient fleet of construction vehicles.

Our second finding relates to the communication of the difference in level of transit service between alternatives 2 and 3 (named "efficient" operations in the Draft EIS) and alternatives 4 and 5 (named "increased" operations in the Draft EIS). It is not immediately clear how many more regular buses and high capacity transit vehicles would be operating in the "increased" operations. However, we are concerned that the emissions estimates for the alternatives with "increased" operations are greater than the emissions for the no build alternative. The summary table on page S-31 and chart on page 3-435 highlight these results. This is counter-intuitive and needs explanation.

We would suppose that by not adding much highway capacity with alternatives 4 and 5, many transit vehicles remain stuck in congestion, which could discourage ridership. Further, the addition of many more diesel powered buses and electric light rail trains would increase greenhouse gas emissions. It may be that the forecasted transit demand associated with light rail or BRT would be largely served with the level of transit frequency provided in the "efficient" operations, such that in spite of adding significantly higher frequency of trains or BRT vehicles, it does not attract substantially more new transit riders or a proportional decrease in auto trips. All of these factors provide a reasonable explanation but they are not clearly explained in the Draft EIS. We encourage CRC to simply – yet fully – clarify the transit service differences and the resulting differences in transit mode split and greenhouse gas emissions. The project may also consider adding a calculation of greenhouse gas emissions per vehicle (or per person) trip to provide another way to compare modes and compare transit service operations.

Question 3: Is the proposed approach for estimating greenhouse gas emissions in the Final EIS reasonable?

Findings

We find the proposed approach for the Final EIS to be reasonable, and we recommend that this approach include the changes proposed by the CRC project team and by this Panel.

Additionally, we find the use of the traffic modeling software VISSIM to calculate the inputs for the greenhouse gas emissions estimate to be excellent and recommend that it continue to be used for the Final EIS.

Discussion

We base our findings that the proposed approach for the Final EIS is reasonable on our earlier conclusion that the methodology used for the Draft EIS was reasonable and appropriate. We understand from our discussions with, and presentations from, the CRC staff that additional inputs and a broader scope of highway emissions analysis are planned for the Final EIS. We recommend CRC implement those changes and to implement our recommendations related to the Draft EIS methodology when conducting the greenhouse gas emissions analysis for the Final EIS.

Specifically, the following changes, which include some proposed by the CRC staff and some recommended by the Panel, should offer a more precise estimate of emissions under the no build and the locally preferred alternative scenarios:

- Separate the transit system emissions estimates from the highway system for reporting and comparison. The Draft EIS provided combined estimates. The estimates should remain separate unless their geographic scope can be modified to be equivalent.
- Include traffic-related emissions for a greater length of I-5 and I-205 in the estimates.
- Include analysis of the adjacent highway emission effects (i.e. Highway 99E, SR 14, SR 500 and I-205).
- Include analysis of the effects of congestion associated with bridge lifts.
- Incorporate the effects of congestion associated with collisions or traffic incidents.
- Add analysis of the effects of a reduction in traffic idling, and in particular, diesel trucks.
- Add analysis of the effects of an electronic-only tolling system by non-residents who may have to exit the highway to pay the toll and contribute to traffic delays.

We recognize that a quantitative analysis for some of these new inputs may not be feasible given data and forecasting/modeling limitations. In some cases, it may be possible to define a "usual" or average scenario and estimate emissions quantitatively based on it. In cases where quantitative data cannot be reasonably obtained, then a qualitative analysis should be included to recognize that there is an effect to greenhouse gas emissions. For example, we

understand that precise emissions from off-mainline highway emissions are more difficult to estimate than mainline conditions. However, if practicable, we recommend that the project include the adjacent highway impacts in the assessment. If they cannot be quantified with the same level of precision as the river crossing, then they should at least be generally estimated or addressed qualitatively in the analysis.

Again, it does not appear that this, or any of the other refinements listed above, would change the basic conclusions about the LPA and the no build alternatives in the Draft EIS, but they will provide a more comprehensive and precise estimate of the effects on greenhouse gas emissions for the Final EIS.

Recommendations for documentation for Final EIS:

In our review of the greenhouse gas analysis and subsequent discussions with CRC staff, we learned that many of our questions from reading the Draft EIS were, indeed, considered in the analysis. However, we found that the documentation of the analysis could be more thorough and compelling. We recommend the following to improve the presentation of the greenhouse gas analysis in the Final EIS:

- Provide a clear explanation between the baseline in 2007 and no build in 2030. Greenhouse gas emissions will be greater in 2030 with or without the CRC project, if CRC does not move forward given the region's predicted population and employment growth.
- Ensure the conclusions related to greenhouse gas emissions are supported by a description of, or a reference to, the analysis that was conducted. Specifically, the conclusion paragraphs on p. 3-435 of the Draft EIS should be connected to a deeper description of the analysis.
- The CRC project is multi-modal with many benefits. Provide an effective, clearly-worded summary of the climate change benefits beyond the numbers given in the summary tables.
- Revisit the methodology used to estimate transit emissions. Once completed, include a detailed explanation of the methodology and the results and avoid use of a quick bullet point conclusion.
- Use separate entries for the transit and highway emissions in the executive summary table of CRC's community and environmental effects for the Final EIS and not combined as they are in the Draft EIS on p. S-31.
- Describe in more detail the actual impacts from tolling on mode shift, trip reduction and trip diversion.
- More clearly describe the effects to I-5 with less congested conditions by:
    - Providing a connection to the traffic analysis or repeat the information from the traffic analysis in the greenhouse gas analysis section.
    - Describing how many trips might be induced because traffic flow would improve. For example, discretionary trips may increase with better travel conditions. At the same time, the highway toll would decrease such trips, and the jobs-housing balance may improve with the project. The result could reduce regional vehicle miles traveled and counteract and added discretionary trips.

- Include an explanation of the construction emissions analysis in the climate change section in the Final EIS and state that it likely overestimates CO_2 emissions.
    - As part of this exercise, revisit the numbers and assumptions obtained from the California Department of Transportation methodology of 1973 to ensure reasonableness in 2008.
    - In addition, explain why the CalTrans methodology was used, given that it is 35 years old. Since then, the construction vehicle fleet has become much more efficient and cleaner. The result of using this methodology is that the analysis gives a high estimate of carbon emissions.
- Include summary tables of the induced growth analysis in the climate change section of the Final EIS. Based on our cursory review of the induced growth analysis, we find the methods to be robust and the findings reasonable, and recommend that it be summarized in the climate change section as it makes a compelling case for how the project's indirect effects would likely further reduce greenhouse gas emissions.

Question 4: Are there specific and realistic opportunities for the project to further reduce greenhouse gas emissions that should be considered in the Final EIS?

Findings

It is the Panel's belief that mitigation measures are not needed because the project has lower emissions than the no build alternative and because there are no thresholds under state and federal regulations at this time. To the extent the measures are incorporated into the project, the Panel commends the project team.

We find that the strategies suggested by CRC to further reduce greenhouse gas emissions should be considered as part of state and regional policy.

Discussion

We commend CRC for looking at additional measures to reduce greenhouse gas emissions beyond providing alternatives to driving and implementing bridge tolls. With CRC's multi-modal approach, greenhouse gas emissions are expected to be less with the project than under the no build scenario. As a result, mitigation is not required.

However, we do support CRC's suggested strategies and recommend they be pursued at the regional or state level. These include:

- planting trees to offset carbon emissions
- improving pedestrian and bicycle access to light rail stations
- requiring construction contractors to use alternative fuels
- using the right-of-way to generate green energy
- providing opportunities to recharge electric vehicles at park and rides
- increasing ride-share and commute choice programs
- operating the facility on green energy

Specific to the CRC project area, CRC should consider how it will collect tolls from vehicles that do not have transponders, and qualitatively evaluate whether this would result in any additional delays or congestion on or off the I-5 mainline. In addition, the staging of the transit improvements should be examined as possible mitigation for construction-related highway impacts. Long-term, a high-level, aggressive incident management system and traffic operations system should be developed both as a way to reduce greenhouse gas emissions and to benefit highway operations.

Other considerations related to climate change adaptation

We wish to acknowledge that reducing the transportation system's effect on global climate change is not the only climate change consideration for large transportation projects. Transportation planners, engineers and managers also must recognize and investigate the potential of climate change to affect transportation projects. For example, river flows can increase as can the potential for fires, floods, soil compaction and settling. We recognize CRC's efforts to consider how I-5 bridge design may need to reflect the potential for a climate-change induced rise in the high water levels of the Columbia River.

Conclusion

It is the conclusion of this Panel that the CRC project's methodology to estimate and compare greenhouse gas emissions from the alternatives presented in the Draft EIS was both reasonable and appropriate. Given the lack of consistent methodology nation-wide for this type of analysis, other transportation projects should consider the CRC energy consumption approach as a viable option. We believe the use of the traffic modeling software VISSIM to calculate inputs to the model strengthens its validity.

We agree with the CRC finding that the locally preferred alternative would reduce greenhouse gas emissions compared to the no build alternative. Improvements to the model are suggested to refine the analysis for the Final EIS. If these recommendations are implemented for the Draft EIS, we do not believe that the CRC relative comparison of alternatives would change.

Because greenhouse gas emissions will not increase with construction of the project and no emissions thresholds exist under state and federal law, mitigation measures are not necessary. We commend the CRC's consideration of additional strategies to further reduce greenhouse gas emissions.

OFFICES OF THE GOVERNORS

CHRISTINE O. GREGOIRE
WASHINGTON

THEODORE R. KULONGOSKI
OREGON

June 19, 2008

Columbia River Crossing Task Force
700 Washington Street, Suite 300
Vancouver, WA 98660

Dear Director Garrett, Secretary Hammond and Task Force Co-Chairs Hewitt and Dengerink:

First of all, we would like to offer both Hal and Henry our sincere appreciation for the countless hours they have spent leading the Columbia River Crossing Task Force over the past three years. Their leadership has helped increase awareness of the significance of this crossing not only to local neighborhoods and communities, but regionally, and nationally. We feel very strongly that now is the time to address this key bottleneck that not only links Portland and Vancouver but affects the economic vitality of the entire west coast.

The Task Force has continued a tradition of transparency and local government and citizen involvement in the CRC project, spanning many years of bi-state planning. In addition to their own visions and values each of the thirty-nine Task Force members brought to the table, you have received input from local, regional, state and federal agencies, as well as thousands of hours of community input from Oregon and Washington citizens. There is no other project in the Portland-Vancouver region that has engaged the public to the extent this project has.

The decision the Task Force is poised to reach at their final June 24th meeting will set a solid foundation for this project to move forward in a way that is consistent with local values voiced by citizens and governments on both sides of the river. The Task Force's decision will guide the state departments of transportation as the project moves forward into the design phase.

We are pleased that the U.S. Department of Transportation recognizes this project as one of a handful of projects of national significance in the country. Most recently, this was demonstrated by its designation as a Corridor of the Future and the award of federal funds for the next phase of project development.

Our strong support for this project is centered on the belief that it presents a huge opportunity for our two states. It is an opportunity to leverage federal funds to build a project that provides transportation options, improves safety, enhances freight mobility, and demonstrates to the nation how to build a green project that reflects the values of our region.

We firmly believe this can and should be the one of the most sustainable transportation projects in the country; one that incorporates high capacity transit, strategies that reduce vehicle miles traveled, tolling, electronic safety technologies, and world class bike and pedestrian facilities. We also believe we must use construction materials and methods that would minimize environmental impacts.

As you know, there are a number of advisory working groups that have had significant influence on the direction of the project, including groups dealing with aesthetics, bicycle and pedestrian facilities, freight movement, and community and environmental justice issues. We believe that it is important for these working groups to continue to meet and provide input to the project. However, simply extending the life of these working groups does not provide adequate involvement from the many sponsor agencies, as well as the diverse stakeholders that have been effectively engaged throughout the three year life of the Task Force.

To that end we are in the process of reconvening the Project Sponsor's Council to allow for high level formalized input to the Departments of Transportation. This council will continue to meet after the task force has convened their final meeting and provided direction on a locally preferred alternative (LPA). This Council will ensure that a structure is in place to provide guidance to the project as it transitions from planning to design and construction.

The Council will be made up of top level representatives from the Washington State Department of Transportation, the Oregon Department of Transportation, cities of Portland and Vancouver, Metro, SW Washington's Regional Transportation Commission, TriMet, and C-Tran.

Members will be appointed by the Governors of Oregon and Washington and the Council will be chaired by two citizens, one from each state, not directly associated with any participating agency.

The Council will be charged with advising the two departments of transportation and transit agencies on:

1. Completion of the Environmental Impact Statement (EIS),

2. Project design, including but not limited to: examining ways to provide an efficient solution that meets safety, transportation and environmental goals,

3. Timelines associated with project development,

4. Development and use of sustainable construction methods,

5. Ensuring the project is consistent with Oregon and Washington's statutory reduction goals for green house gas emissions, and

6. A finance plan that balances revenue generation and demand management.

Recommendations will be made, to the greatest extent possible, based on a consensus of the Council.

We look forward to supporting the States of Oregon and Washington in their efforts to build a bridge that can serve as a model for the nation.

Sincerely,

CHRISTINE O. GREGOIRE
Governor of Washington

THEODORE R. KULONGOSKI
Governor of Oregon

Columbia River CROSSING

Memorandum

November 26, 2008

TO: Project Sponsors Council

FROM: Doug Ficco, P.E.

SUBJECT: Summary of December 5th Presentation on Add/Drop Lanes

COPY: CRC Web Site

Add/Drop Lanes

At the December 5th PSC meeting we will focus most of our time on the determination of the number of add/drop lanes to be carried forward into the Final Environmental Impact Statement (EIS). This memorandum is intended to summarize several of the issues that go into determining the appropriate number of lanes. The advance materials and presentation at the December 5th meeting will provide additional information. It is not the intent of this memorandum to provide a recommendation for the decision, only to provide the context.

This project is on a path to deliver a Final EIS by Fall 2009 and receive a Federal Record of Decision (ROD) by Spring 2010. In order to meet these timelines, there are several critical path decisions needed, the first of which is the number of add/drop lanes. The ultimate recommendation for project footprint will influence bridge type, environmental impacts, and development of the Biological Assessment and Opinion. The project will need a Biological Opinion from the National Marine Fisheries Service prior to receiving a ROD from the Federal Transit Administration and the Federal Highway Administration. Biological Opinions typically take 6-9 months to receive, which is why the timing of this decision is so important.

Number of Add/Drop Lanes - Background

The CRC project, in the Draft EIS published in May 2008, analyzed up to 3 add/drop traffic lanes for short segments of the project, including 12 total lanes (three through lanes and three add/drop lanes in each direction) on the replacement bridge across the Columbia River.

In July 2008, the project sponsors recommended a Locally Preferred Alternative (LPA) that included replacement of the I-5 Bridge with three through lanes in each direction and tolls, light rail as the high capacity transit mode, and a light rail terminus at Clark College. Resolutions adopted by the sponsor agencies Boards and Councils requested the add/drop lanes be analyzed to determine the number needed for safe operations and functionality.

Why did CRC analyze up to 3 add/drop lanes (total of 12 lanes on the Interstate Bridge) in segments of the project?

Operational safety is the primary emphasis required by the State DOTs and FHWA standards and policies when determining the appropriate number of lanes for a new project on the Interstate. The number of add/drop lanes for CRC is also influenced by the number of closely spaced interchanges and high traffic volumes entering and leaving within the bridge influence area. Today there are three lanes in each direction across the river. Due to the close spacing of the interchanges at the north and south sides of the Columbia River, the three lanes are unable to function as true through capacity for the Interstate.

Following are key steps in developing the number of add/drop lanes:

360/737-2726 503/256-2726 WWW.COLUMBIARIVERCROSSING.ORG 700 WASHINGTON STREET, SUITE 300, VANCOUVER, WA 98660

- **Determine Travel Demand:** FHWA and State criteria requires that projects be designed for travel demand that will occur 20 years beyond the start of construction, even though they require the new Interstate Bridge be designed with a 100 year life. CRC used 2030 as the design year and will be preparing the Final EIS based on traffic projections for 2035. Metro's travel demand model was the basis for the projections. An independent analysis of the travel demand forecasts was conducted by a nationwide expert panel and has confirmed the results. The full report of the expert panel is included in the December 5 PSC meeting materials.

- **Determine number of lanes that are needed for safe operation of the Interstate:** CRC applied State and Federal design criteria in determining the optimum number of add/drop lanes for the replacement bridge alternative. A base assumption was the need for maintaining three general purpose lanes ("through lanes") in each direction. Methodologies included applying Interstate design and safety standards, performing operational analysis through use of traffic modeling software, and considering environmental and physical constraints. The number of add/drop lanes is heavily influenced by the impact of closely spaced interchanges and achieving lane balance from the on-off connections. A brief presentation on the operational analysis of 8, 10, and 12 lane scenarios will be made at the December 5 meeting.

What happens if one add/drop lane is added to the project?

The Draft EIS included an analysis of a supplemental bridge option that was restricted to four lanes in each direction across the river. Reducing the number of add/drop lanes creates "hot spots" where traffic must merge with through traffic rather than having a dedicated receiving lane for safe entry onto the freeway. "Forced" merges, similar to those required today for the on-ramps located at either end of the Columbia River Bridge, increases the potential for accidents and reduces general purpose through lane capacity.

Both the 8 and 10-lane bridge options create more impacts on connecting city arterials and state highways connecting with the Interstate. Reduced freeway connectivity and throughput encourages cut-through traffic to use city arterials and results in back-ups entering and leaving the freeway, adding to local street congestion.

Major operational impacts are:

- Results in 7 to 9 hours of I-5 Bridge congestion per day
- Increases accidents by 50 percent over the 12 lane option
- Increases number of forced merge and weaving sections (9 traffic "hot spots") compared to the 12-lane option
- Increases the cut-through traffic on Vancouver and Portland arterials for trips that belong on the Interstate (more impact than the 10 lane option)
- Eliminates the potential for a future regional HOV system across the river

What happens if two add/drop lanes are added to the project?

Reducing the total number lanes to 10 (three general purpose plus two add/drop lanes in each direction) creates five merge/weave "hot-spots" compared to the 12-lane bridge option. With two add/drop lanes in both directions instead of three, northbound traffic bottlenecks would be expected between Hayden Island and Marine Drive and between SR 14 and Mill Plain Boulevard. Southbound traffic bottlenecks would be expected between SR 500 and Fourth Plain Boulevard, between Mill Plain Boulevard and SR 14, and between Hayden Island and the I-5 Bridge.

Major operational impacts are:

- Results in 5 to 7 hours of I-5 Bridge congestion per day

- Increases accidents by 20 percent over the 12 lane option
- Increases number of forced merge and weaving sections (5 traffic "hot spots")
- Increases the cut-through traffic on Vancouver and Portland arterials for trips that belong on the Interstate (less impact than the 8 lane option)
- Reduces the potential for a future regional HOV system across the river

What happens if up to three add/drop lanes are used at select interchange locations?

The addition of three add/drop lanes in short sections of the project, allowing six lanes in each direction (12 total) on the river crossing is similar to the 10 lane option, except it adds short add/drop lanes in the hot spot areas of the 10 lane option. This concept adds one additional add/drop lane across the river, with the added lanes ending at their connections with SR 14 and Hayden Island off ramps. This concept also adds an add/drop lane between the Fourth Plain and SR 500 interchanges in order to provide a safer transition to and from SR 500, a major state route. This concept eliminates all of the hot spots identified in the 8 and 10 lane options.

Major operational impacts are:

- Results in 3.5 to 5.5 hours of congestion per day (No-Build estimated at 15 hours per day)
- Provides improved balance for high traffic volumes entering and leaving the highway
- Reduces the number of forced merges and weaves, reducing accidents by 50 percent
- Serves as a surrogate for arterial traffic between Marine Drive, Hayden Island and Vancouver
- Provides better connections for freight from I-5 to the ports
- Results in less spillover traffic to city streets in Vancouver and Portland
- Provides a better option for implementing a future managed lane system

What are the impacts of congestion pricing and other aggressive travel demand strategies for reducing peak hour demand?

The local agencies, project partners and the project are committed to and supportive of aggressive Travel Demand Management (TDM) strategies that are designed to allow more efficient use of the region's transportation system. The project will continue to evaluate the effectiveness of TDM measures throughout the project, even after construction. Congestion pricing by increasing tolls during peak travel periods and implementing other aggressive TDM measures will reduce daily travel demand, but would have less impact on reducing peak hour travel and would have less impact on the add/drop lane decision because of the safety and operational issues.

Tolling, or more specifically congestion pricing, has been discussed as a tool that may have a significant effect on the number of trips that cross the river. CRC recently conducted sufficient tolling analysis to determine the impacts to I-5 and I-205 for varying toll rates. By tolling I-5 only, higher toll rates than were assumed in the Draft EIS would slightly reduce trips crossing I-5, but most of this reduction would be achieved by shifting trips to I-205. With the higher toll, the shift of traffic from I-5 to I-205 would result in unacceptable levels of congestion on I-205 and connecting systems and would increase regional VMT because of the out of direction travel caused by the diversion.

If both I-5 and I-205 are tolled, total vehicle trips across the Columbia River would drop, but a significant portion of traffic would shift back to I-5, resulting in higher traffic levels on I-5 than achieved by tolling I-5 only at the rate assumed in the Draft EIS. Analyses conducted to date suggest tolling does not provide enough of a reduction in trips crossing I-5 to warrant elimination of an add/drop lane because they are primarily for the safe movement between the interchanges.

Many other transportation demand management (TDM) methods will be added to the project aimed at reducing project and regional travel demand. In addition, Oregon and Washington will be implementing strategies to reduce per-capita VMT. Materials and presentation will be made available on these subjects at the January 9 PSC meeting.

What is the effect of providing up to 3 add-drop lanes in selected locations in induced travel, change in land use, and greenhouse gas emissions?

At the December 5th PSC meeting, the presentation on the report from the Travel Demand Expert panel will touch on model assumptions and results relating to induced travel and impacts to land use. (See the Travel Demand Model Review Panel Report summary sent in the materials for the December 5th meeting.) A more detailed analysis of induced travel and land use relating to the number of lanes will be provided at the January 9th PSC meeting.

A Greenhouse Gas Expert Panel met November 20, 2008, to review model results and validity of findings included in the Draft EIS. The panel report will be included in materials for the January 9th PSC meeting, along with a presentation of findings. Initial findings support the information presented in the Draft EIS that the replacement bridge alternative would result in slightly lower CO_2 emissions (tons per day) than the No-Build alternative, and perform much better than the supplemental bridge alternatives designed for 8 lanes.

U.S. Department
of Transportation

**Federal Highway
Administration**

530 Center Street N.E.
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January 23, 2009
In Reply Refer To:
HPP S001(250)

Paula J. Hammond, Secretary
Washington State Department of Transportation
310 Maple Park Avenue SE
PO Box 47300
Olympia WA 98504-7300

Matthew Garrett, Director
Oregon Department of Transportation
355 Capitol St. N.E., Rm 135
Salem, OR 97301-3871

RE: Interstate 5 Columbia River Crossing Project; 10 vs. 12 Lane Bridge

Dear Secretary Hammond and Director Garrett:

We are writing to express the Federal Highway Administration's (FHWA) support for a 12-lane Columbia River Bridge option. The locally preferred alternative endorsed by the six sponsoring agencies consists of a replacement crossing and an extension of the existing light rail transit to Clark College. One of the more critical design decisions that has to be made as we progress forward, is the number of lanes this new facility will carry.

As you know Interstate 5 serves as the only continuous north-south Interstate corridor on the West Coast. The efficient operation of this designated *Corridor of the Future* is critical to growing our local, regional, and national economies while providing the safe and efficient mobility travelers expect.

On May 2, 2008, the Draft Environmental Impact Statement (DEIS) for this project was published, providing evaluation of reasonable alternatives for meeting the project's purpose and need. In this DEIS, six local sponsoring agencies and two Federal co-lead partners committed to the following objectives as reflected in the purpose and need statement:

a) Improve travel safety and traffic operations on the Interstate 5 crossing's bridges and associated interchanges;
b) Improve connectivity, reliability, travel times and operations of public transportation modal alternatives in the bridge influence area;

c) Improve highway freight mobility and address Interstate travel and commerce needs in the bridge influence area; and
d) Improve the Interstate 5 river crossing's structural integrity.

Currently, a healthy discussion is taking place between the communities and the Project Sponsors Council. To aid that discussion, the Columbia River Crossing Project team has provided data from a host of design studies conducted during the development of the DEIS. Replacement crossings studied included three through travel lanes (matches existing cross section) and three auxiliary lanes in each direction, for a total of 12 lanes on the crossing. Auxiliary lanes improve operational efficiency and safety by providing motorists greater distances for ramp merging and diverging movements. In fact, the data indicate that a 10-lane crossing (three through lanes and two auxiliary lanes in each direction) would increase predicted crashes by 20% when compared to a 12-lane crossing. Crashes on an eight-lane crossing (three through lanes and one auxiliary lane in each direction) are predicted to increase by 50% when compared to a 12-lane crossing.

Congestion is another critical factor to be considered. A 12-lane facility serves the travel demand substantially better than a 10-lane facility and lessens congestion by two hours per day. Throughput on the Interstate is dependent on these interchanges operating safely and efficiently.

We believe the 12-lane bridge best meets the safety, operations, connectivity, reliability, freight mobility, and commerce needs for this Interstate corridor. We do, however, acknowledge the practical constraints for a project of this magnitude and in this setting. We understand the sensitive nature of these discussions and appreciate the opportunity to provide a Federal perspective.

Daniel M. Mathis
Daniel M. Mathis, P.E.
Division Administrator
Federal Highway Administration

Phillip A. Ditzler
Phillip A. Ditzler, P.E.
Division Administrator
Oregon Division

cc:
FTA (Rick Krochalis, Regional Administrator)
WSDOT (Doug Ficco)
(Don Wagner)
ODOT (Richard Brandman)

Columbia Crossing Mobility Council
- Concept –

Project Sponsors Council – March 6, 2009

Background/Preamble:
The Columbia River Crossing Project is a long term, comprehensive, multi-modal transportation project that will bring significant economic and environmental benefits and improve the quality of life in the bi-state region. The I-5 corridor is nationally significant and the most important trade and commerce corridor on the entire West Coast. This project addresses one of the most significant chokepoints in this corridor.

The accomplishments achieved to date have been primarily due to the cooperation of all the project partners at the state, local and regional levels. That cooperation was founded in a Locally Preferred Alternative (LPA) in July 2008 that was unanimously supported by all partner agencies. The LPA achieved consensus on the following higher level outcomes:

- The project will build a replacement bridge.
- The project will incorporate light rail transit as the high capacity transit mode.
- The light rail transit extension will terminate at Clark College in Vancouver.
- The project will provide a range of options and significant improvements for those wishing to use alternate modes of travel within the corridor (light rail transit, bus, shared ride, bicycle and pedestrian).

Several other areas of agreement are apparent as we move forward through the final phase of the Environmental Impact Statement (EIS) and into design:

- The replacement bridge will be constructed with adequate width to accommodate six lanes in each direction to provide for safe operations between interchanges and efficient movement of people and goods.
- This project is consistent with the regional plans that call for three through lanes in each direction on I-5 within the metropolitan area.
- The finance plan will consist, in part, of tolling options to not only repay debt and ongoing operations and maintenance, but also to help as a tool to manage the travel performance of the Columbia River crossings.
- The Project Sponsors Council will begin evaluation of issues related to tolling at its June 2009 meeting and commence a process for public dialogue and discussion about tolling.
- The project will increase the safety in the corridor by improving the interchanges within the project area.
- The project will create predictable and reliable trip durations for freight and other high-priority trips moving through and within the corridor.
- The project will help to maintain regional trips on the facility, rather than spilling over to local collectors and arterials due to congestion.
- At its June 2009 meeting, the Project Sponsors Council will endorse membership of a technical group to draft performance measures.
- By January 2010, the afore-mentioned group will present recommendations to the Project Sponsors Council.

Columbia Crossing Mobility Council
The Project Sponsors Council supports creation of a local advisory Mobility Council to advise the state departments of transportation (DOTs) and transit districts on the optimal long-term performance of the Columbia River crossings. It is through such a partnership that the federal, state, regional and local needs will be achieved. The Project Sponsors Council supports practical and measurable performance standards to maintain long term system management.

This complex project has significant areas of agreement among the local agencies and stakeholders. The areas of agreement as noted above will serve as the starting point of a Council to advise the DOTs and transit agencies on ways to not only achieve the goals of the local communities, but also preserve the integrity and function of this yet to be constructed national asset.

Purpose:
The purpose of this Mobility Council is to provide recommendations to the DOTs and transit agencies on ways to actively manage mobility for all modes of transportation on the Columbia River crossings and their adjoining city streets and highways. This Mobility Council will help maximize the long-term benefits of the new multi-modal crossing for all users and affected stakeholders in an equitable manner by recommending the implementation of the agreed upon goals.

Partners:
Oregon Department of Transportation (ODOT), Washington Department of Transportation (WSDOT), City of Portland, Oregon, City of Vancouver, Washington, Tri-Met, C-TRAN, Metro, RTC, Port of Portland, Port of Vancouver

Council Structure:
Along with a Chair appointed jointly by the governors of the states of Oregon and Washington, each Partner appoints a non-elected citizen representative to serve a three-year term on the Columbia Crossing Mobility Council.

Process:
The DOTs will provide staff to the Mobility Council which will hold its first meeting at such time as the CRC Project Sponsors Council deems it necessary.

Each year the Mobility Council will recommend a Columbia Crossing Mobility Operations Plan for consideration by ODOT and WSDOT, and TriMet and C-TRAN, and others, as applicable.

The Mobility Council will consult with other local, state and federal agencies relevant to issues being considered.

The Mobility Council's annual recommendations may include, but are not limited to, tools such as:

- Toll rate structures, provided they are consistent with toll bond covenants and do not negatively impact the ability to pay bonds or meet other project related financial needs with toll revenues (including operations and maintenance)
- Travel and auxiliary lane uses and access

- Applicable transit policies
- Transportation demand management (TDM) strategies

The Plan will be forwarded from the Mobility Council to the DOTs and Transit Agencies. At that point, ODOT and WSDOT, and C-TRAN and TriMet, and others, as applicable, will either accept the Plan as is, or reject it with comments.

a. The Oregon and Washington DOT commissions or CEOs, or transit agency boards or directors as applicable will consider the Plan before taking action.

b. When accepted, the Plan will be implemented by the DOTs, Transit Agencies and others as applicable.

c. If applicable sections of the Plan are rejected by either DOT or Transit Agency, the Plan will be sent back to the Mobility Council with comments and a request to amend the Plan. The Mobility Council will resubmit a revised Plan for approval by ODOT and WSDOT, or C-TRAN and TriMet, or others, as applicable.

d. If agreement on a revised Plan cannot be reached within 90 days, the ODOT and WSDOT Transportation Commission Chairs, or their CEOs, or the Chairs of C-TRAN and TriMet, or their delegates, will convene with the Chair of the Mobility Council to resolve any differences and complete the annual Columbia Crossing Mobility Operations Plan.

e. If agreement cannot be reached as outlined in (d) above, the DOTs and transit agencies and others, as applicable, may act without recommendation in accordance with their best judgment on how to achieve the agreed upon performance goals.

f. When toll rate decisions need to be adjusted at a faster rate than this process identifies in order to satisfy bond needs (including operations and maintenance), the DOTs are entitled to act on those decisions while giving the greatest possible consideration to the performance goals of the project.

g. The Columbia Crossing Mobility Council may recommend extending this process to pertinent operations of other Partners.

RESOLUTION No. SUBSTITUTE 36684 AS AMENDED

Support the creation of a Columbia Crossing Mobility Council that is charged with developing management recommendations based on comprehensive performance goals for the Columbia River Crossing Project (Resolution)

WHEREAS, on July 8, 2008, the Portland City Council adopted Resolution No. 36618 to support a replacement bridge crossing with Light Rail Transit as the Locally Preferred Alternative for the Columbia River Crossing Project; and

WHEREAS, the Columbia River Crossing is a project of great importance and unprecedented magnitude in our region, with far-reaching benefits for the city of Portland and the city of Vancouver; and

WHEREAS, the physical capacity of a new bridge is inextricably linked to the issue of how it will be managed over time; and

WHEREAS, the City of Portland supports the concept of performance-based management to maximize freight and personal mobility through the I-5 and I-205 Columba River Crossings using performance standards;

NOW, THEREFORE, BE IT RESOLVED, the City recommends that a new bridge be built to accommodate up to three add/drop lanes and three through lanes in each direction, but that use of these lanes will be actively managed over time to get the right mix of tolling, HOV or HOT lanes, vanpools, and transit fare programs to reduce vehicle miles traveled and pollution; and

BE IT FURTHER RESOLVED, the City of Portland supports the formation of a Columbia River Crossing Mobility Council ("Mobility Council") consisting of the Oregon Department of Transportation (ODOT); Washington Department of Transportation (WSDOT); City of Portland, Oregon; City of Vancouver, Washington; Tri-Met; CTran; Metro; RTC; Port of Portland; Port of Vancouver, Oregon Department of Environmental Quality, and Washington Department of Ecology; and

BE IT FURTHER RESOLVED, the Mobility Council will recommend an annual Columbia Crossing Mobility Operations Plan for consideration by ODOT and WSDOT, in addition to TriMet, CTRAN, the Ports, and the Cities of Portland and Vancouver. Recommendations may include but are not limited to toll amounts, travel and auxiliary lane uses and access, transit fares and operations, and transportation demand management (TDM) strategies; and

BE IT FURTHER RESOLVED, that ODOT, WSDOT and the other partners will either accept/adopt or reject with comments the proposed Plan, in a process substantially similar to the one described in Attachment A; and

BE IT FURTHER RESOLVED, the City of Portland's support for moving forward with these recommendations is conditioned on approval on March 6, 2009 by the CRC Project Sponsors Council members of (1) a Mobility Council governance structure; and (2) a timetable for

developing a mutually acceptable set of performance goals. (See Attachment B for a draft preliminary list of performance goal areas).

Adopted by the Council, February 25, 2009

GARY BLACKMER
Auditor of the City of Portland
By /s/ Susan Parsons
Deputy

Mayor Sam Adams
Prepared by: Catherine Ciarlo
Date Prepared: February 25, 2009

BACKING SHEET INFORMATION

AGENDA NO. S-198-2009

ORDINANCE/RESOLUTION/COUNCIL DOCUMENT NO. SUBSTITUTE 36684 AS AMENDED

COMMISSIONERS VOTED AS FOLLOWS:		
	YEAS	NAYS
1. FRITZ		X
2. FISH	X	
3. SALTZMAN	X	
4. LEONARD	X	
ADAMS	X	

ATTACHMENT A

Columbia Crossing Mobility Commission
- Concept -

Draft revised: 2/25/2009

Purpose:
Maximize freight and personal mobility through the Columba River Crossings using performance standards.

Partners:
Oregon Department of Transportation (ODOT); Washington Department of Transportation (WSDOT); City of Portland, Oregon; City of Vancouver, Washington; Tri-Met; CTran; Metro; RTC; Port of Portland; Port of Vancouver, Oregon Department of Environmental Quality, Washington Department of Ecology.

Boundaries:
The Columbia Crossing District shall include the bridge influence areas of I-5. The I-205 crossing shall be identified as a secondary impact zone.

Governance:
Along with a Chair appointed jointly by the governors of the states of Oregon and Washington, each Partner appoints a non-elected citizen representative to serve a three-year term on the Columbia Crossing Council.

Process:
To achieve the goals of this Compact, by March 1 of each year the Council will recommend an annual Columbia Crossing Mobility Operations Plan for consideration by ODOT and WSDOT.

The Council's annual recommendations may include but are not limited to toll amounts, travel and auxiliary lane uses and access, transit fares and operations, and transportation demand management (TDM) strategies.

1. ODOT and WSDOT will either accept/adopt or reject with comments the proposed Plan.
    a. When accepted, the Plan will be implemented by the DOTs in coordination with the other Partners.
    b. If the Plan is rejected by either DOT, the Council will resubmit a revised proposed Plan for approval by ODOT and WSDOT.
    c. If agreement on a revised Plan cannot be reached by the deadline, the Chair of the Council will convene the ODOT and WSDOT Transportation Commission Chairs to resolve any differences and complete the annual Columbia Crossing Mobility Operations Plan.

The Council may extend this process to pertinent operations of other Partners.

The Partners may unanimously override a recommendation of the Council. To do so, the decision making body of each Partner must pass the same resolution. The unanimous recommendation will bypass the Council and go to the DOTs as a recommendation for their consideration.

ATTACHMENT B

(FOR EXAMPLE ONLY – TO BE REVISED)

Columbia Crossing Mobility Compact – Performance Standards
Draft 5
February 13, 2009

Performance standards are a "performance warranty" for the purchase taxpayers are being asked to make. Clear standards with sufficient authority provide ongoing transparency and accountability.

The Columbia Crossing Mobility Council, in cooperation with implementing agencies, will recommend annual and long-term lane management, price, incentive and phasing policies to meet the following performance standards. Partners will agree on details of each standard by (date certain, 2009).

Financial

Financial Responsibility Standard
Ensure sufficient revenue to:

- *Meet bond covenants*
- *Meet maintenance and operations needs of all modes (detail)*
- *Provide travel options and incentives to meet Safety, Travel Reliability, Sustainability and Larger System performance standards*

Construction Funding Standard
Ensure sufficient funding commitments for all project elements prior to commencement of bridge construction.

Affordability Standard
Ensure all trips are affordable and that multi-modal trips are less expensive than drive-alone trips at comparable times and distances.

Safety & Health

Safety Standard
Ensure collisions remain below (define number and severity thresholds within specified area)

Health Standard
Prevent local air pollution hot spots (e.g. Victory Boulevard – define pollutants and levels).

Travel Reliability

Freight Speed & Reliability Standard

Ensure freight vehicles are treated as a priority and meet speed and reliability thresholds

Transit/HOV/Mode Split Standard

- *Establish annual ridership and mode split goals on I-5 and I-205 to achieve (at least 19,000 transit riders/day by 2030 or refined number) plus vanpool, carpool, bike/ped and TDM goals*
- *Ensure HOV's are treated as a priority on I-5 and I-205 and meet speed and reliability thresholds (e.g. at least 45 MPH 90% of peak periods or refined number)*

Mobility Standard

- *Bottlenecks - Prevent severe traffic hot spots (e.g. Victory Boulevard) and ensure new capacity is used wisely by phasing lane openings to meet speed and reliability standards (develop phasing plan)*
- *Ensure reasonable travel times for solo drivers, consistent with freight and HOV priority (set optimum speed & reliability for each phase)*

Diversion Standard

Ensure less than (3,000 in 2030 or refined number) daily trips divert to I-205.

Economic Growth Incentives Standard

Provide incentives for transportation efficient development projects in key locations (determine budget and thresholds).

Sustainability

VMT/GHGE Standard

"Ensuring the project is consistent with Oregon and Washington's statutory reduction goals for greenhouse gas emissions." (June 19, 2008 Governors' letter).

- *Establish specific VMT and GHGE reduction schedules and measures for I-5 and I-205.*
- *Evaluate benefit/cost to offset emissions.*

Land Use Standard

(being developed by Neil, Dean, Matt and Ross)

(Preamble to frame scope and intent to coordinate with adjacent transportation agencies to prevent system performance problems)

Larger System

Regional Mobility Standards

Establish mobility standards to meet regional mobility goals for interstate, state and major regional and local road and transit facilities impacted by Columbia Crossing traffic.