

January 6, 2009

**TO:** CRC Project Sponsors Council

**FROM:** CRC Staff

**SUBJECT: Impacts of the CRC Project on Land Uses in Oregon and Washington**

## Summary Conclusions of the CRC Project on Land Uses in Oregon and Washington

Studies of “induced travel demand” have found that under certain conditions improvements in highway capacity lowers the cost (time and money) of travel, resulting in additional traffic and vehicle miles of travel. These studies also found that improved highway access may lead to greater levels of urban development on the fringes of the metropolitan area, influencing urban sprawl.

The conditions that create significant induced demand, including urban sprawl, are not present for the CRC project. Consequently, significant induced demand is not anticipated for any of the lane configuration options being considered by the PSC.

Specifically, this analysis found:

- The CRC Project, including all of its lane configuration options, would not provide additional through capacity on I-5 outside the bridge influence area or any new access to fringe development areas. The improved accessibility benefits of the project would be derived from the travel time savings in the bridge influence area.
- Drivers consider the total cost of a trip, both the value of travel time and the cost of the trip, when determining if, when, how, and where to travel. Trip-making is particularly sensitive to a toll because it is a direct, out-of-pocket expense.
- Tolling the I-5 Bridge would offset the limited induced demand that would otherwise be generated by the modest increase in highway capacity provided by the add/drop lane options within the bridge influence area:
  - Because of tolls, the modeling shows all bridge configuration options exhibit lower volumes of cross-river trips (3,000 -10,000 daily trips depending on the option) compared to the No Build.
  - The number of add/drop lanes on the I-5 Bridge have only a minor impact on the volume of river crossing trips. The 12-lane option exhibits only 2,000 more daily trips than the 10-lane option; the 10-lane option 4,500 more than the 8-lane option.
  - The higher the number of add/drop lanes on the I-5 Bridge, the less diversion of trips to I-205, and the lower the VMT. The 12-lane option diverts 3,000 daily trips to I-205; the 10-lane diverts 4,500; and the 8-lane 7,500. As a result, the 12-lane option

exhibits 4,000 less daily vehicle miles of travel than the 10-lane option, and 24,000 less than the 8-lane option.

- The form of urban development in the I-5 Bridge impact area will be largely dictated by adopted land use plans and policies; the traffic impacts of the I-5 Bridge options are not sufficiently large to have a major affect.
- Land use plans are in place on both sides of the river that ensure that the urban development effects of the CRC Project would occur within urban growth areas, would not create urban sprawl, would support urban densities, and would be consistent with adopted 20-year plans that provide for efficient and sustainable use of land and resources.

## Impacts of the CRC Project on Land Uses in Oregon and Washington

### Background

Issues and concerns have been raised about the relationship between land use and the number of lanes associated with the CRC project and the potential to increase sprawl on the fringe of the urban area. In order to understand this relationship, it is important to understand the context for the discussion in terms of how the proposed add/drop lanes would affect the capacity and function of the through lanes. This relationship is key to determining whether the improved accessibility provided by the CRC project would be sufficient to increase demand for land at the periphery of the region or induce more travel compared to the No-Build condition.

There are many factors that influence the demand for more land at the edge of adopted urban growth boundaries in the metropolitan area. They include the supply of land available to be urbanized inside currently adopted urban growth boundaries; the policies regulating growth inside these boundaries; the cost and the market for a given set of land uses as well as transportation mobility and accessibility; and other infrastructure costs. No one factor in isolation can cause urban growth to occur.

As an integral link in the Interstate highway system, the CRC project area is vital to the movement of freight and people up and down the west coast, as well as within the Portland/Vancouver region. The CRC project is analyzing the appropriate number of lanes to safely and efficiently move the very high number of auto and truck trips that are entering and exiting I-5 in a very short congested area, as well as accommodating the high overall number of trips on the Interstate itself.

There are seven high volume interchanges within the project area. The area warrants a standard two-mile spacing to accommodate the heavy traffic volumes; however, these seven interchanges have an average spacing of less than the minimum standard of one mile. The merging and weaving created by these closely spaced interchanges creates unsafe and congested conditions. This section of I-5 has the highest accident rate of any Interstate highway in the entire state of Oregon. In 2030 it is projected to be congested for as much as 15 hours a day if no improvements are made.

The add/drop lanes being considered are new lanes that would connect the closely spaced interchanges with the heaviest on/off volumes. They would provide better access to areas that have reduced development capacity, such as the Marine Drive corridor and Hayden Island; as well to improve safety and manage the operation of the freeway. Their primary purpose is not to add new capacity.

## Overview of Analysis

The CRC project team evaluated whether and how this project could change travel behavior and consequentially influence land use patterns. The evaluation was presented in the May 2008 Draft Environmental Impact Statement (EIS) and subsequently reviewed by an independent panel of experts.

As noted in the Draft EIS, the project's analysis concluded that the CRC project is unlikely to induce growth around the region's urban periphery ("sprawl"). However, CRC is likely to promote transit-oriented development around new light rail stations on Hayden Island and in downtown Vancouver, and to promote additional density of jobs and housing near the I-5 corridor. An evaluation summary can be found in the Draft EIS (Section 3.19.4, pages 3-427, 3-428) and additional details are presented in the Land Use Technical report. Both documents are available online: [www.ColumbiaRiverCrossing.org](http://www.ColumbiaRiverCrossing.org).

In October, 2008, the project convened a panel of national experts to review the travel demand model methodology and conclusions, including a land use evaluation. The panel unanimously concluded that CRC's methods and the conclusions were valid and reasonable. Specifically, the panel noted that CRC would "have a low impact to induce growth...because the project is located in a mature urban area," and that it would "contribute to a better jobs housing balance in Clark County...a positive outcome of the project" (page 16).

## Land Use Evaluation

The CRC project's evaluation of the potential to induce land use changes included four analytical methods, which are summarized in the Draft EIS and described below.

1. A survey of national research and case studies on how transportation infrastructure can indirectly impact land use,
2. An analysis of growth management techniques in Washington and Oregon land use planning,
3. The results of travel demand modeling and operational analysis for the CRC project alternatives, and
4. Integrated land use/transportation modeling that estimates how the CRC project might or might not influence the location of future growth in housing and employment.

### *1. Survey of research and case studies*

National research and case studies revealed a variety of important factors that influence whether and how transportation investments change travel and land use patterns. In general, some transit projects tended to promote higher density development, particularly around new transit stations, while some highway projects increased automobile use when adding through capacity and could have the potential to induce low-density, auto-oriented development further from urban centers. At the same time, other transit projects and highway projects did not have these effects. The most relevant findings from the national research were the answers to the following two questions:

- What factors were associated with highway projects that tended to increase auto use and low density development, and
- What factors were associated with high capacity transit projects that tended to increase transit-oriented and higher density development?

The answers identified in the national research are summarized on the left side of the following two tables. The right side of each table identifies the extent to which each of those factors is or is not included in the CRC project and project area.

**TABLE 1: Factors associated with highway projects that influence induce auto travel and sprawl**

| Factors associated with highway projects that influence induce auto travel and sprawl                 | Does the CRC project exhibit these factors?  |
|---|--|
| Does the project provide new access to areas previously un-served or greatly underserved by highways? | <b>No.</b> CRC is entirely within an urbanized area, and I-5 has been an Interstate corridor since 1958. Project adds no new interchanges.   |
| Does the project provide new highway access to land on the urban edge?                                | <b>No.</b> CRC improvements are located 7 miles inside Vancouver Urban Growth Area boundary to the north, and over 13 miles inside Metro Urban Growth Boundary to the south.   |
| Does the project substantially improve highway travel times?  | <b>Yes but induced demand impacts from travel time savings are offset by the higher cost of tolls.</b> Drivers consider both the value of travel time and the cost of the trip, when determining if, when, how, and where to travel. Compared to the No Build, the 12-lane bridge configuration has a 23-minute travel time savings for a round trip between 179th and I-84 during peak periods. Applying a travel time penalty to offset the cost of the toll negates almost 3/4ths of the trip-making effect of this travel time savings. The net effect of these countervailing factors is equivalent to a 6% decrease in travel time; which does not have a material impact on induced demand or access to fringe areas.   |
| Does the project reduce auto travel costs?  | <b>No.</b> CRC adds a toll on the highway that increases auto travel costs relative to No Build alternative.   |
| Are local and regional land use regulations ineffective at managing growth?                           | <b>No.</b> Effective growth management controls backed by state law exist in the I-5 corridor on both sides of the river that require; <ul style="list-style-type: none"> <li>• the vast majority of future growth to occur within urban growth areas that reduce sprawl and that are sized to meet population and employment forecasts;</li> <li>• comprehensive plans that implement efficient and sustainable urban development within urban growth areas;</li> <li>• minimum densities in urban areas; and,</li> <li>• protections for rural, agricultural, and environmentally sensitive areas.</li> </ul>  |
| Are there real estate markets supporting low density development?                                     | <b>Yes, but these areas are extremely minor and distant from the Project's influence area.</b> The minimum average densities required to be achieved in Vancouver growth management areas is notably higher than that required in Metro's "Inner Neighborhood" designation. In certain locations densities as high as those targeted for Town Centers, Station Areas, and Main Streets are anticipated. The minimum densities required in the urban growth areas of Washougal, Battle Ground, Camas, and Ridgefield are similar to the densities required in Metro's "Outer Neighborhoods." The two urban growth areas that allow low densities are Yacolt (20 miles from Vancouver) and La Center (15 miles from Vancouver). These growth areas are distant and quite small, representing only 0.9% of the County's population in 2004, and 1.7% of the County's projected population in 2024; no material urban sprawl is anticipated in these areas from the CRC Project. |

**TABLE 2: Factors associated with high capacity transit projects that tend to promote higher density and/or transit oriented development**

| Factors associated with high capacity transit projects that tend to promote higher density and/or transit oriented development | Does the CRC project exhibit these factors?  |
|--|--|
| Would the project increase transit ridership?  | <b>Yes.</b> Transit mode split is projected to be about 17 percent with the project, compared to 7 percent with the No Build alternative. <sup>1</sup> |
| Does the project provide new access to developable/redevelopable land previously unserved or underserved by transit?           | <b>Yes.</b> The project area is not currently served by high capacity transit and there is substantial latent demand for cross-river transit service   |
| Are there real estate markets supporting such development?   | <b>Yes.</b> The majority of the recent and planned developments in downtown Vancouver are high density and/or mixed use.                               |

<sup>1</sup> PM Peak period transit mode split for I-5 crossings

|   |  |
|---|--|
| Is there positive public perception of transit?                       | <b>Yes.</b> Over 70 percent of residents polled support extending light rail across the river to Vancouver. <sup>2</sup>   |
| Do local and regional land use regulations effectively manage growth? | <b>Yes.</b> Comprehensive plans and implementing regulations, including zoning, exist on both sides of the river that (a) require minimum densities in urban areas, (b) encourage compact nodal and mixed-use development, and (c) encourage transit-oriented development. |

As evident from the tables, and supported by the independent expert review panel, the CRC project is far more likely to encourage compact, higher density development in established urban areas than promote auto-oriented, lower density development on the urban fringe.

This project would decrease travel times, improve travel reliability and reduce congestion. However, tolling the river crossing offsets much of the potential for inducing auto travel. It serves to reduce total auto trips and increase transit mode share. The light rail extension into Vancouver further increases transit ridership and promotes transit-oriented development around the new stations on Hayden Island and downtown Vancouver. Ultimately, the transit and highway improvements are more likely to help realize long-term, regional land use visions by supporting concentrated growth in established urban centers.

*2. Analysis of Washington and Oregon growth management*

The national research and case studies emphasized the importance of local land use regulations for influencing the type and magnitude of effect from transportation improvements. Metro has a long history of effective growth management, and the City of Portland has a sophisticated zoning code with provisions for focusing growth where desired and encouraging compact mixed-use development around transit facilities. The land use regulations in the City of Vancouver and Clark County also have robust growth management policies and regulations. The Vancouver Comprehensive Plan targets growth in designated urban centers and corridors connecting these centers in a growth management approach comparable to Metro’s 2040 Growth Concept. Vancouver also has a Transit Overlay District allowing for “higher densities and more transit-friendly urban design” than afforded by base zoning. This overlay zone is similar to Portland’s Light Rail Transit Station Zone that is an overlay zone allowing for “increased densities for the mutual re-enforcement of public investments and private development”. Also, in preparation for the construction of the CRC project, the City of Vancouver has recently made changes to the downtown plan (the Vancouver City Center Vision) and is implementing regulations that encourage complimentary development along the light rail alignment.

In 1990, the Washington Growth Management Act (GMA) established requirements for counties to plan for and manage growth. The GMA requires local governments to identify and protect critical and natural resource lands, designate urban growth areas, and prepare comprehensive plans to be implemented through capital investments and development regulations.

A comparison of urban growth area expansions by Metro and Clark County since 2000, shows Metro and Clark County added approximately 21,000 and 16,400 acres respectively. Clark County and the City of Vancouver have planned residential densities of approximately 16 and 20 persons per acre. This compares favorably to Metro’s “inner neighborhood” and “outer neighborhood” areas that target 14 and 13 persons per acre, respectively. Metro has other significant goals applied throughout its jurisdiction, tied to designations such as Regional, Town Centers and Main Streets with much higher density targets. The City of Vancouver does have policy and regulations encouraging higher densities in planned sub-areas, downtown, and along transit corridors that are comparable to the densities anticipated in Metro’s Town Centers and Main Streets.

<sup>2</sup> Riley Report / Portland-Vancouver Area Survey. Riley Research Associates. June 18, 2008. A scientific telephone poll of 504 randomly selected households in Multnomah, Washington, and Clackamas Counties in Oregon, and Clark County in Washington.

### *3. Travel demand modeling and traffic operations analysis*

Travel time and resulting accessibility can influence the demand for land at both the urban fringe and in established urban areas. Travel demand modeling and traffic micro-simulation could provide valuable information about how the CRC project might change travel behavior and, in turn influence land use patterns. Significant improvements in travel time from areas along the urban periphery to key destinations such as downtown Portland could increase pressure for suburban residential development in northern Clark County. At the same time, increases in transit ridership could promote higher density development around transit stations the central Vancouver area. The modeling results presented in the Draft EIS indicate this project has a far greater effect on transit ridership than I-5 travel times. Though CRC would substantially reduce congestion within the project area compared to the No Build alternative, travel times are not as dramatically changed because this project improves a relatively small portion of the region's highway system, and because the toll on the I-5 crossing would add a perceived penalty to auto travel<sup>3</sup>. In fact, because of the toll and the introduction of a reliable and efficient transit alternative, modeling shows that the project would actually lower the number of vehicles using the I-5 crossing each day by about 3 percent<sup>4</sup>. In contrast, transit ridership would increase over 250 percent during the p.m. peak hour.<sup>5</sup>

### *4. Transportation-land use modeling (Metroscope)*

The fourth method for evaluating this project's potential for inducing land use changes entailed evaluating a Metroscope model analysis that included transportation improvements in the corridor similar to the CRC locally preferred alternative (LPA). The analysis included a replacement bridge with four through lanes and light rail to Clark College. Metroscope is an integrated land use and transportation model designed by Metro to predict how changes in several factors, including transportation infrastructure, could change the future distribution of employment and housing throughout the region. In 2001, as part of the I-5 Partnership Study, Metro used its Metroscope model to estimate land use changes if I-5 were to increase to four through-lanes between Going Street in Portland and 134th Street in Vancouver, and light rail were extended to Clark College. This scenario had the same transit improvements as the LPA, but added capacity to a significantly longer portion of I-5, and did not include a toll on the bridge. These differences resulted in greater travel time savings and increased vehicle use compared to the project's LPA.

Under this scenario, Metroscope showed only minimal changes in employment location and housing demand compared to the No Build alternative. Metroscope estimated a one percent regional redistribution of jobs to the I-5 corridor with 4,000 more in North and Northeast Portland and 1,000 more in Clark County. The model estimated very modest changes in residential values (a proxy for residential demand), with the highest increase in some Clark County and North Portland areas experiencing up to three percent greater values by 2020, equating to about 0.12 percent growth per year. This analysis also concluded the land-use policies in the Metro boundary and in Clark County were far more likely to influence growth patterns than the CRC project.

### **Conclusion**

Rigorous analysis and independent review suggest that CRC is more likely to encourage compact, higher density development in established urban areas, than promote auto-oriented, lower density development

---

3 Modeling the toll entailed incurring a 9 minute time penalty to simulate drivers' response to paying this fee. Travel time savings on I-5 between I-84 and 179th Street during the PM peak (3pm to 7pm) period shrink from 18 minutes without accounting for the toll to 9 minutes with the toll.

4 184,000 cars would travel over the I-5 bridges under the No Build alternative versus 178,000 with a replacement crossing, a toll on I-5, and light rail.

5 With a replacement crossing, a toll on the I-5 bridges, and light rail, 7,250 people would ride transit during the PM peak period compared to 2,050 people for the No Build alternative.

on the urban fringe. These findings were in the Draft EIS analysis, and they have been confirmed by the independent panel of experts that reviewed this analysis in October 2008.

As the research indicates, there are many land use and economic policy factors beyond the scope of the CRC project that would have a much larger impact on the urban growth pattern of the bi-state region than the CRC project alone.