

NOTEBOOK 1

TAB C: REGIONAL I-5 NEEDS ASSESSMENT (1999-2002)

The congestion and safety problems on the I-5 corridor between Portland and Vancouver have been apparent for more than a decade. In January 1999, regional elected officials and decision makers initiated the *Portland/Vancouver I-5 Trade Corridor Freight Feasibility and Needs Assessment*, to better understand the magnitude of the congestion problem and explore concepts for improvement. Elective official, agency decision makers and freight and industry representatives from both states worked together on this assessment.

Once the problems on I-5 were better identified, a strategic planning effort was convened by the governors of both states. This second regional effort, the *Portland/Vancouver I-5 Transportation and Trade Partnership Final Strategic Plan*, led to specific recommendations to address current and future needs for freight, autos and transit users in the region.

These two studies are summarized below. The complete reports are included in this section of the notebook.

PORTLAND/VANCOUVER I-5 TRADE CORRIDOR FREIGHT FEASIBILITY AND NEEDS ASSESSMENT

The intent of this study was to examine the transportation and economic consequences of investments in the I-5 Trade Corridor from the I-84 interchange in Oregon to the I-205 interchange in Washington.

The study's Policy Committee was composed of representatives from the cities of Portland and Vancouver, the ports of Portland and Vancouver, Metro, Clark County, C-TRAN, TriMet, the Washington Transportation Commission and the Oregon Transportation Commission. The Policy Committee also appointed a fourteen-member Leadership Committee of business and civic leaders to work closely with the project.

The Study's findings were completed in 2000 and include the following:

- The most economically significant segment of I-5 in the Portland/Vancouver region is in north Portland and Vancouver where the freeway intersects the Columbia River, which serves deep-water shipping, barging, and two trans-continental rail lines.
- I-5 is the most congested most congested segment of the regional freeway system in the Portland/Vancouver region and future congestion threatens the livability and economic promise of the region.

- To maintain economic competitiveness of the region and maintain a high quality of life, the region needs a Strategic Plan for managing demand in the corridor and making a balanced set of improvements in the corridor, including highway, transit, rail freight and passenger rail improvements, and demand management.
- Improvements in the corridor will be costly and cannot be done using existing sources, but rather a combination of federal funds, tolling, and state funds from Washington and Oregon.

The recommendation for next steps included development of a strategic plan to identify a long-range vision for improvements and management scenarios that will improve the integrity of the corridor.

PORTLAND/VANCOUVER I-5 TRANSPORTATION AND TRADE PARTNERSHIP FINAL STRATEGIC PLAN JUNE 2002

This strategic planning effort began in January 2001, as a follow-on project related to the Freight Feasibility and Needs Assessment. The development of the Final Strategic Plan in 2002, was guided by a 26-member group of elected officials, agency leaders, business representatives, neighborhood representatives and others appointed by the two states' governors.

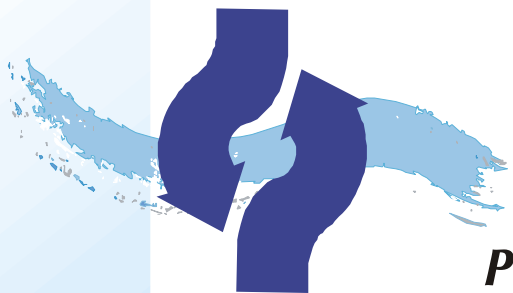
Key overall findings of the Strategic Plan were;

- In the absence of both freeway and transit investment in the I-5 corridor, congestion and delay will grow steadily and spread into the early morning, mid-day, and evening hours.
- Rush hour congestion is inevitable, but unpredictable delays and congestion throughout the day cannot be tolerated without adversely impacting the region's economy and quality of life.
- Future delays in the I-5 corridor could impact the region's economy by increasing freight costs during the mid-day; adding additional cost due to lack of reliability; influencing business location and expansion decisions based on costs and uncertainty; limiting the attraction of future jobs due to lack of accessibility.
- Congestion on the rail system threatens the region's status as a low-cost rail port and disadvantages the rail companies and regional customers.
- The problems in the I-5 corridor cannot be solved with freeway improvements alone. Transit improvements will be needed to provide an alternative to driving.
- The problems in the I-5 corridor cannot be solved with transit, land use, demand management actions alone. Additional highway capacity will be needed.

The I-5 Trade Partnership recommended fixing three highway bottlenecks in its 2002 Strategic Plan:

- I-5 at Salmon Creek in Clark County (completed in 2006)
- I-5 at Delta Park in Portland (construction to be complete in 2010)
- I-5 at the Columbia River (became the Columbia River Crossing project)

The complete I-5 Trade Partnership report is provided in this section of the notebook.



Portland/Vancouver I-5 Trade Corridor

Freight Feasibility and Needs Assessment

Final Report



January 27, 2000



**Washington State
Department of Transportation**

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Executive Summary

Traffic congestion on Interstate 5 through the Portland, Oregon/Vancouver, Washington metropolitan area is a serious, growing problem that is affecting the region's economy. Referred to as the I-5 Trade Corridor, Interstate 5 is the most important freight freeway on the West Coast, linking markets in Canada, the United States, and Mexico. It is also the busiest commuter roadway in the region, linking the region's two largest cities, Portland and Vancouver.

The Oregon and Washington Departments of Transportation, in cooperation with regional policy-makers, initiated the Portland/Vancouver I-5 Trade Corridor Study in January 1999. The intent of the study is to examine transportation and economic consequences of investments in the I-5 Trade Corridor from the I-84 interchange in Oregon to the I-205 interchange in Washington.

As part of the study, the region's transportation policy-makers appointed fourteen business and civic leaders to a Leadership Committee and asked the committee to address five specific questions about the Portland/Vancouver I-5 Trade Corridor:

- (1) What is the magnitude of the problem?
- (2) What are the costs of inaction?
- (3) What improvements are needed?
- (4) How can the improvements be funded?
- (5) What are the next steps?

A summary of the Leadership Committee's findings follows.

Question 1: What is the magnitude of the problem?

- (1) The Portland/Vancouver I-5 Trade Corridor is critical to regional, state, and national economies.
 - (a) Interstate 5 is the only continuous interstate freeway on the West Coast between Canada and Mexico. It links international, national, and regional economies in Mexico, California, Oregon, Washington, Canada, and the Pacific Rim countries.
 - (b) The Portland/Vancouver I-5 Trade Corridor intersects the Columbia River, connecting the interstate highway system with deep-water shipping, up-river barging, and two water-level transcontinental rail lines. The convergence of transportation and port facilities in the Portland/Vancouver



We are at the brink of either keeping our economy strong or allowing the kind of disastrous gridlock that is going on in California and Seattle.

– Margaret Carter

ver I-5 Trade Corridor makes it a crossroads for both north-south and east-west trade, and an international gateway.

- (c) The Portland/Vancouver I-5 Trade Corridor is home to the region's largest industrial areas, including the Ports of Portland and Vancouver, which together export the second largest volume of goods among West Coast ports. Over 40 percent of U.S. wheat exports move through the Columbia River system for transshipment to international markets through the marine terminals in the I-5 Trade Corridor.
 - (d) Portland/Vancouver is the number one origin and the number two destination for tonnage moved by commercial vehicles within the 17 western states. The I-5 Trade Corridor is the primary route for much of this freight movement.
- (2) I-5 is a critical chokepoint; without attention, it will only become worse in the future.
- (a) The I-5 Trade Corridor is currently the most congested segment of the regional freeway system.
 - (b) By 2020, congestion will grow significantly worse in the corridor.
 - (i) It will take about twice as long to commute from Downtown Portland to Downtown Vancouver.
 - (ii) Congestion will be a problem in the corridor for most of the day and well into the evening.
 - (iii) Back-ups on I-5 will cause back-ups on many regional freeways, including I-84, I-405, SR 14 and SR 500.

Question 2: What are the costs of inaction?

- (1) Without improvements, future congestion in the I-5 corridor threatens the economic promise of the Portland/Vancouver region.
 - (a) Trade and freight movement on I-5 will be significantly more difficult as congestion moves into the mid-day period when the highest numbers of trucks are on the road.
 - (b) Traffic congestion will increase costs and uncertainty for businesses and will influence the willingness and ability of firms to continue to operate or expand at their current locations.
 - (c) The Portland/Vancouver region's ability to profit from the timely delivery of high-value or time-sensitive goods to national and international markets will be affected. Even a few pennies more in transportation costs can make the high volumes of wheat, wood, and scrap metal moving through the region non-competitive in the global market.
 - (d) The lack of accessibility in the I-5 Trade Corridor will adversely impact the ability to attract future jobs to areas such as the Columbia Corridor and central Vancouver.

- (2) Maintaining mobility in the I-5 Trade Corridor is key to supporting quality of life in the Portland/Vancouver region.
 - (a) Regional land-use plans depend on movement between Portland and Vancouver. A significant portion of the labor market for Oregon jobs is located in Vancouver. Almost 50,000 Clark County residents are employed in Oregon and commute to work. Retaining access for commuters is important to support employment growth in Oregon.
 - (b) Increased spillover traffic from I-5 on parallel arterials, such as Martin Luther King, Jr. Boulevard and Interstate Avenue, will adversely impact neighborhoods and will diminish the opportunities for more neighborhood business development in these areas.
 - (c) Increased congestion on arterial roads through the industrial corridor leading to and from I-5 will dampen the region's ability to meet its job growth goals in the north Portland and Vancouver industrial areas.
 - (d) Traffic avoiding congestion on I-5 is overloading I-205, which limits opportunities for continued growth in the I-205 corridor.
 - (e) Congestion at the Interstate Bridge threatens development in Downtown Vancouver. Such development is critical to increasing employment in Clark County and therefore reducing demand for commuting trips to Oregon.

Question 3: What improvements are needed?

- (1) Doing only the currently planned projects in the corridor is unacceptable.
 - (a) Without additional transportation investments, congestion on I-5 and corridor arterials will greatly increase. This will dramatically affect access to important port and industrial property and to jobs and housing in the bi-state region.
- (2) The magnitude of the problem requires new freight and passenger capacity across the Columbia River.
 - (a) Addressing congestion in the corridor will require addressing the bottleneck created by the existing Interstate Bridge.
- (3) The complexity of the problem requires that the new capacity be multi-faceted.
 - (a) It should include highway, transit, rail, and demand management, while also supporting the vitality of the river-based economy.



The cure is not simply additional freeway capacity ... a concerted, integrated, and inter-modal effort is required.

– Bill Hutchison

- (4) The region should maximize the capacity of the existing system.
 - (a) This can be accomplished by encouraging demand and traffic management strategies, including transit, car-pooling, flex time, ramp metering, and incident response.
- (5) The region's decision-makers should begin now to pursue a phased approach to addressing freight and passenger mobility in the I-5 Trade Corridor.
 - (a) The building blocks we recommend for further evaluation (not in order) should be:
 - (i) Improving bottlenecks and weaving problems on I-5 at:
 - (1) the Rose Quarter and Delta Park in Oregon
 - (2) downtown Vancouver and 99th to 134th in Washington
 - (ii) Providing new highway and transit capacity across the Columbia River and in the I-5 corridor.
 - (iii) Improving critical freight arterials in the corridor such as Marine Drive and Columbia Boulevard.
 - (iv) Improving the freight rail system in the corridor, in cooperation with private operators of the rail system.
 - (b) The cost of individual improvements ranges from a few million dollars to several hundred million. Together the cost of these elements could exceed \$1 billion. While this is a significant cost, not addressing the identified problems will have significant impacts on the region's economy and quality of life.
- (6) Even with the above improvements, there will be a capacity problem.
 - (a) It is important for the future economic health of the region to look at other solutions, including:
 - (i) Managing additional demand through peak-hour pricing of new capacity.
 - (ii) Instituting measures that would promote transportation-efficient development, including a better balance of housing and jobs on both sides of the river.
 - (iii) Providing for further, longer term highway express or HOV lane capacity in the corridor.

Question 4: How can the improvements be funded?

- (1) Funding for major improvements in the I-5 Trade Corridor cannot be accomplished with existing resources.
 - (a) The transportation needs in the Portland/Vancouver region far exceed available funding.

-
- (b) In the Portland metropolitan area, the Regional Transportation Plan identifies almost \$7 billion in high priority needs over the next 20 years, yet only \$1 billion in state, federal, regional, and local transportation revenue is available.
 - (c) In Clark County, the Metropolitan Transportation Plan identifies approximately \$2 billion in needs over the next 20 years, yet only \$500 million in state, federal, regional and local transportation revenue is available. Ballot measures in both states have and could reduce available transportation measures even further.
- (2) The region should advocate strongly for federal participation in funding improvements in the corridor.
- (a) The I-5 Trade Corridor is a critical link in this nation's freight movement network.
 - (b) There is a national interest in ensuring that goods can continue to move through the corridor in an efficient and effective manner.
 - (c) Therefore, the region should seek funding to the fullest extent possible from all appropriate federal highway, transit, and rail programs authorized by Congress.
- (3) Assuming the current structure of public funding, tolling will be required to pay for a new Columbia River crossing and other corridor improvements.
- (a) Improvements in the I-5 Trade Corridor are likely to be costly, particularly if a new crossing of the Columbia River is pursued.
 - (b) Funding for such bridges has historically been provided through tolls. This continues to be a viable means of financing such improvements.
 - (c) The region should consider tolls on other bi-state facilities if it is necessary to balance the traffic flow.
- (4) Both states should make funding of infrastructure improvements in the corridor a priority.
- (a) Trade activity in the corridor benefits all of Oregon and Washington. Both state legislatures need to recognize the importance of this corridor and consider allocation of transportation and general funds to fund improvements.
- (5) Private financing should be sought where appropriate.
- (a) There may be certain projects such as improvements to the freight rail system where funding should come primarily from the private sector.
 - (b) Further work will need to be done to identify specific freight rail needs in the corridor.

Question 5: What are the next steps?

- (1) The Portland/Vancouver region needs to develop a Strategic Plan for improvements in the I-5 Trade Corridor.
 - (a) The Leadership Committee has identified the need for a multi-faceted solution in the I-5 Trade Corridor, including demand management techniques and improvements to the highway, transit, and rail system.
 - (b) The Strategic Plan should be developed with extensive citizen and resource agency participation in both states, and it needs to fully evaluate the environmental and social impacts of potential improvements.
 - (c) The specific improvements in the corridor and their phasing will need to be identified and formally accepted into the Regional Transportation Plans in the Portland and Vancouver metropolitan areas.
 - (d) The Strategic Plan must take into account and be coordinated with regional economic development, transportation, and other relevant plans.
- (2) The Strategic Plan should address several areas, including:
 - (a) Highway, transit, and rail improvements in the corridor.
 - (b) Education and outreach about the critical nature of improvements in the corridor.
 - (c) Demand management techniques for the corridor.
 - (d) Local and regional land-use impacts of corridor improvements in each state.
 - (e) Environmental effects of corridor improvements.
 - (f) Public/private partnerships that may accelerate improvements in the corridor.
 - (g) A finance plan for corridor improvements.
- (3) The region's local, state, and federal officials must work together to advocate for improvements in the corridor.
 - (a) The problem and the solutions we have identified will require cooperation at all levels of government in both states to ensure that the I-5 Trade Corridor, and the Columbia River Crossing issue in particular, is a priority for both states.

Summary of Findings

- Interstate 5 is the primary economic lifeline on the West Coast. The most economically significant segment of I-5 in the Portland/Vancouver region is in north Portland and Vancouver, where the freeway intersects with the Columbia River. Here, the interstate provides access to deep-water shipping, up-river barging, and two water-level transcontinental rail lines.

- Interstate 5 is currently the most congested segment of the regional freeway system in the Portland/Vancouver area. Without attention, future congestion in this important transportation corridor threatens the livability and economic promise of the Portland/Vancouver region.
- To maintain the economic competitiveness of the Portland/Vancouver region, and to maintain the high quality of life, this region needs to develop a Strategic Plan for managing demand in the I-5 Trade Corridor and making a balanced set of improvements in the corridor. To keep up with mobility needs in the corridor, there must be highway, transit, and freight and passenger rail improvements, along with demand management. No single strategy will solve the problems in the corridor. There is no silver bullet.
- Improvements in the corridor will be costly and most cannot be funded with existing transportation revenue. It is possible, however, to fund public improvements in the I-5 Trade Corridor with a combination of federal funds, tolling, and state funding from Oregon and Washington.

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1 Introduction

*Rush hour on I-5
in Vancouver,
Washington*



Traffic congestion on Interstate 5 through the Portland/Vancouver metropolitan area is a major problem. Rush hour now means hours of stop-and-go driving, and daily periods of congestion are steadily increasing. Accidents, even minor ones, can tie up traffic for hours. Congestion causes constant inconvenience for area residents and increases costs for the busi-

ness community. To avoid congestion, many people reschedule trips, change routes, or select alternate destinations. All of these choices have economic impact.

Interstate 5 is the primary freight facility through the Portland/Vancouver metropolitan area with national and international significance. The rapid growth in international trade, especially in high-tech manufacturing, has increased the importance of access to and through the metropolitan area. Businesses are putting an increasing emphasis on the prompt delivery of products, and there is a growing trend to purchase goods and services directly from producers, leading to an increase in the number of small package shipments

and the vehicle fleet required to distribute the packages. Surface transportation has become a principal means of delivering virtually all consumer goods, further taxing an already strained highway infrastructure. At the same time, resources for improving or even maintaining the infrastructure are diminishing.

*This decision will
be one of the
most important
for the region in
the new
millennium.*

– Dick
Pokornowski



This region is noted around the world for the quality of its planning. Several central locations, namely the Columbia Corridor,

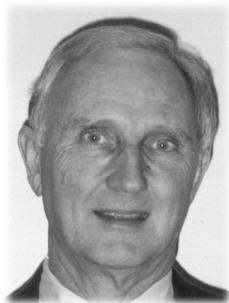
Downtown Portland, Downtown Vancouver, and the Portland International Airport, among others, have been designated as places where job growth would be especially beneficial to the community. In a competitive business environment, accessibility significantly affects the willingness of employers and employees to locate to and work at these sites.

The Portland/Vancouver metro area is an international hub for the movement of commodities by rail, barge, highway, and air. As an important port on the Pacific Rim, Portland/Vancouver competes for business with other North American ports. The freight rail that serves ports and key industries is also becoming congested.

*As moving goods
becomes more
difficult, it is
the smaller
businesses that
will suffer most.*

– Phil Kalberer

Portland/Vancouver residents share a vision not only for a compact, livable metropolitan area but also for livable neighborhoods. People who live near I-5 rely on the jobs they find nearby — in the ports, warehouses, offices and factories. If these businesses lose sales, local residents lose jobs. At the same time, residents must live with the increasing intrusion and pollution of trucks on neighborhood streets, as I-5 congestion forces drivers to seek alternate routes.



Yes, there are real constraints, but we can no longer put our heads in the sand. We must think creatively and we must act now.
– Keith Thomson

Although it may be impossible to completely eliminate congestion on I-5 in the Portland/Vancouver metropolitan area, the problem must be addressed. In January of 1999, the I-5 Trade Corridor Study was initiated to examine how congestion impedes freight mobility.

This report represents the completion of the study's first task, to identify the magnitude of the congestion problem and explore concepts that could improve it. The concepts are presented as scenarios and are only a starting point in the study; they will be refined and others will be developed. Some of the scenarios give priority to the movement of goods while providing important benefits to residents of both Oregon and Washington. All of the scenarios support local and regional plans for livable neighborhoods, and vital, centrally located industrial and office employment centers, and help maintain the region's advantages in terms of attracting business and as a location for trade. Finally, the scenarios provide more choices for travel in the most important corridor of this busy, growing bi-state region.

1.1 The Process

In January 1999, the Oregon and Washington State Departments of Transportation, in cooperation with regional decision-makers, initiated the Portland/Vancouver I-5 Trade Corridor Study.

The regional decision-makers organized themselves into a Policy Committee to oversee the I-5 Trade Corridor Study. Policy Committee members are:

- **Henry Hewitt, Committee Chair**, *Chair, Oregon Transportation Commission*
- **Ed Barnes**, *Commissioner, Washington State Transportation Commission*
- **Mike Burton**, *Executive Officer, Metro*
- **Charlie Hales**, *Commissioner, City of Portland*
- **Fred Hansen**, *General Manager, Tri-Met*
- **Keith Parker**, *Executive Director, C-Tran*
- **Larry Paulson**, *Executive Director, Port of Vancouver*
- **Royce Pollard**, *Mayor, City of Vancouver*
- **Judie Stanton**, *Commissioner, Clark County Board of Commissioners*
- **Mike Thorne**, *Executive Director, Port of Portland*

The Policy Committee appointed a 14-member Leadership Committee to examine the specific problems in the I-5 Trade Corridor and to make recommendations to the Policy Committee. Leadership Committee members are:

- **Vern Ryles, Committee Chair**, *President, Poppers Supply*
- **Peter Bennett**, *Vice President, K-Line*
- **Mike Bletko**, *Vice President, Distribution and Trucking, Fred Meyer Stores, Inc.*

- **Margaret Carter**, *President, Urban League of Portland*
- **Anthony Ching**, *General Counsel/Secretary, Wafertech*
- **Wesley Hickey**, *President/CEO, Tidewater Barge Lines*
- **Bill Hutchison**, *Partner, Tooze, Duden, Creamer, Frank & Hutchison*
- **Phil Kalberer**, *General Manager, Kalberer Food Service Equipment*
- **Steve Madison**, *President, Cana Realty*
- **Bill Maris**, *CFO/Treasurer, Market Transport, Ltd.*
- **Ken Novack**, *President, Schnitzer Steel Industries/Schnitzer Investment Corp.*
- **Dick Pokornowski**, *Vancouver Citizen*
- **Carl Talton**, *Manager of Economic Development, Portland General Electric*
- **Keith Thomson**, *Commissioner, Port of Portland*

1.2 Leadership Committee Charge

The Policy Committee drafted a charge to the Leadership Committee to guide its examination of the I-5 Trade Corridor. Specifically, the Leadership Committee was asked to address these five questions:

- (1) **What is the magnitude of the problem?** To what extent do congestion and access issues in the I-5 Trade Corridor constitute a major impediment to the competitiveness and economic development of the Portland/Vancouver region, the states of Washington and Oregon, and the nation? Specifically, please address the congestion and access issues in the I-5 Trade Corridor as they pertain to:
 - (a) serving the needs of interstate commerce
 - (b) providing access to port and other trade-related facilities in north Portland and Vancouver
 - (c) providing access and internal circulation to the industrial enclaves in north Portland and Vancouver
- (2) **What are the costs of inaction?**
- (3) **What improvements are needed?** Are there efficient transportation improvement scenarios that regional decision-makers should consider for the corridor? If so, what are their costs and benefits?
- (4) **How can the improvements be funded?** If improvement scenarios are recommended, how should/can these improvements be funded?
- (5) **What are the next steps?** How should the Oregon Department of Transportation (ODOT)/Washington State Department of Transportation (WSDOT) and regional governments proceed in implementing the committee's recommendations?

The remaining sections of this report discuss the technical analysis used to answer the questions posed by the Policy Committee and present the Leadership Committee's find-

ings. Further information on these topics is available in several technical memoranda and reports. Source material for this report is cited in these documents, which are:

- “Development of Alternative Scenarios”
- “The Economic Benefits of Highway Improvements”
- “Economic Evaluation of Alternative Scenarios”
- “Factors Affecting Employment Growth in Southwest Washington”
- “Freight Rail Existing Conditions”
- “Transportation Assessment of Alternative Scenarios”
- “2020 Baseline Conditions”

These documents may be obtained from:

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- **Brian McMullen**, WSDOT, SW Region, 4200 Main St., Vancouver, WA 98668
(360) 905-2055

1.3 Study Area

Fig. 1 on page 5 is a map of the I-5 Trade Corridor Study area, which includes Interstate 5 and its vicinity from I-84 in Oregon to I-205 in Washington. The study corridor is important to the regional and national economy and includes many important community and economic assets:

- Interstate 5, the only continuous interstate highway on the West Coast between Canada and Mexico, linking the region with California, Canada and Mexico.
- The interchange of east-west and north-south mainline rail lines that connect the nation’s agricultural heartland with major Pacific Rim ports. The east-west mainlines in particular are unique because they run at water level, making rail service on these rail lines among the most competitive in the United States.
- The Columbia River, second in trade volume only to the Mississippi River, linking the Pacific Rim and Portland/Vancouver to the nation’s agricultural heartland. The Columbia River makes possible the deep-water ports of Portland and Vancouver, two major West Coast ports that connect this region with the Pacific Rim and the rest of world.
- The Rivergate, Columbia Corridor and Vancouver industrial areas, which provide high-wage jobs. The corridor includes Downtown Vancouver, the region’s second largest city and neighborhoods in north-northeast Portland and Vancouver.

The convergence of transportation, port, industrial and community resources in this area makes it a unique crossroads for trade, industry and transportation, which are critical to the health of the economies of Oregon and Washington.

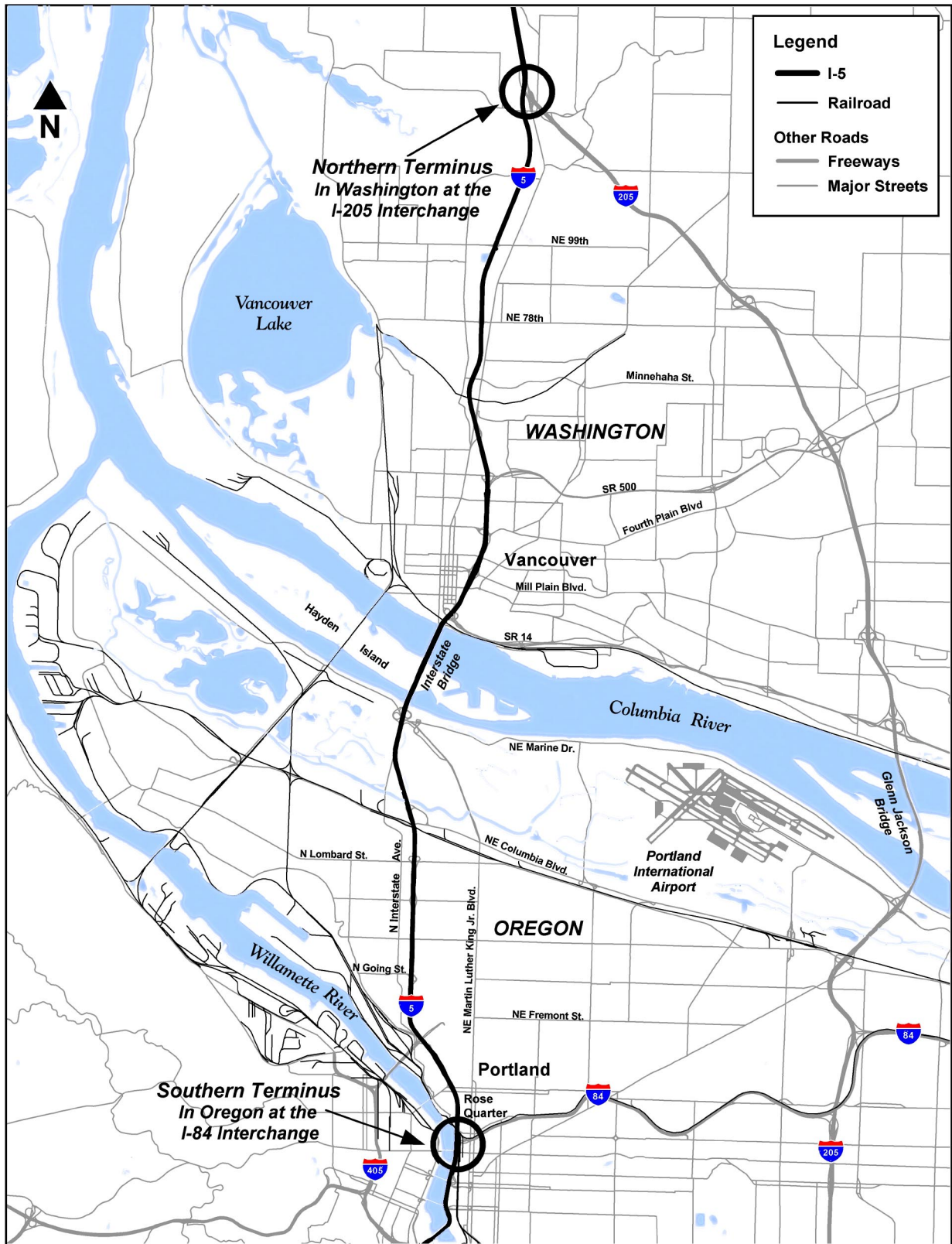


Fig. 1. I-5 Trade Corridor Study Area.

Many of the resources in this area have recently been addressed by public-sector efforts, including:

- A coalition of ports and cities is working with U.S. Army Corps of Engineers to deepen the Columbia River shipping channel.
- The City of Vancouver is developing a transportation and land-use plan for Downtown Vancouver.
- The City of Portland recently completed a transportation plan for the Columbia Corridor.
- The Port of Portland is planning a new, major deep-water terminal on Hayden Island.
- Tri-Met is planning a light rail line on Interstate Avenue.
- ODOT is operating an interim HOV lane on I-5 northbound.
- ODOT is working with the US Coast Guard, Senator Slade Gordon's office, WSDOT, and several citizen groups to develop a revised schedule of hours for lifts of the I-5 Interstate Bridges that facilities both highway and river traffic.



The Columbia River and Hayden Island

The I-5 Trade Corridor Study focuses on the highway and rail transportation systems in the corridor, and this report discusses the highway transportation system in detail.

1.4 Methodology

This report presents the conclusions of the Leadership Committee and the technical work used to develop the conclusions. This effort was meant to be a preliminary look at the corridor; there are many issues that have not yet been thoroughly examined.

The Leadership Committee examined the trade economy of the Portland/Vancouver region and the impacts of continuing congestion in the corridor and developed several scenarios for improvements in the corridor. The committee also assessed how the transportation system would function in the future and what its impact on the economy would be. The intent was to identify the magnitude of the problem and suggest the scope of improvements that would be necessary to address the problem.

There are many questions that will need to be addressed as the study moves forward, including:

- Land use: How congestion in the corridor will affect future land-use plans.
- Environment: Very few of the concepts in the scenarios were developed at a level of detail necessary to assess the environmental impacts of improvements. The next

phase of the study will include a more detailed assessment of air quality, water quality, noise and other environmental impacts.

- Public participation: The study focused on answering questions posed by a group of business and civic leaders. The second phase of this study will include an extensive process to identify the needs and concerns of the citizens of Vancouver and Portland.

2 Magnitude of the Problem

This chapter discusses the magnitude of the transportation problem in the I-5 Trade Corridor facing the region now and in the future, current bottleneck locations in the corridor, results of a technical analysis that assumed only minor improvements in the corridor, and freight rail bottlenecks in the corridor.

2.1 The Role of Interstate 5

I-5 is the only continuous highway between Mexico and Canada (U.S. NAFTA trading partners) on the West Coast and directly serves regional and state economies in Washington, Oregon and California. Within the Portland/Vancouver metropolitan area, I-5 is the north-south backbone of regional trade, intersecting two east-west transcontinental railroads, deep-water shipping and upriver barging, and providing primary access to the region's two ports and regional warehousing and distribution facilities. The Portland/Vancouver region's proximity to two interstate highways (I-5 and I-84) makes overnight truck delivery north into British Columbia, east to Idaho and western Montana, and south into the Bay Area possible. As a result, the Portland/Vancouver region serves as the Pacific Northwest domestic distribution location for many retailers and manufacturers, as well as the regional hub for most less-than-truckload carriers. For these and other reasons, Congress recognized I-5's national significance and economic importance in the Transportation Equity Act for the 21st Century (TEA-21) by designating it as a High Priority Corridor.



Afternoon truck traffic in the I-5 corridor

Domestically, trucks carry 75% of the goods that are shipped to or from other states. North and south truck movements in and out of the Portland/Vancouver region account for the majority of annual truck freight volumes. According to ODOT, \$106 million of truck freight comes into the region each day, primarily from California, while \$73 million leaves the region, going primarily to Washington. Can-

ada is the primary destination for international exports by truck or rail, accounting for 17% of total exports leaving the region (most exports are bound for Pacific Rim countries). Trucks carry 100% of the goods for the local segment of international air-freight shipments.

I-5 plays a crucial role in local transportation because it provides the major access to port and industrial areas, with links to marine and rail freight terminals. I-5 is also one of only two river crossings linking Portland and Vancouver. As such, it is a vital corridor for commuting, shopping, access to services, and other local trips.

2.2 Current Conditions on Interstate 5

I-5 serves interstate, regional, and local traffic demand, with traffic volumes in the corridor ranging from over 140,000 vehicles per day near Going Street to nearly 58,000 vehicles per day just south of the north I-205 interchange endpoint of the corridor. On an average weekday, about 120,000 vehicles cross the Interstate Bridge. Traffic on I-5 has been growing at nearly 4% per year in Vancouver and Clark County, and at about 2% per year in the Portland portion of the corridor.

Throughout the corridor, morning and evening peak-period travel demand consumes between 60 and 100% of the highway's capacity. Peak-period travel demand routinely approaches or exceeds the available capacity at several locations, resulting in recurring periods of congestion and slow travel speeds.

The Interstate Bridge is one of the most significant bottlenecks in the corridor. While three lanes are provided in each direction, the capacity of the outside lane is significantly diminished by the heavy traffic volumes entering and exiting the highway on the Hayden Island and SR 14 on- and off-ramps. The capacity problem created by heavy ramp volumes is exacerbated because the short ramps do not permit vehicles to accelerate to highway speeds before merging, and the distance between the on- and off-ramps is insufficient to provide for merging and weaving movements.

In addition, the Interstate Bridge is a lift span and is required by the Coast Guard to open on demand for marine traffic (the Coast Guard requirement has been modified to minimize openings during morning and evening peak traffic periods). During periods of high water, lifts can be required several times a day, each time creating delays and queuing for vehicles on I-5.

Other major congestion points occur principally on sections of I-5 where only two through-lanes are provided in each direction, including I-5 near the Rose Quarter, the segment of I-5 between the Delta Park and Lombard interchanges, and from Main Street to I-205 (WSDOT has programmed adding a third lane in each direction from Main Street to 99th Street). The basic lane capacity of those segments is generally inadequate to meet existing and anticipated travel demand. In addition, congestion points occur where on- and off-ramps are closely spaced.

2.3 The Future of Travel Along Interstate 5

Travel demand along I-5 is expected to increase substantially over the next 20 years. At the Interstate Bridge, the corridor's main chokepoint, travel demand will increase by up to 35% over current conditions. Because of the increase in traffic, limited capacity across the bridge, and bottlenecks (Rose Quarter, Delta Park, Downtown Vancouver, and between 99th and 134th Streets in Vancouver), there will be long vehicle queues and prolonged congestion throughout the day.

Delays will be long, not only during typical morning and evening commute periods, but also between these periods when freight traffic is heavily dependent on the highway and connecting roadway system. Truck trips are expected to increase at a much greater rate than automobile trips in the corridor. In fact, mid-day and evening truck trips across Interstate Bridge are expected to increase by up to 60% over existing conditions. Therefore, freight mobility will be substantially impacted.

Due to extended periods of congestion along I-5, traffic demand will shift to adjacent corridors, including I-205. Without improvements to alleviate I-5 conditions, peak-period traffic levels will increase at the Glenn Jackson Bridge by 70% over existing volumes, resulting in over-capacity and congested conditions along this key route as well.

With all-day congestion expected throughout the I-5 corridor, the number of vehicle hours of delay (for all vehicles) will increase by over 220% during the evening peak period. Truck hours of delay are expected to increase even more — by 300%. Overall vehicle miles traveled (for all vehicles) will increase by about 35%. Truck miles traveled will increase by over 50% due to the anticipated increase in freight activity and diversion to less congested routes (Fig. 2).

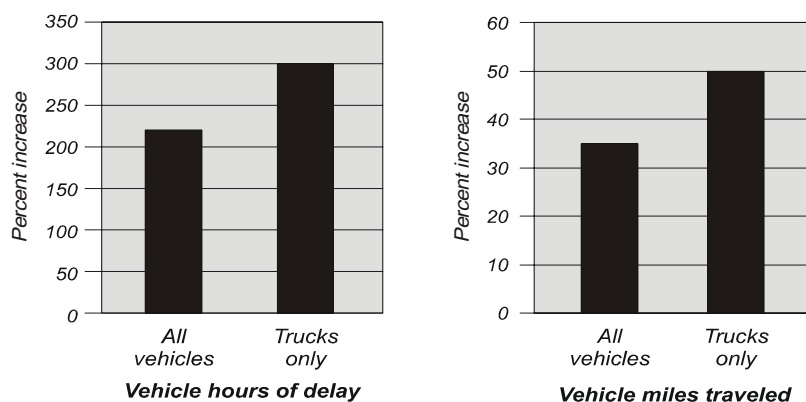


Fig. 2. Estimated Percent Increases for the Year 2020 in Vehicle Hours of Delay (VHD) and Vehicle Miles Traveled (VMT), Compared to Existing Conditions.

Increased traffic demand at several of I-5’s on-ramps will create long vehicle queues, which may affect surface street operations. The most extensive queues and delays are expected at both southbound on-ramps (including 99th Street, Mill Plain Boulevard, Lombard Avenue and Weidler Street) and northbound on-ramps (including Denver/Delta Park, Marine Drive, Hayden Island, and Mill Plain Boulevard).

Nearly all of the arterial roadways serving I-5 are expected to show significant increases in traffic volumes. For example, over the next 20 years, traffic will more than double along segments of 134th Street, SR 14, Martin Luther King, Jr. Boulevard, and Lombard Street. The increased travel demand along the arterial street network will result in congestion and delays for all vehicles. For further information on this subject, see the technical memorandum, “2020 Baseline Conditions.”

2.4 Freight Rail

The Leadership Committee discussed freight rail issues, including the results of a study conducted by Burlington Northern Santa Fe (BNSF) Railroad for the Southwest Washington Regional Transportation Council (RTC). The RTC study found that there will be a significant rail-capacity problem in the corridor in the future, which could limit potential industrial development in the corridor in a manner similar to the highway capacity problem. In addition, rail-capacity problems will create delays for goods shipped statewide and nationally. For further information on this subject, see the technical memorandum, “Freight Rail Existing Conditions.”

2.5 Leadership Committee Findings

- (1) The Portland/Vancouver I-5 Trade Corridor is critical to regional, state, and national economies.
 - (a) Interstate 5 is the only continuous interstate highway on the West Coast between Mexico and Canada. It links international, national, and regional economies in Mexico, California, Oregon, Washington, Canada, and the Pacific Rim countries.
 - (b) The Portland/Vancouver I-5 Trade Corridor intersects the Columbia River, connecting the interstate highway system with deep-water shipping, up-river barging, and two water-level transcontinental rail lines. The convergence of transportation and port facilities in the Portland/Vancouver I-5 Trade Corridor makes it a crossroads for both north-south and east-west trade, and an international gateway.
 - (c) The Portland/Vancouver I-5 Trade Corridor is home to the region’s largest industrial areas, including the Ports of Portland and Vancouver, which together export the second largest volume of goods among West Coast ports. Over 40% of U.S. wheat exports move through the Columbia River system for transshipment to international markets through the marine terminals in the I-5 Trade Corridor.
 - (d) Portland/Vancouver is the number one origin and the number two destination for tonnage moved by commercial vehicles within the 17 western states. The I-5 Trade Corridor is the primary route for much of this freight movement.
- (2) I-5 is a critical chokepoint; without attention, it will only become worse in the future.
 - (a) The I-5 Trade Corridor is currently the most congested segment of the regional highway system.
 - (b) By 2020, congestion will grow significantly worse in the corridor.
 - (i) It will take about twice as long to commute from Downtown Portland to Downtown Vancouver.
 - (ii) Congestion will be a problem in the corridor for most of the day and well into the evening.
 - (iii) Back-ups on I-5 will cause back-ups on many regional highways, including I-84, I-405, SR 14 and SR 500.

3 The Cost of Inaction

This chapter documents what is potentially at stake for the regional economy if traffic congestion on I-5 further impedes the movement of people and goods in the corridor. More specifically, this section describes ways in which improvements in the performance of I-5 could improve movement of goods, creation and retention of jobs, leasing or development of real estate, and livability of neighborhoods in the vicinity of the corridor, in both Oregon and Washington.

3.1 The Portland/Vancouver Regional Economy

The Portland/Vancouver region has enjoyed a strong and growing economy over the past 10 years. During this period, growth in the manufacturing sector, especially in high-tech manufacturing, has dramatically shifted the regional economy from one dependent primarily on the natural resources sector to one that is more diverse and robust. The shift toward electronic and computer equipment manufacturing has brought an increase in wages. As a result, the average wage in the Portland/Vancouver region is currently higher than the national average.

Regional growth is evidenced by demographic indicators such as population, employment output, and wages. Employment has been growing consistently over the past eight years at an average rate of 3.3% per year. Regional population, which is linked to employment growth, has also increased with a net migration of 223,000 people to the region from

1990 to 1997. During this same period, regional output (i.e., sales) has increased 7.8% per year.



T-6 at the Port of Portland

Recent growth of the Portland/Vancouver regional economy has been led primarily by four major industries: electronics manufacturing (including plastics and chemicals), air transportation, construction, and business services (particularly computer-related services). Growth of the electronics industry has been particularly strong,

with double-digit growth for the past 10 years. This compares to an average growth rate of about 1% per year for the U.S. electronics industry as a whole. **Table 1** compares the growth rates of these local industries with growth rates for the rest of the nation.

In light of the recent growth and other factors, several industrial “clusters” have emerged and are driving the regional economy (**Table 2**). Briefly, industrial clusters are groups of firms that share common markets, have similar technological needs, demand similar workforce skills, and have broad impact on regional and/or national economies.

**Table 1. Average Annual Growth Rates (Earnings):
Portland/Vancouver Region vs. U.S., 1985-1995.**

Industry	Portland regional growth rate (%)	U.S. growth rate (%)
Electronics and other electronic equipment	14.3	1.2
Transportation by air	14.9	6.2
Construction	10.7	4.1
Other transportation equipment	7.8	1.3
Agricultural services, forestry and other	12.7	8.0
Business services	11.2	7.0

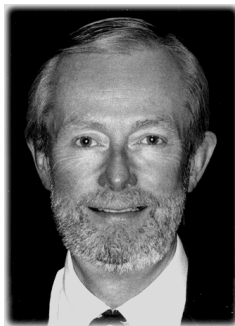
**Table 2. Major Industrial Clusters in the Portland/Vancouver
Regional Economy (1996 Data).**

Industry	Firms	Jobs	Average wage
Electronics/high tech	2,049	57,200	\$49,000
Metals, machinery, transportation equipment	1,129	40,934	\$37,500
Lumber and wood products	1,202	23,115	\$39,600
Transportation/distribution ¹	NA	38,342	\$34,900
Nursery products	801	8,780	\$18,911
Specialty food/craft beverages	136	3,556	\$30,458

¹Number of jobs does not include durable and nondurable wholesaling. Average wage does include wholesaling.

Our regional ability to meet every other social, economic, and environmental challenge depends on economic strength, and our economic strength absolutely depends on efficient, multi-mode freight transport throughout the I-5 corridor.

– Bill Maris



Trade comprises a significant share of the regional economy. Freight movements into and out of the region have historically led to increased business and employment growth, with the result that today the Portland/Vancouver metropolitan area plays a leading role among regional distribution and transshipment centers for international commerce. While the ratio of wholesale to retail sales for the nation as a whole is 1.7:1, Portland's ratio is 2.5 times higher (4.4:1), giving Portland the highest value of wholesale trade per capita on the West Coast. Wholesale trade is therefore one of the primary drivers of the regional economy, although this sector is not listed as a cluster in **Table 2** due to the difficulty of separating wholesale and warehouse activities from their related primary industries.

The Portland/Vancouver region ranks thirteenth among all U.S. cities based on the value of exports. Exports make up the vast majority of the region's traded volume, exceeding the volume of imports by a factor of 15. While the volume of exports is still dominated by the natural resources sector (lumber, wood products, and agricultural products), the high-

tech sector now makes up the majority of the value of exported goods. Between 1989 and 1995, natural resource exports grew 30% (from \$2.9 to \$3.8 billion) while the high-tech sector grew 190% (from \$1.7 to \$4.9 billion). Because high-tech goods are valuable, light, and time-sensitive, they tend to be shipped by air freight rather than by sea. This has led to a dramatic increase in air-freight shipments, especially international shipments, which has created a greater demand for “just-in-time” (JIT) deliveries and access to the airport by high-tech businesses. Key industries in the high-tech sector include electrical and electronic equipment, industrial machines, and computers and instruments. The growing regional economy is increasingly dependent on an efficient transportation system.

3.2 Economic Benefits

This section discusses some of the ways investments that reduce travel times on the region’s transportation system will benefit local businesses and the regional economy. Benefits are divided into business productivity, travel reliability, regional competitiveness, accessibility, trade, and livability.

3.2.1 Productivity

This section focuses on the impact of reduced travel times for businesses that rely on transportation services as part of the production process.

Reduced travel times affect business profitability directly by reducing transport costs. A percentage of these savings may in turn be passed on to passengers, consumers, and others in the form of lower prices. Travel time savings can also allow firms to reduce other logistical costs. Because total logistical costs are central to freight modal and route choices, inventory costs, production locations, and shipment frequency are all interconnected decisions manufacturers must make. Deregulation in the airline, trucking, and railroad industries has increased competition among carriers and given logistics managers greater opportunities to control costs and develop innovative services.

Increasing travel time is also a significant issue at the local level. Surveys of shippers (manufacturers and distributors), conducted for the I-5 Trade Corridor Study, revealed that businesses respond to increasing travel times and reduced reliability by:

- Moving operations closer to the airport or to key customers, thus incurring substantial relocation costs.
- Building satellite facilities and decentralizing services. This practice runs counter to a growing general business trend of centralizing facilities, with the result that costly overhead is duplicated.
- Increasing inventories and holding costs.
- Adding trucks, drivers and loaders to reduce stockpiling. In addition to increasing labor costs, this also places more trucks on the road, thus compounding problems re-

lated to congestion (trucks are increasingly carrying less than full truckloads of goods). While this strategy is usually used by firms engaged in JIT deliveries, many firms would prefer to consolidate loads.

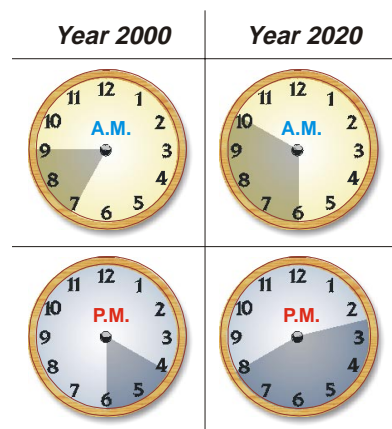
- Consolidating freight and ship during evening hours. This might require the purchase of larger vehicles.
- Increasing hours of operation, typically earlier in the morning. This may inconvenience staff and/or increase labor costs due to longer working hours or adding staff.

The surveys found that local cartage carriers (truck companies) may respond by:

- Increasing reliance on dispatch services to warn of congestion problems.
- Using alternative routes, often through residential neighborhoods. (Because interstate highways have lower rates of traffic accidents and injuries than other roads, route diversions typically increase accident rates and ultimately truck insurance premiums and medical costs. Traffic accidents are also a major cause of reduced travel reliability.)
- Rescheduling pickups and deliveries before or after peaks, potentially increasing labor costs.
- Turning down or postponing loads at the risk of upsetting customers.
- Arriving late and incurring penalty fees. For companies that try to reduce inventory stockpiling, late shipments can cause expensive machinery to sit idle.
- Moving multiple trailers to a service area, which are then loaded or unloaded individually, to reduce returns to a main terminal. As relatively few streets and parking areas are designed to store idle trailers, this can result in unsafe traffic operations. Some areas (e.g., Downtown Portland) have no areas in which to store transfer trucks.
- Increasing shuttle runs by additional trucks to other trucks (particularly air-freight carriers) already in the field, compounding congestion.

The business community's ability to respond to increasing travel times and reduced reliability is limited by several factors. As traffic congestion spreads into off-peak commut-

ing hours, for instance, firms find increasingly narrower windows of time within the normal business day in which to reschedule pickups and deliveries. Moreover, many of these deliveries cannot be shifted to times before or after normal business hours. Deliveries to Portland International Airport, for example, must be made by late afternoon in order for a shipment to make a next-day or two-day delivery, and many shippers and receivers work only from 6 am to 6 pm. State and federal regulations limit some types of heavy hauls to specific times of day and on particular facilities. Finally, it can be difficult to find workers willing to work a



Projected rush hour periods for the years 2000 and 2020 on I-5 in Portland/Vancouver.

non-traditional schedule, and drivers doing so may incur additional accident costs because of driver fatigue.

Transportation improvements can lead to fundamental societal changes and flexibility (e.g., the ability to selectively adopt some logistical practices and discard others) that will facilitate gains in productivity and innovation. Transportation improvements will also ensure that existing businesses are able to operate in an increasingly competitive world. Not being able to deliver and receive goods promptly and at an optimal time of day has significant economic impact.

3.2.2 Competitiveness

Competitiveness is the ability of a region to retain and expand existing businesses and to attract new companies or industries. In this respect, transportation bottlenecks are important because many of today's industries are just as dependent on efficient transportation as other industries have historically been. One difference, however, is the fact that many companies are now based in the service economy and are flexible in terms of business location (in Portland/Vancouver, the service sector is the only sector larger than the trade sector). Many companies may now leave behind only empty office space, rather than immense capital facilities, when they choose new locations because of good airport,

highway, and rail access. This increased locational flexibility is of critical importance for the Portland/Vancouver region, which is currently home to few company headquarters. Branch offices with relatively weak ties to the greater community are particularly likely to relocate or consolidate with headquarter operations to reduce costs.

Good transportation access is critical to a region's ability to attract business. Other factors important in attracting business are production costs (e.g., energy), availability of skilled labor, available land, business climate, labor costs, taxation, environmental regulation, and quality of life factors. However, transportation infrastructure may be "first among equals," in that there



Barge loading at T-6

must first be an infrastructure that is sufficient to encourage other factors (e.g., labor and private capital) to enter a region.

According to business recruitment staff at Portland Development Commission, the Portland/Vancouver region currently enjoys several competitive advantages regarding business recruitment, including:

- An "average" cost structure with respect to taxes, wages, utilities costs, and land costs. While land in Portland is still relatively inexpensive compared to other West Coast water port cities (e.g., Los Angeles, San Francisco, Seattle), it can be more expensive than in other inland transportation hubs such as Denver, Phoenix, and Kansas City.

- A well-educated labor force.
- Telecommunications infrastructure. This factor is becoming increasingly important, and quantitative measures are only now emerging. In this case, Portland is considered to be “fully functional.”
- Abundant natural resources (e.g., water).
- Low-cost power. The magnitude of this advantage may erode, however, due to energy deregulation, which is being aggressively pursued in California, for instance.
- Quality of life benefits for employees. While these are difficult to define and most cities claim to offer benefits in some form, Portland/Vancouver consistently ranks high regarding “livability” or quality of life factors. **Section 3.2.6** discusses livability issues in more detail.
- Industrial land-use planning. Firms like predictability and are able to occupy industrial sites knowing that their business use has been approved and that conflicts with neighbors are unlikely. Land-use approvals are often more difficult and time-consuming in other cities.

Regarding traffic congestion, most prospective firms note that current congestion levels in Portland are low compared to Seattle, Los Angeles, and San Francisco. In the long run, congestion levels in other cities are already so high that increased congestion in these places could cause some business activity to be driven elsewhere.

Prospective firms also note that Portland’s linking of land-use and transportation planning gives it a long-term strategic advantage. While the business community does expect congestion to increase here (and everywhere else) from population and income growth, it also believes that the region’s planning institutions are well equipped to mitigate these impacts and keep congestion at “tolerable” levels. In the future, Portland’s competitive advantage may lie in maintaining a congestion level differential with other cities to attract firms that find deteriorating business conditions in those cities.

3.2.3 Trade

Trade is defined as the dollar value or volume of goods exported from or imported to the region, either to international (primarily Pacific Rim) markets or domestically to other West Coast states. The Port of Portland currently exports the second largest volume of goods among West Coast ports and is the nation’s largest wheat shipping port. Oregon and Washington are each other’s largest trading partners, with California the second largest trading partner for each state.

Trade sector activities create a demand for labor, which increases the number of “basic sector” jobs and introduces new income in the form of wages into the regional economy. Sixty percent (60%) of Oregon’s workers have jobs that rely on transportation, and inter-

national trade supports one out of every four jobs in Washington, making the trade sector a primary driver of the Portland/Vancouver regional economy.

In 1996, over 165 million total tons of trade-related cargo moved in and around the Portland metropolitan area. This figure is projected to grow to 275 million tons in 2020, and to 330 million tons in 2030, for an average annual growth rate of 1.9%. This growth will be driven primarily by continued regional and national economic growth. In comparison, local employment is projected to grow by 1.5% annually, indicating that trade will become increasingly important to the local economy. Cargo volumes moving across docks or air terminals (e.g., international goods) are projected to increase more than overall volumes. Ocean freight is projected to increase by 250% by 2030, while air cargo will grow by 300%.

At the local level, freight mobility is dependent largely upon trucks. In 1996, trucks carried 61% of total tonnage, comprised of 6 million tons of international goods, 22 million tons of local goods, and 75 million tons of goods moving into and out of the region. By 2020, the volume of international goods moved by truck is expected to increase to nearly 16 million tons, representing an increase of 160%. Notably, all air cargo moves to and from terminals at the airport by truck, and 25% of ocean tonnage moves to and from marine terminals by truck. In addition, trucks carry approximately 75% of domestic goods that are shipped to or from other states.



Top loading train

I-5 is an important link for all of these freight movements, with the result that local firms' share of domestic and international trade could be adversely affected by congestion due to higher transportation costs. Because much of the freight moving through the region is of low value, such as wheat, wood, and scrap metal, the Portland/Vancouver area is vulnerable to subtle market

changes. Transportation costs are a large component of low-value products; therefore even a few dollars more in transportation costs can make some products non-competitive in the global market.

3.2.4 Reliability

Increased travel reliability allows firms to make smaller and more frequent deliveries, thereby reducing inventory and handling costs. This is significant since the costs of holding inventory are, for many industries, among the highest of doing business (between 30 and 70% of current assets). These costs are a prime motivator behind the growing trend for JIT delivery practices, which were initially adopted for high-value products (e.g., computers) but are now used for just about any type of product (e.g., hammers and birdseed). While in some cases JIT delivery may increase total transportation costs due to more fre-

quent shipments, total product costs typically decline through savings in production costs.

Traffic congestion is one of the leading causes of reduced travel reliability because congestion significantly increases traffic accidents. Data compiled by the Federal Highway Administration (FHWA) reveal that for all categories of accidents and injuries for both urban and rural areas, accident rates on interstate highways are two to three times lower than rates on other types of roads (highways, arterials, collectors, and local streets). Because truck drivers place a relatively high value on their time compared to commuters, truck drivers generally prefer to utilize highway facilities as much as possible because highways are designed to accommodate larger vehicles at higher speeds than other roadways and there is a reduced likelihood of delays caused by accidents.

Fig. 3 shows how accident rates increase with increasing levels of congestion (measured as the ratio of vehicles to capacity) on urban highways.

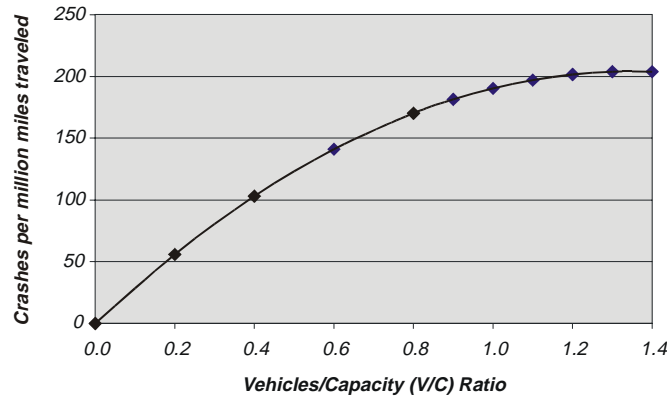


Fig. 3. Relationship Between Congestion and Accident Rates on Urban Highways (Tedesco, S., V. Alexiadis, W. Loudon, R. Margiotta, and D. Skinner, "Development of a Model to Assess the Safety Impacts of Implementing IVHS User Services," *Proceedings, IVHS America*, 1994.

At the local level, there are currently segments of I-5 where three traffic lanes merge into two lanes, with the result that congestion levels increase and bottlenecks occur regularly. These areas also have higher traffic accident rates and are located:

- between 99th and 134th Streets in Vancouver
- at the Interstate Bridge (three lanes but less capacity due to merging and weaving)
- between Lombard Street and Delta Park
- between I-84 and the Greeley Avenue ramps

In freight surveys conducted for this study, 43% of shippers (manufacturers) indicated that timeliness is very important to the production line, and 57% said it was very important to customers. Importantly, virtually all deliveries arrive at manufacturers by truck because there are almost no direct rail connections. In addition, 60% of manufacturers said they manage their inventory as JIT, and 30% say they manage according to customer orders. Due to travel-time variability, most shippers set schedules by adding a buffer to

average travel times. **Table 3** shows the percentage of inbound and outbound goods considered to be “time sensitive” by manufacturers and distributors.

Table 3. *Percentage of Shipments Considered Time Sensitive (DKS Associates et al., Freight Users/Shippers Logistics Interviews Interstate 5 Corridor Summary Report, Oregon Department of Transportation, Region 1, June 1999).*

Percentage of shipments (%)	Inbound		Outbound	
	Manufacturers (%)	Distributors (%)	Manufacturers (%)	Distributors (%)
>74	38	10	50	37
50 – 74	23	10	12	18
1 – 49	23	50	23	27
0	16	30	15	18

From a geographic perspective, one of the most problematic regional freight movements is currently from high-tech firms in Washington County (Oregon) to Portland International Airport for time-sensitive deliveries. Because commuter traffic in this corridor is also a major problem, it is possible that future regional growth in the high-tech sector is likely to be deflected to east Multnomah County and Clark County, which now enjoy relatively good access to the airport. From the perspective of this study, it is important to note that most of the developable industrial land in the region is currently in Clark County at locations that are critically dependent upon the smooth functioning of I-5 (e.g., the Port of Vancouver, Ridgefield).

3.2.5 Accessibility

Accessibility is defined by the U.S. Department of Transportation as “the relative ease by which the locations of activities, such as work, shopping, health care, and recreation, can be reached from another location.” Transportation increases the value of goods by moving them to locations where they are worth more, and by allowing people to commute to places of employment where their time has higher value.

The construction of I-5 and later I-205 added significant transportation capacity to the region, which led to substantial residential and employment growth in Oregon and Washington because of increased access (via reduced travel times) to the rest of the region and beyond. On the employment side, this growth included the expansion of existing companies and the attraction of new businesses. More recently, the effects of these accessibility changes have been more pronounced in southwest Washington where the incremental change in transport infrastructure was greatest and there was a relative abundance of cheap, developable land on the urban fringe.

Over time, regional growth has occurred to a point where much of the initial increase in accessibility for residences and businesses has dissipated. Increasing congestion in the I-5 corridor in particular threatens to jeopardize the long-term integration of a bi-state re-

gional economy. If nothing is done to mitigate growing congestion, residences and businesses will face reduced choices as congestion reduces the ease of access to both a bi-state labor force and to bi-state employment opportunities.

To promote economic development generally, the Portland/Vancouver region has proactively developed centrally located industrial and office enclaves with good highway access. If these sites are no longer attractive to prospective businesses, few alternative sites will be available in the region and firms may have to go elsewhere. Congested conditions on I-5 may play a role in this process.

Port of Vancouver. The Port of Vancouver currently holds approximately 700 acres of developable industrially zoned land. Although a future tenant list has not been developed, the area is expected to serve 6,000 employees. About 300 acres of this land is expected to be marine terminal related, such as bulk, break bulk, and warehousing operations. The remaining acreage has rail and truck access and is expected to house heavy and light industry, preferably related to marine activities. The Port would also welcome campus-type developments (e.g., Nike, Intel); one high-tech tenant (MKA) already operates from Port properties. Because I-5 provides primary vehicular access via Mill Plain Boulevard and 26th Street, traffic congestion could negatively impact the development potential of these properties.

Downtown Vancouver. The City of Vancouver is currently in Phase I of implementing its downtown redevelopment plan, which covers eight city blocks. Phase I consists primarily of large office buildings and some mixed uses, while Phases II and III will provide supporting, primarily retail uses, for a total construction value of \$600 million to \$800 million.



I-5 truck traffic

While construction of Phase I is financed and underway, leasing will not begin in earnest until 2000. In addition, programming of Phases II and III properties is pending and will be contingent upon the success of Phase I projects. Because all properties will rely on I-5 for primary regional access, congestion could impact the marketability of sites in this emerging regional center.

Columbia Corridor/Rivergate. The Columbia Corridor/Rivergate employment center is the location of a substantial portion of transportation-related employment. The area contains two marine terminal complexes (a third is being planned) and is home to the region's only international container terminal. Port of Portland properties have access to two national freight rail carriers, and over 90% of the corridor's reload facilities are located here. The region's major air-freight facility is also located here along with related land side cargo distribution facilities. This area contains a substantial amount of warehouse distribution space that supports retail and wholesale operations throughout the region and several truck freight companies that handle regional and interstate freight movement. The area is also the location of nearly 2,000 acres of vacant land that is planned for future industrial

development. Most of these properties rely on I-5 and I-205 for their primary regional vehicular access and would therefore be negatively impacted by growing congestion on these facilities.

3.2.6 Livability

Livability is a word that is often used to represent a host of factors that collectively describe a “good” place to live. The definition of livability varies from person to person and often includes concepts such as safe neighborhoods, access to jobs and recreation, clean environment, good schools, a strong economy, affordable housing, and moderate cost of living. In the Portland region, livability appears as a goal, explicitly and implicitly, in most local and regional planning documents.

In the context of this report, livability is important for its role in attracting and retaining a skilled labor force. Business location decision-makers increasingly rank quality of life and proximity to a highly skilled labor force high on the list of critical factors needed to attract firms. These two factors are highly correlated, as rising incomes are associated with an increased ability to locate in areas that have a high quality of life, or are “livable.” Importantly, the Portland Development Commission and the Columbia River Economic Development Council, two regional agencies charged with business recruitment, have made the attraction of high-wage jobs an explicit goal.

A large percentage of congestion costs are passed on to employees who face increasingly longer and less reliable commutes, and have less time for leisure or other activities. In congested areas, these costs are substantial, and include:

- General aggravation and stress, reducing worker productivity.
- The inability of some workers to work a traditional 9 to 5 schedule. While some workers may prefer to work non-traditional hours to avoid congestion or for personal reasons, many workers prefer normal working hours to make personal schedules align with those of family (other workers, school-age children) and friends.
- Tardiness and work rescheduling.
- For workers traveling on the job, increased pressure to complete tasks within schedule.

If congestion becomes a chronic problem, residents may relocate to keep the amount of time allocated for travel at a stable level. Relocations may occur within the region or to other regions where reduced congestion and other factors combine to provide a better overall quality of life. Many labor economists have noted, for instance, that the recent migration of workers from southern California to Portland, Denver, Las Vegas, and Phoenix, can be largely explained by a downturn in the regional economy coupled with terrible traffic and environmental problems.

At the same time, every few years a new city or region becomes “hot” for business growth. While most entrenched companies may be less inclined to leave a region due to strong ties to other local businesses and existing customers, over time a pronounced ex-

odus of workers to other regions will lead newly emerging or expanding firms to those other regions as firms chase workers. This has probably happened to a certain extent in Portland with the emergence of the Silicon Forest, and with respect to the high-tech sector, is beginning to play out in other regions (e.g., the research triangle in North Carolina) as well. Thus, business dislocation may not be caused primarily by existing firms leaving an area but rather may be led by dislocated residential growth. In this light, traffic congestion creates considerable costs when measured by quality of life factors, the productivity of capital (e.g., excessive relocation costs), land-use impacts and environmental quality.

3.3 Social and Economic Impacts

The I-5 Trade Corridor functions within a planning environment in which public policy seeks to create both a vibrant urban form and a dynamic business environment. State and local policies and plans that were developed over the last 30 years overlap and complement each other. I-5 Trade Corridor transportation projects will help the region meet many of these planning goals, some of which are described below. Following each goal is a brief statement of why it is important and how the goal can be met.

- (1) **Accommodate the growth of the region within a compact urban form (reduce sprawl).** All local plans support the creation of a compact urban form that focuses growth in areas where there is already urban development and public facilities. The result is a more efficient use of existing public investment and infrastructure. I-5 improvement projects would support the continued development of employment centers in the I-5 Trade Corridor area by maintaining the accessibility of undeveloped sites.
- (2) **Support continued development in designated mixed-use urban centers.** Continued development of mixed-use centers strengthens portions of the I-5 Trade Corridor such as Downtown Portland, the Lloyd Center District and Downtown Vancouver. In addition, new mixed-use centers are proposed along the future Interstate MAX light rail line and in existing transit corridors located both north and south of the Columbia River. I-5 Trade Corridor transportation projects in the corridor support the continued development of existing centers and the proposed redevelopment of mixed-use areas and meet the intent of this goal.
- (3) **Help maintain current travel times between residential areas and employment centers to support access to jobs.** Many new jobs that are projected in the region are expected to locate within or near the I-5 Trade Corridor. I-5 Trade Corridor transportation projects help to maintain the level of accessibility for jobs and workers.
- (4) **Create and maintain a regional transportation system for efficient movement of goods and for meeting the needs of the region's business and consumers.** The efficient distribution of goods by truck is necessary to meet the needs of both businesses and consumers in the region. Many truck freight companies are located in the I-5 Trade Corridor and must use I-5 for the delivery of goods to local businesses. The I-5

Trade Corridor transportation projects address a number of existing problems and improve truck freight movement both in and beyond the corridor.

- (5) **Support access to inter-modal freight facilities in the corridor — truck/rail, marine/truck/rail and truck/air freight — for interregional and international trade.** Truck freight is a vital part of both the international and interregional trade systems. Truck freight is the primary method of delivering wholesale goods from Portland to its wholesale trade area, which covers much of Oregon and Washington. Truck freight also plays a major role in international trade. A substantial portion of the products being delivered to and shipped from marine and airfreight terminals move by truck.

3.4 Leadership Committee Findings

- (1) Without improvements, future congestion in the I-5 corridor threatens the economic promise of the Portland/Vancouver region.
 - (a) Trade and freight movement on I-5 will be significantly more difficult as congestion moves into the mid-day period when the highest numbers of trucks are on the road.
 - (b) Traffic congestion will increase costs and uncertainty for businesses and will influence the willingness and ability of firms to continue to operate or expand at their current locations.
 - (c) The Portland/Vancouver region's ability to profit from the timely delivery of high-value or time-sensitive goods to national and international markets will be affected. Even a few pennies more in transportation costs can make the high volumes of wheat, wood, and scrap metal moving through the region non-competitive in the global market.
 - (d) The lack of accessibility in the I-5 Trade Corridor will adversely impact the ability to attract future jobs to areas such as the Columbia Corridor and central Vancouver.
- (2) Maintaining mobility in the I-5 Trade Corridor is key to supporting quality of life in the Portland/Vancouver region.
 - (a) Regional land-use plans depend on movement between Portland and Vancouver. A significant portion of the labor market for Oregon jobs is located in Vancouver. Almost 50,000 Clark County residents are employed in Oregon and commute to work. Retaining access for commuters is important to support employment growth in Oregon.
 - (b) Increased spillover traffic from I-5 on parallel arterials such as Martin Luther King, Jr. Boulevard, and Interstate Avenue will adversely impact neighborhoods and will diminish the opportunities for more neighborhood business development in these areas.

- (c) Increased congestion on arterial roads through the industrial corridor leading to and from I-5 will dampen the region's ability to meet its job growth goals in the north Portland and Vancouver industrial areas.
- (d) Traffic avoiding congestion on I-5 is overloading I-205, which limits opportunities for continued growth in the I-205 corridor.
- (e) Congestion at the Interstate Bridge threatens development in Downtown Vancouver. Such development is critical to increasing employment in Clark County and therefore reducing demand for commuting trips to Oregon.

4 Needed Improvements

4.1 Improvement Scenarios

To answer the Policy Committee charge, the Leadership Committee developed seven improvement scenarios. The scenarios were analyzed by the technical team to evaluate their respective transportation and economic impacts, costs, and constraints.

The scenarios collectively comprise a multi-modal approach to address congestion and facilitate freight movement in the I-5 corridor. Some scenarios focus on highway improvements while other scenarios emphasize improvements to freight arterials and/or transit improvements. Some scenarios include all of the elements (highway, freight, and transit).

Fig. 4 on page 27 gives an overview of the scenarios and illustrates how different transportation modes could build upon each other to reduce congestion in the I-5 corridor. The following sections describe these scenarios in more detail and how they build upon each other.

4.1.1 Highway Focus Scenarios

The Leadership Committee identified two broad sets of scenarios. The first set focuses on general highway components (i.e., projects). These scenarios would provide additional highway capacity for all vehicles, as well as additional transit capacity. The assumption is that by improving travel conditions for all roadway users — and commuters in particular — problems related to freight movement will be addressed as well. Highway capacity scenarios are cumulative, meaning higher-ordered scenarios build upon, rather than replace, previously described scenarios (Fig. 5).

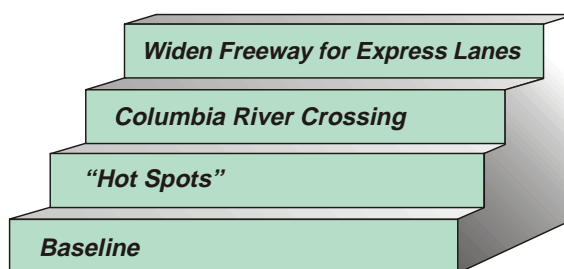


Fig. 5. Highway Focus.

The Baseline Scenario considers only the existing transportation system plus projects in the study area that are already funded or highly likely to be funded. The “Hot Spots” Scenario consists of relieving bottlenecks along I-5 by adding one travel lane in each direction where there are currently only two lanes, along with planned arterial improvements. The Columbia River Crossing Scenario provides a new freeway bridge across the Columbia River, leaving the existing Interstate bridges in place for local traffic, freight, or transit uses. The Widen Freeway for Express Lanes Scenario includes additional capacity along I-5 including separated express travel lanes.

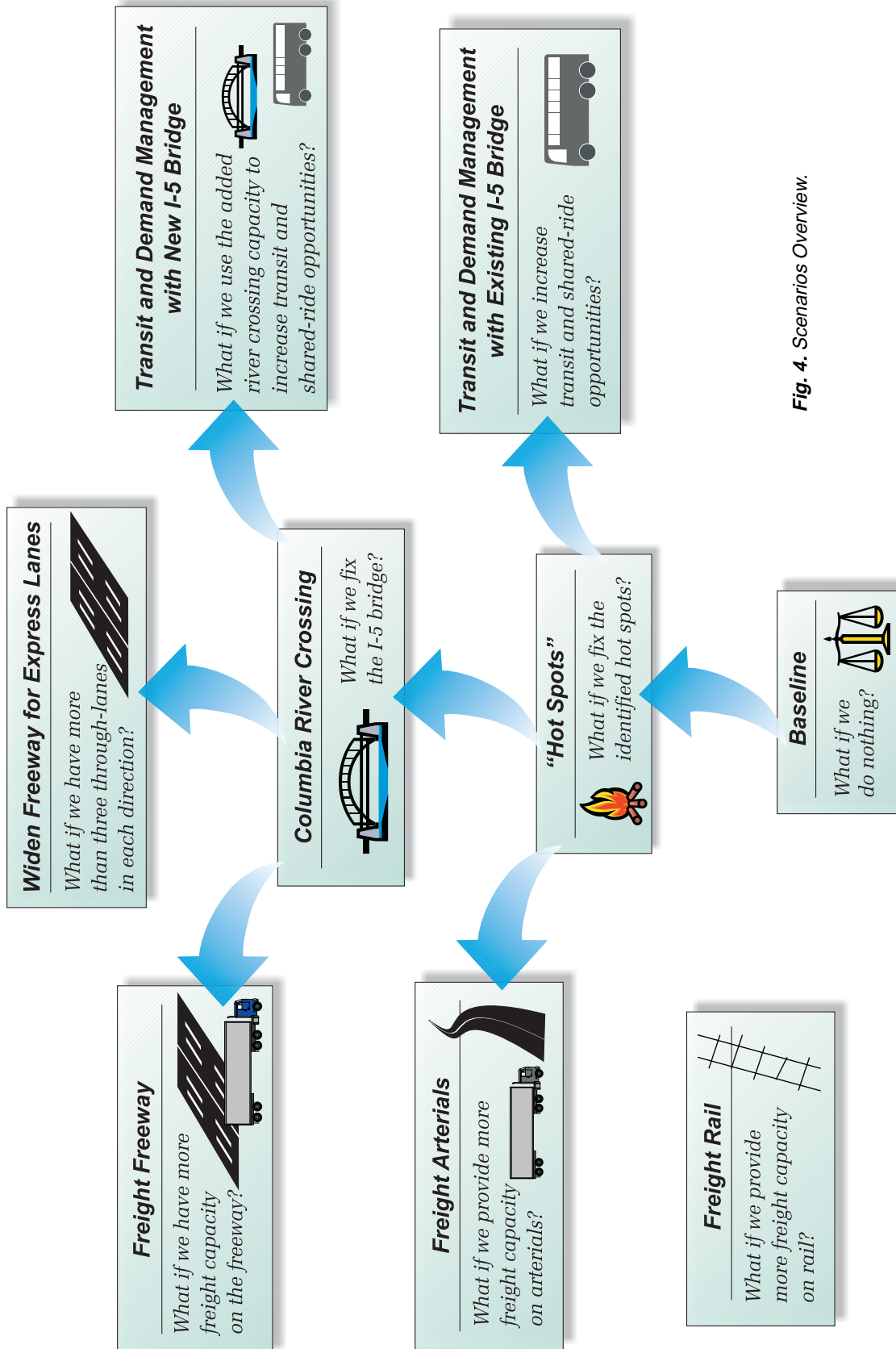


Fig. 4. Scenarios Overview.

4.1.2 Freight Focus Scenarios

A second set of scenarios that focuses specifically on facilitating freight movement was developed. As shown in Fig. 6, these scenarios do not build on each other. Some of these scenarios may include (build upon) the highway capacity scenarios.

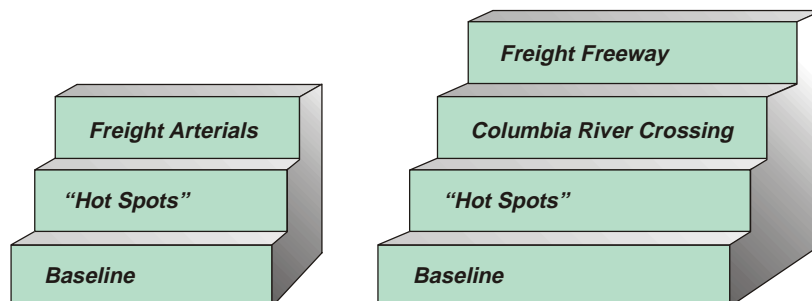


Fig. 6. Freight Focus.

The Freight Arterial Scenario features a new arterial roadway and bridge crossing the Columbia River across West Hayden Island, linking North Portland Road and Marine Drive to Mill Plain in Vancouver. A new interchange would be built at Hayden Island, enabling closure of the existing I-5 interchange. The new arterial roadway/bridge would be free for all freight and commercial traffic, but general purpose traffic not entering or exiting at Hayden Island would pay a toll.

The Freight Freeway Scenario adds facilities to improve truck access between Marine Drive and I-5 to and from the north. Under this scenario, the Hayden Island interchange would be removed and a new, four-lane, general-purpose arterial linking Marine Drive and Hayden Island would be built west of the existing Interstate bridges.

4.1.3 Transit and Demand Management Focus Scenarios

The Leadership Committee developed two scenarios that focus on improving transit and implementing policy changes to reduce demand in the corridor (Fig. 7).

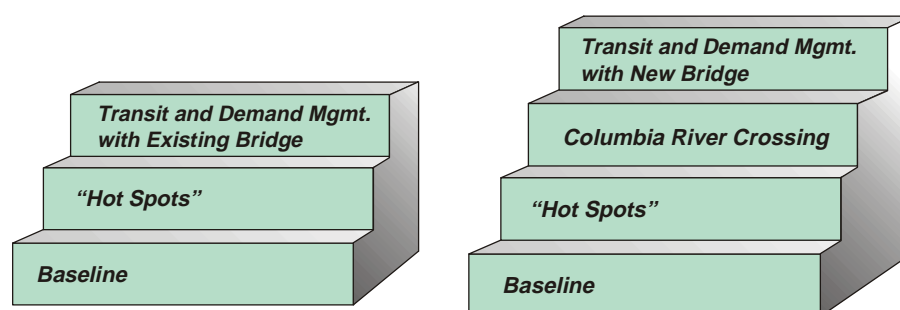


Fig. 7. Transit and Demand Management with Existing Bridge and Transit and Demand Management with New Bridge Scenarios.

The Transit and Demand Management with Existing Bridge Scenario was intended to test an aggressive transit scenario that did not include new highway capacity across the river. The scenario included a light rail system in Vancouver that would connect with the planned Interstate MAX light rail line in Oregon. The committee chose to use light rail in this scenario because it is difficult for transit to be competitive in a congested corridor without an exclusive right of way. Buses, even express buses, are delayed by the same congestion as passenger vehicles, and there is no time-travel savings.

The Transit and Demand Management with Existing Bridge Scenario included two demand management elements, an increase in the cost of parking at selected locations and a shift of 25,000 future jobs from Oregon to Washington. Both of these demand management elements could be challenging to implement. In the case of the job shift, the intention was to test the effectiveness of land-use and other policies to stimulate job growth in Washington. This is an aggressive assumption and would require significant changes in areas that public policy does not usually influence.

The second transit scenario was built on a Columbia River crossing and included a light rail system in Vancouver that would connect to the planned Interstate MAX light rail line in Oregon. This scenario also included the shift of 25,000 future jobs from Oregon to Washington. Due to increased capacity with a new Columbia River crossing, this scenario included a high occupancy vehicle (HOV) lane from 134th Street in Washington to Going Street in Oregon.

4.1.4 Freight Rail

The committee did not develop a detailed Freight Rail Scenario because of the difficulty of analyzing freight rail operations. However, the committee did identify several improvement scenarios that will be developed further in Task 2:

- expanded Columbia River crossing capacity
- rail sidings
- new rail connections
- modifying the existing rail bridge to reduce the number of openings of the Interstate Bridge

Further development of this scenario will require considerable involvement on the part of private rail operators. This scenario will be developed and analyzed further in Phase II.

4.1.5 Summary of Scenarios

The scenarios described in this report can be organized as shown in Fig. 8. The scenarios and their modal elements are described in Fig. 9 on page 30a.

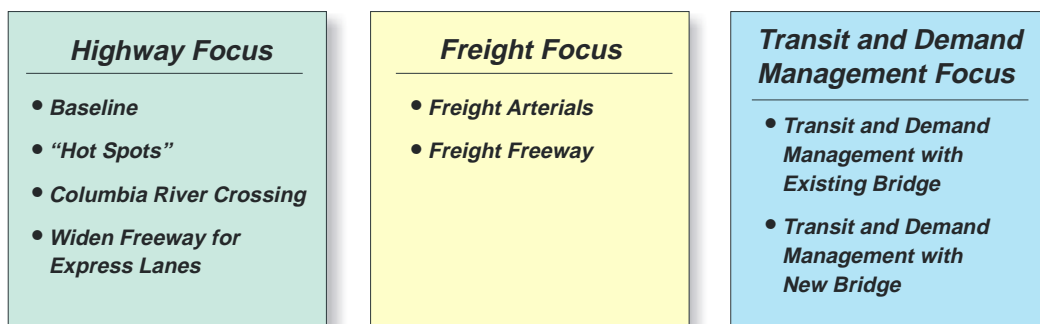
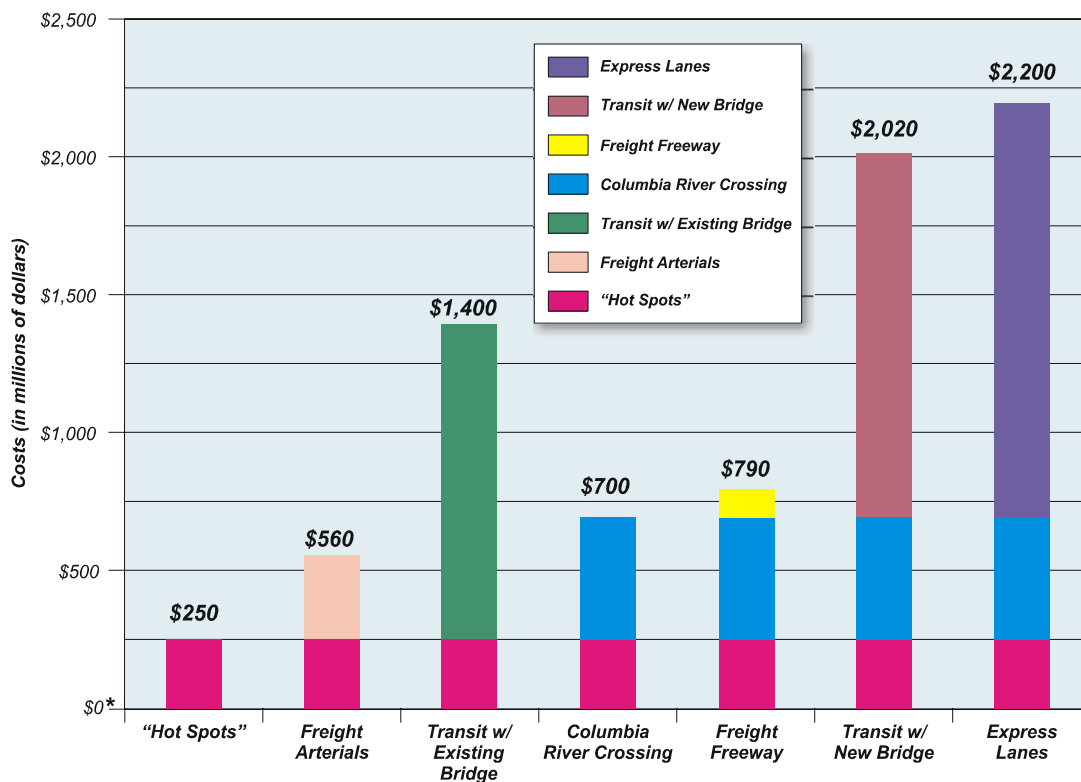


Fig. 8. Three Groups of Scenarios.

Fig. 10 shows estimated capital costs for each of the scenarios. Costs are conceptual estimates and are intended to show primarily the different investment options at this early stage of the planning process. These costs will be refined further during subsequent phases of the study.



*Costs do not include costs of the Baseline Scenario and Planned Improvements.

Fig. 10. Estimated Capital Costs for Each of the Scenarios.

Some components of scenarios are projects under development by local transportation agencies and jurisdictions. For these projects, costs developed by the responsible agency were used. Costs for scenario components developed for this study were based on actual costs for recently completed similar projects. Since the concepts for these scenarios are at a very early stage of design, contingencies have been added to the estimates to account for unknowns. All costs are in 1999 dollars

4.2 Transportation Performance of Alternative Scenarios

The alternative scenarios were analyzed to compare their performance using five key measures. These measures reflect important goals for the community and are:

- **I-5 mainline operations, with emphasis on the Columbia River crossings:** I-5 operations give a sense of future congestion on Interstate 5. Traffic congestion on I-5 could affect the future growth of jobs and housing in Clark County, which will in turn affect jobs and housing growth in Oregon.
- **Impacts to travel demand on I-205:** As the other crossing of the Columbia River, the future of I-205 is inextricably linked with I-5. Traffic diverting from I-5 will increasingly cause traffic problems on I-205. This will affect the potential for growth in the I-205 corridor and compromise the region's major bypass route.
- **Arterial roadway operations:** Arterial streets provide the life-blood for communities and neighborhoods. Arterial street congestion can affect local business growth and lead to more traffic on neighborhood streets.
- **Transit ridership demand:** Since even the most extensive improvements will not be able to accommodate all travelers in cars, it is critical to increase transit ridership in this corridor.
- **System-wide measures such as vehicle miles traveled and hours of delay:** This region has established aggressive goals for reducing vehicle miles traveled. Hours of delay give a sense of how the regional transportation system will perform in the future.

The Leadership Committee used Metro's travel demand models to forecast year 2020 automobile and truck traffic demand and commodity flows for each of the scenarios. The models forecast weekday trips for three peak periods: morning, mid-day, and evening. The models projected the number of automobile trips, medium-sized truck trips, and heavy-sized truck trips on the roadway network. For further information on this topic, see the technical memorandum, "Transportation Assessment of Alternative Scenarios."

It should be noted that the models used for this analysis have two significant limitations. First, they use a fixed land-use forecast that is not able to account for changes in demand that would occur with changing land-use patterns, and second, they use a fixed forecast for commodities that does not account for large-scale changes in the regional economy. The models are intended to help with the comparison of scenarios, not to predict the fu-

ture. For further information on this topic, see the technical memorandum, “2020 Baseline Conditions.”

4.2.1 I-5 Operations

Travel Demand. As shown in Fig. 11, year 2020 evening peak-hour travel demand at the Interstate Bridge would be fully served under only two scenarios: (1) Widen Freeway for Express Lanes and (2) Transit and Demand Management with New Bridge. For all of the other alternative scenarios, evening peak-period travel demand would not be completely served, resulting in congestion and queuing along I-5 for several hours each evening and requiring many motorists to travel before or after the two-hour period, thereby causing “peak spreading.”

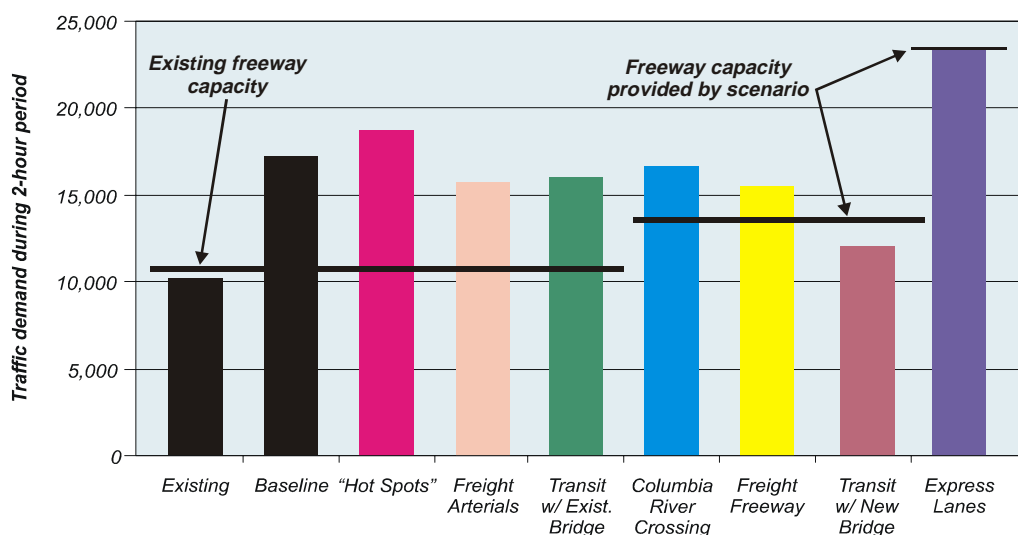
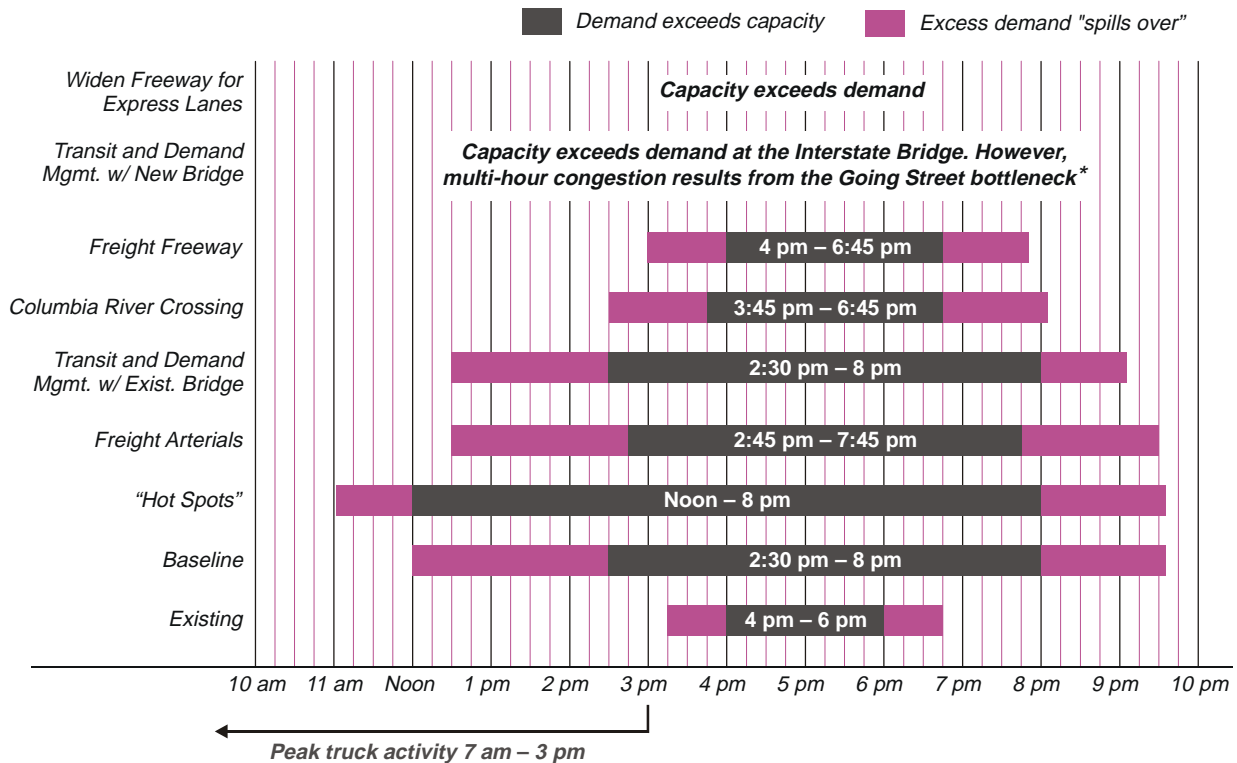


Fig. 11. Projected Evening Peak-Period Vehicle Demands, I-5 at Columbia River, for Year 2020. Comparisons are based on Metro emme/2 results.

Fig. 12 illustrates the concept of evening “peak spreading” at the Interstate Bridge for each alternative scenario. The black portion within each horizontal bar signifies the portion of time when northbound travel demand would theoretically exceed the bridge’s available capacity. The red portion of each bar denotes the periods during which excess demand would “spill” (i.e., be served). Therefore, again theoretically, over-capacity conditions would occur throughout these periods, and in some cases for over ten hours. Of course, such extreme congestion is unlikely to actually occur because many motorists would find it intolerable and would take other actions to avoid the delays, e.g., decide to work and/or live elsewhere, commute by transit or telecommute, etc. Still, the extension of peak periods would significantly interfere with periods of high truck activity throughout the study area, as shown in Fig. 12.



*The "Going Street bottleneck" is caused by the reduction of one general-purpose lane to provide an HOV lane at Going Street. This problem will be analyzed in more detail in Task 2.

Fig. 12. Projected Afternoon "Peak Spreading" at the Interstate Bridge for Year 2020.

In 2020, almost 500 trucks per hour would travel northbound over the bridge during the evening peak period under the Baseline Scenario. However, almost 800 trucks per hour would travel northbound during the mid-day period (2 to 3 pm). Thus, as the peak period spreads, freight mobility becomes increasingly impacted.

Under the Baseline Scenario, afternoon queues for northbound traffic would extend from the Interstate Bridge over six miles south to beyond I-84. Substantial morning queuing would also occur, with the capacity constraints at the Interstate Bridge influencing traffic operations as far north as I-205. As shown in Fig. 12, the duration of the peak would be slightly lengthened under the "Hot Spots" Scenario. Improvements to I-5 through north Portland would attract more vehicles to the highway, but the "Hot Spots" Scenario does not include any changes in the capacity of the Interstate Bridge. As a result, congestion and queuing at the bridge could be expected to worsen.

Some relief from the projected queuing would be obtained by the Freight Arterials and the Transit and Demand Management with Existing Bridge Scenarios. Although neither scenario would add highway river crossing capacity, both would reduce the demand for travel on I-5. The Freight Arterials Scenario would shift about 6,000 vehicles in the peak period to the new bridge across the Columbia at West Hayden Island and move Hayden Island access to the arterial bridge. Both of those scenarios would improve highway operations directly. The Transit and Demand Management with Existing Bridge Scenario would

Morning southbound traffic in Vancouver



also reduce cross-river commuting by shifting a large number of future jobs to Clark County and by encouraging the use of transit for the remaining interstate trips.

The new bridge capacity included in the Columbia River Crossing and Freight Freeway Scenarios would reduce queuing caused by congestion at the Interstate Bridge by about 40% compared to the Baseline Scenario.

However, the highway would still operate over capacity for about three hours every day, which could potentially impact traffic for up to six hours per day due to the anticipated “peak spreading.”

Two of the scenarios would potentially fully address afternoon peak-period congestion. The Widen Freeway for Express Lanes Scenario, which includes reversible express lanes and light rail service to Clark County, is projected to provide sufficient capacity to meet travel demand in the corridor. The Transit and Demand Management with New Bridge Scenario would address travel demand both by providing more capacity (highway lanes and transit service) and encouraging job shifting to Clark County.

Highway Travel Times. The demand management and capacity enhancements in the corridor would also improve travel times on the highway. Today it takes almost 27 minutes to travel along I-5 between I-84 and I-205 during the evening peak period. As shown in **Fig. 13**, in the year 2020 under the Baseline Scenario, this travel time would increase to almost 45 minutes. All of the other scenarios would reduce travel times, with the Widen Freeway for Express Lanes Scenario actually decreasing the time to less than it is today (24 minutes). The “Hot Spots” and Freight Arterials Scenarios would have the second

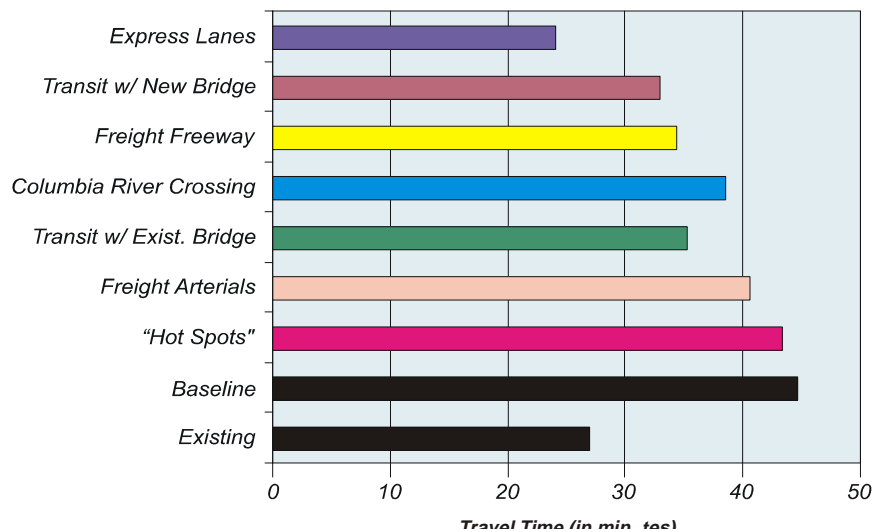


Fig. 13. Projected Evening Peak-Period Travel Time, Northbound I-5: I-84 to I-205, for Year 2020. Comparisons are based on Metro emme/2 results.

and third highest travel times, respectively. Similar travel time trends would occur between I-205 and I-84 during the morning peak period

4.2.2 I-205 Travel Demand

Each scenario would result in different travel demand along I-205. As illustrated in Fig. 14, under the Baseline and “Hot Spots” Scenarios, future northbound travel demand may not be served by the Glenn Jackson Bridge, resulting in congestion during the evening peak period along this interstate corridor. Travel demand associated with several other scenarios could also approach or exceed I-205’s capacity. Fig. 14 shows the effect that additional capacity in the I-5 corridor would have on travel demand in the I-205 corridor.

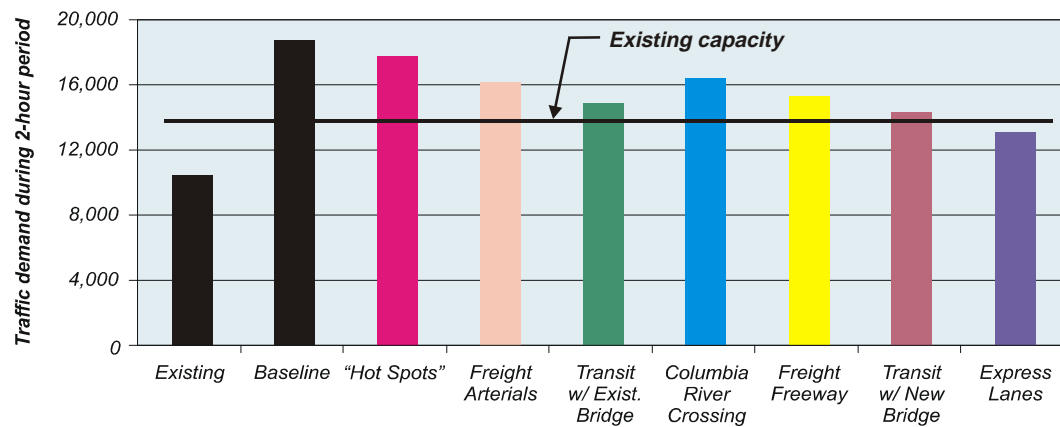


Fig. 14. Projected Peak-Period Vehicle Demands, I-205 at Columbia River, for Year 2020. Comparisons are based on Metro emme/2 results.

4.2.3 Arterial Operations

Compared to existing conditions, arterial roadway traffic volumes are projected to increase significantly under the Baseline Scenario. Within the study area, arterial traffic would more than double on segments of NE 134th Street, Martin Luther King, Jr. Boulevard, Marine Drive, and Lombard Street. Substantial increases would result along many other arterial roadways, too, as increased highway congestion would send long-distance trips to these roadways. Some of the key locations with significant increases in traffic would include Mill Plain Boulevard just to the west of I-5, Marine Drive west of I-5, and Denver Avenue at Columbia Boulevard.

Each of the other scenarios would impact arterial roadway volumes and traffic operations differently when contrasted to the Baseline Scenario. In general, the scenarios that provide increased capacity across the Columbia River would offer less disruptive conditions along major freight corridors; however, added capacity on I-5 would typically result in increased traffic volumes on arterials near major interchanges with the interstate.

In addition to the locations identified above that would show significant increases under the Baseline Scenario, the arterials most likely to experience major increases resulting from

Southbound on-ramp to I-5 at SR 14



capacity improvements on I-5 include Fourth Plain Boulevard west of I-5, Mill Plain east of I-5, and North Portland Road north of Columbia Boulevard. Reductions in arterial traffic volumes would typically be found on Marine Drive west of I-5, except for the Freight Arterials and Freight Freeway Scenarios, which would result in conditions similar to the Baseline Scenario on that segment of Marine Drive.

The two Transit and Demand Management Scenarios (with Existing Bridge and with New Bridge) would generally reduce most arterial roadway demand in Multnomah County, due primarily to the job shift to Clark County and the extensive expansion of light rail service. However, travel on Mill Plain and Fourth Plain Boulevards would increase somewhat, due to the increased commuting trips within Clark County.

4.2.4 Transit Ridership

Metro’s travel demand models were used to compare projected peak-period transit ridership for each scenario across the Interstate Bridge and throughout the I-5 corridor. Transit ridership is the number of person-trips taken by bus and/or light rail. **Fig. 15** depicts the forecasted total peak-period transit ridership (peak morning two hours plus the peak evening two hours) for the scenarios.

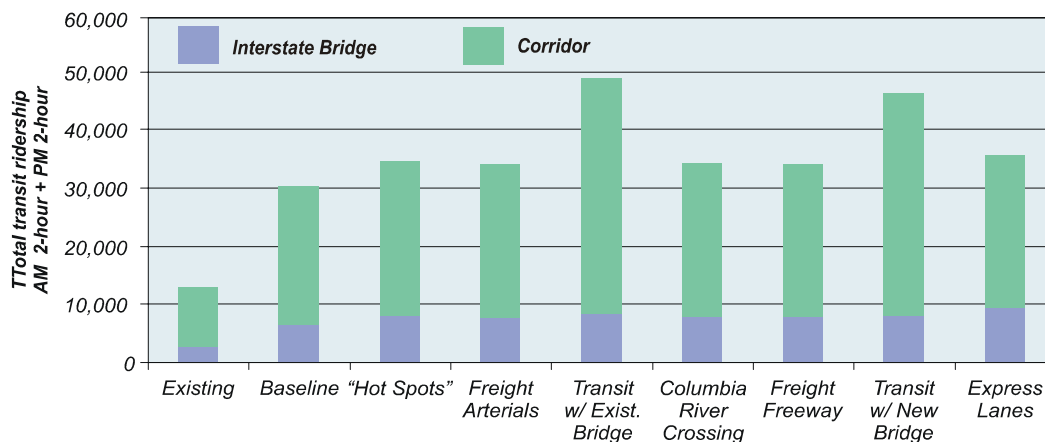


Fig. 15. Projected Peak-Period Transit Ridership along I-5 and in the Corridor, for Year 2020. Comparisons are based on Metro emme/2 results.

Under the Baseline Scenario, the number of peak-period (four hours) transit trips across the Interstate Bridge would increase from the current 2,700 to 6,500 by the year 2020, and throughout the corridor, from the current 13,000 to about 30,000 by the year 2020.

Under the “Hot Spots,” Freight Arterials, Columbia River Crossing, and Freight Freeway Scenarios, over 34,000 peak-period transit trips would occur in the corridor, a 14% in-



MAX light rail

crease compared to the Baseline Scenario. The increase would be due primarily to the proposed MAX light rail extension from the Rose Quarter to the Expo Center and some additional congestion expected along I-5. About 7,900 peak-period transit trips are projected across the Interstate Bridge in 2020.

Although the Widen Freeway for Express Lanes Scenario would add substantial highway capacity, this scenario would result in higher transit ridership than the above scenarios due to the further extension of MAX light rail across the Columbia River to Clark College and the ability of express buses to travel faster within the express lanes. The scenario would result in almost 35,600 peak-period corridor transit trips, a 17% increase over the Baseline Scenario. Almost 9,300 peak-period transit trips would occur across the Interstate Bridge.

The Transit and Demand Management with Existing Bridge Scenario would result in the highest transit demand of all of the scenarios. This scenario would add extensive transit service in lieu of substantially increased highway capacity. It would extend the MAX light rail system beyond the Expo Center to 134th Street (via I-5) and to the Vancouver Mall (via SR 500), and add extensive feeder and local buses, as well as express buses. However, no substantial highway improvements beyond those in the “Hot Spots” Scenario would be included. The Transit and Demand Management with Existing Bridge Scenario would result in almost 49,000 peak-period corridor transit trips (a 61% increase over the Baseline Scenario) and 8,400 peak-period transit trips across the Interstate Bridge. Projected highway transit demand would be substantially lower if the employment shift from Multnomah County to Clark County is not assumed — that is, the job shift to Clark County would reduce the pool of potential transit riders in the corridor.

Finally, the Transit and Demand Management with New Bridge Scenario would result in the second highest transit demand of all the scenarios. This scenario would offer transit elements similar to the Transit and Demand Management with Existing Bridge Scenario but would add increased highway capacity and a new river crossing similar to that proposed in the Columbia River Crossing Scenario. Under the Transit and Demand Management with New Bridge Scenario, highway enhancements would decrease transit demand and result in nearly 46,200 peak-period corridor transit trips (a 52% increase over the Baseline Scenario), while over 8,100 peak-period transit trips would occur across the Interstate Bridge. Again, projected highway transit demand would be substantially lower if the employment shift from Multnomah County to Clark County is not assumed.

4.2.5 System-Wide Measures of Performance

This section discusses each scenario’s performance from a system-wide perspective by looking at two measures of performance: (1) estimated vehicle hours of delay (VHD), which is the total number of hours of delay caused by congestion on the regional highway

network during peak periods, and (2) vehicle miles of travel (VMT), which is the total number of miles traveled by all vehicles on the roadway network during peak times.

VHD and VMT were determined for the scenarios during all three of the study peak periods using Metro’s 2020 freight commodity travel demand models. Separate VHD and VMT estimates were developed for all vehicle classifications (including trucks) and for trucks only (medium and heavy trucks).

Projected evening peak-hour VHD for all scenarios is shown in **Fig. 16**. System-wide VHD is projected to grow at a much faster rate than the overall increase in VMT. As shown in **Fig. 16**, about 14,000 VHD could be expected in the corridor under the Baseline Scenario during the 2020 evening peak two-hour period, which is significantly higher than the existing (1999) condition of nearly 4,500 VHD and represents an increase of over 200%.

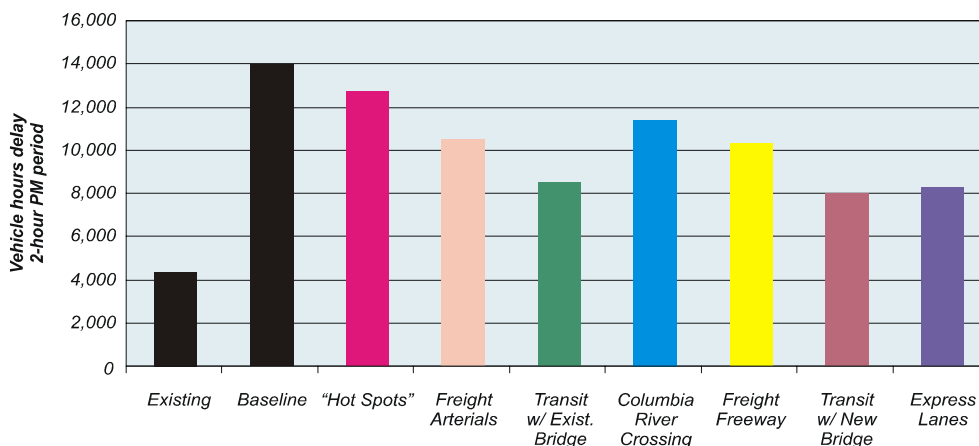


Fig. 16. Projected Evening Peak-Period VHD in the I-5 Corridor for the Year 2020. Comparisons are based on Metro emme/2 results

By comparison, VMT is expected to increase from today’s 650,000 to 886,000 in 2020, a more than 35% increase (**Fig. 17**). The much greater proportional increase in VHD is symptomatic of an increasingly capacity-constrained transportation system.

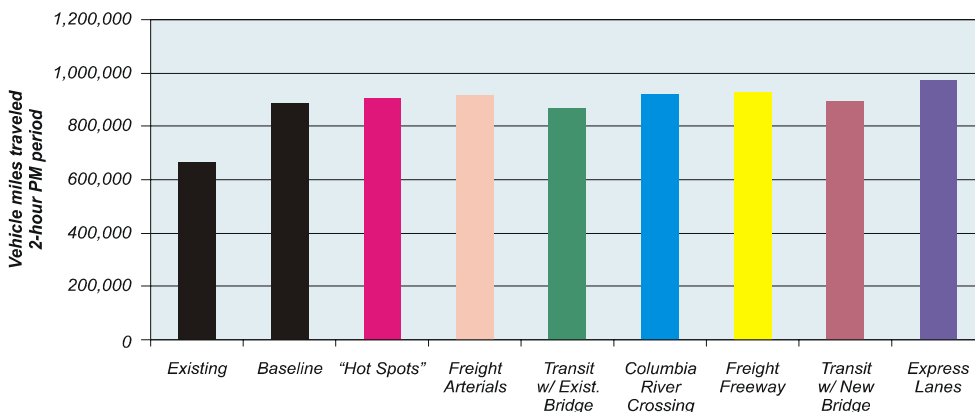


Fig. 17. Projected Evening Peak-Period VMT in the I-5 Corridor for the Year 2020. Comparisons are based on Metro emme/2 results.

Total VMT increases for all vehicles are projected to be highest during the evening peak period, both in the corridor and in the larger study area. Truck VHD is generally expected to increase at a substantially higher rate than all vehicle VHD for most of the alternative scenarios. Similarly, truck VMT is expected to increase at a faster pace than all vehicle VMT. These trends signify the projected increased number of freight trips and reliance upon the I-5 corridor by the year 2020.

To varying degrees, all scenarios would significantly reduce delay compared to the Baseline Scenario. Under the “Hot Spots” Scenario, 2020 evening peak-period VHD for all vehicles in the corridor would decrease by about 9% (6% decrease for trucks), due primarily to the removal of I-5’s current bottlenecks. For the Freight Arterials Scenario, which builds on the “Hot Spots” Scenario by adding a parallel bridge and other arterial connections, peak-period VHD for all vehicles would decrease by 25% (33% for trucks).

The Columbia River Crossing Scenario would decrease peak-period VHD for all vehicles (and for trucks only) by 19% since substantial capacity would be added at the Interstate Bridge. The Freight Freeway Scenario would decrease VHD even more due to the interchange modifications at Columbia Boulevard and Marine Drive and the removal of the Hayden Island interchange. Peak-period VHD for all vehicles would decrease by 26% (33% for trucks).

The significant highway capacity obtained under the Widen Freeway for Express Lanes Scenario would reduce 2020 peak-period VHD for all vehicles in the corridor by 41% compared to the Baseline Scenario. The added capacity would reduce delays experienced by trucks by 48%, the greatest reduction of all of the alternative scenarios.

The Transit and Demand Management with Existing Bridge Scenario would result in almost the same VHD reductions as the Widen Freeway for Express Lanes Scenario. This Transit and Demand Management with Existing Bridge Scenario would reduce evening peak-period VHD by 39% for all vehicles (31% for trucks).

Finally, the Transit and Demand Management with New Bridge Scenario would result in the highest VHD reduction for all vehicles. It would reduce evening peak-period VHD by 43% in the corridor (38% for trucks). This substantial delay reduction would come from the added highway capacity and the reduced number of corridor vehicle-trips with an extended light rail system and long-distance commuting due to the job shift.

VMT would generally increase under each of the scenarios by as much as 4 to 5% for all vehicles, and 3 to 6% for trucks. A significant exception would be for the Transit and Demand Management with Existing Bridge Scenario, which is the only scenario that would reduce VMT (by 2%). The VMT reduction would result primarily from the shifting of jobs from Multnomah County to Clark County. Also, the additional highway capacity provided by the Widen Freeway for Express Lanes Scenario would allow more and longer trips, thereby increasing peak-period VMT by 10% for all vehicles.

4.3 Rail Scenario



Union Pacific Railroad

The committee met with the vice president of Burlington Northern and discussed the findings of a study conducted by the Southwest Washington Regional Transportation Council. The committee's brief analysis concluded:

- There is a potential rail-capacity problem in the corridor. The projected growth of passenger and freight rail in the corridor will eventually exceed the capacity of the Burlington Northern north-south mainline.
- Several sections of the rail line are not constructed for maximum capacity. These sections should be examined in more detail.
- The Columbia River rail bridge limits the capacity of the north-south mainline.

Due to a lack of staff resources, the committee was not able to address freight-rail congestion in depth. Phase II of this study will focus on freight-rail issues.

4.4 Economic and Social Benefits

Based on the transportation performance results discussed above, the alternative scenarios offer varying levels of potential economic benefits. This section describes some of the benefits and estimated costs of developing the scenarios (for a more detailed description of the estimated costs for developing specific projects in the scenarios, see the report, "Development of Alternative Scenarios"). The economic benefits were estimated by Cambridge Systematics using the REMI model (from Regional Economics Models, Inc.), which forecasts a wide range of regional economic indicators based on future traffic demand and commodity flows.

This section also presents a brief qualitative assessment of potential travel benefits in terms of their ability to achieve local and regional plans (**Section 3.3** describes the impacts of congestion on regional plans in more detail). Benefits are grouped under a number of broad objectives that are important to citizens of the region:

- supporting the regional economy and increasing trade
- reducing vehicle demand
- improving evening travel times
- supporting local and regional land-use plans
- considering capital costs
- evaluating capital cost effectiveness

Benefits related to these objectives are summarized in **Fig. 18** on page 40a (some are described in more detail in **Section 4.2** on transportation performance). **Fig. 18** was developed to allow a side-by-side comparison of the scenarios to help the Leadership Committee determine which elements should be advanced for further consideration. The objectives and the lessons learned from their applications are discussed below.

4.4.1 Supporting the Regional Economy and Increasing Trade

The performance of the I-5 corridor is important because of its critical role in the movement of goods. Improved travel times and safety for trucks and other vehicles used for business and trade enhance the Portland/Vancouver economy directly. Time spent delayed in traffic results in increased costs to businesses, while time saved results in increased profits, lower prices, and/or opportunities for increased sales.

The three scenarios that offer the greatest benefits to business as a result of saved travel time include an increase in capacity across the Columbia River and/or a reduction in vehicle trips due to demand management measures. These elements generate the greatest travel time and other economic benefits for businesses because these improvements make more efficient movement of goods in and out of the region possible.

The Transit and Demand Management with New Bridge Scenario would produce the greatest annual business savings due to travel time reductions and the largest increase in trade. The Widen Freeway for Express Lanes Scenario would produce the next greatest level of business savings followed by the Transit and Demand Management with Existing Bridge Scenario. In comparison, the “Hot Spots” Scenario would produce the least business savings and trade benefits.

4.4.2 Reducing Vehicle Demand

The Portland/Vancouver region is committed, as a matter of policy, to reduce its use and dependence on automobiles. Doing so will not only reduce congestion but also improve air quality and reduce impacts on residential neighborhoods. Potential reductions in vehicle use under the different scenarios are estimated using three indicators: the amount of transit ridership, the number of miles traveled daily in vehicles in the evening rush hour, and the amount of travel at mid-day (especially important to trucks, which often travel at mid-day to avoid congestion in the morning and evening commuting period).

Based on these indicators, the two scenarios that include balancing jobs on both sides of the Columbia River (the two Transit and Demand Management Scenarios) are especially effective. These scenarios reduce trips across the river, which generate congestion. However, implementing these scenarios could be very difficult. Unlike the other scenarios, balancing jobs requires affecting market conditions through public policy. The Transit



*The Interstate
Bridges*

and Demand Management with Existing Bridge Scenario actually reduces afternoon and mid-day miles of travel relative to the Baseline Scenario. The use of parking pricing on both the Oregon and Washington sides of the river, as well as the provision of additional transit service, further contribute to the reduction in vehicle demand in these scenarios. **Section 4.2** on transportation performance elaborates further

on the effects of the different scenarios on transit ridership and afternoon peak miles of travel.

4.4.3 Improving Evening Travel Times

The evening rush hour is typically the busiest hour of the travel day. By reducing travel times at this hour of the day, the local economy and the region's residents can realize significant economic benefits.

Based on three measures of travel delay (travel time, hours of delay for trucks, and hours of delay for cars), the Widen Freeway for Express Lanes Scenario offers the greatest travel time benefits during the evening rush hour for both trucks and commuters as a result of its increased highway capacity. Both of the Transit and Demand Management Scenarios also offer high levels of benefits in the form of reduced vehicle delay due primarily to increased transit ridership. **Section 4.2** on transportation performance results elaborates further on peak-hour travel times.

4.4.4 Supporting Local and Regional Plans

Local planning agencies have collaborated to produce noteworthy regional, local and neighborhood plans that focus on issues associated with livability and reduced reliance on automobiles. To consider the ways in which the I-5 scenarios would support local and regional plans, five locations were analyzed: (1) Downtown Vancouver, (2) the Columbia River industrial corridors, (3) north Portland neighborhoods, (4) Downtown Portland, and (5) the I-205 corridor.

The scenarios differed in benefits, with each producing benefits for different parts of the corridor, depending on, for example, whether the transportation benefits affect east-west or north-south travel. Scenarios that include a new bridge crossing of the Columbia River significantly reduce congestion in Downtown Vancouver. The exception to this is the Transit Demand Management with New Bridge Scenario, due to the conversion of one southbound general-purpose lane to an HOV lane south of the Columbia River. This scenario and the "Hot Spots" Scenario produce the greatest levels of congestion in Downtown Vancouver.

Travel times in industrial corridors do not vary substantially across the scenarios. The Freight Arterials Scenario, which provides a direct port-to-port connection and upgrades North Portland Road and Columbia Boulevard, offers the greatest reduction in travel time.

North Portland neighborhoods would realize the greatest reduction in cut-through traffic (-21%) under the Widen Freeway for Express Lanes Scenario, followed by the two Transit and Demand Management Scenarios. In comparison, the other scenarios do not appreciably reduce cut-through traffic; the "Hot Spots" Scenario, the next best performer, reduces local traffic by only approximately 5%.

The Widen Freeway for Express Lanes Scenario does the most to improve operations on the Glenn Jackson Bridge by bringing travel demand well below bridge capacity. The next best performing scenarios are the Transit and Demand Management with Existing Bridge and Transit and Demand Management with New Bridge. By causing a substantial gain in transit ridership, these scenarios free up some capacity in the I-5 corridor so that some travelers on I-205 can take more direct routes.

Quantitative estimates of queuing impacts on Downtown Portland (a measure of accessibility) are currently not available. The Widen Freeway for Express Lanes and Transit and Demand Management with Existing Bridge Scenarios, however, are likely to impact circulation on the downtown highway loop (I-5 and I-405) due to the express and HOV lane merge points at I-84 and Going Street. The other scenarios would not have this impact.

4.4.5 Considering Capital Costs

The transportation improvements considered during this phase of the study would have significant capital costs. New or improved interchanges, new bridge crossings, roadway widenings, and safety improvements vary in total cost. In addition, each of the scenarios combines different types of projects and travel modes, resulting in costs that vary from several hundred million dollars to over a billion dollars.

The “Hot Spots” Scenario is the least costly, since it does not include a new bridge or substantial capacity enhancements for any mode of travel. The most costly scenarios include a new Columbia River crossing and/or an extension of light rail into Clark County. The three most expensive scenarios, from most to least, are (1) Transit and Demand Management with New Bridge, (2) Widen Freeway for Express Lanes, and (3) Transit and Demand Management with Existing Bridge. Importantly, all costs are conceptual estimates that will be refined during the next phase of the study. The technical memorandum “Development of Alternative Scenarios” describes in more detail the individual projects that comprise the different scenarios and their associated costs.

4.4.6 Evaluating Cost Effectiveness

Cost effectiveness is a measure of how much each scenario benefits the region in comparison to the costs and is calculated by dividing total estimated benefits for each scenario by total construction costs. This analysis was conducted only to provide a preliminary comparison of the scenarios, and is not designed to determine project feasibility at this early stage in the planning process. This cost-effectiveness analysis considers only some of the more easily quantifiable costs and benefits. Certain benefits, such as those resulting from supporting local and regional plans (e.g., reduced neighborhood cut-through traffic, desired land-use changes), are difficult to measure in dollar terms and have not been estimated. This cost-effectiveness ratio considers only benefits due to reductions in traffic accidents, improvements in travel time for trucks and commuters, reduced vehicle operating costs, and increases in regional real disposable personal income. Similarly, the



C-Tran park and ride transit center

analysis does not include potential pollution (air, noise, and water) costs, short-term costs due to traffic disruption during project construction, potential impacts to environmental resources, and other costs. The only costs considered for this preliminary analysis are the aggregate long-term capital costs of construction of each scenario (it was

not possible to perform a separate analysis for the individual projects comprising each scenario). Finally, all benefits and costs were analyzed using a 20-year planning horizon; some benefits and costs could have more lasting impacts. A more complete list of benefits and costs will be analyzed during the next phase of the study and cost effectiveness may be measured for the separate projects that comprise the scenarios. Until then, it is not possible to determine definitively which scenario performs best under this criterion.

The preliminary analysis indicates that of the seven scenarios, those that provide dedicated facilities to facilitate freight movement (the Freight Arterials Scenario and the Freight Freeway Scenario) performed especially well in terms of cost effectiveness. In addition, the “Hot Spots” Scenario proved especially cost-effective. Despite the relatively low benefits provided under this scenario, its low cost makes it the most cost effective of all the scenarios (this scenario is a building block in all the other scenarios as well). In comparison, the two Transit and Demand Management Scenarios, which offer high levels of benefits, are among the least cost effective due to the cost of building an extensive transit network in Clark County (the costs of these scenarios also do not include any potential costs needed to shift 25,000 future jobs to Vancouver). The next phase of the study will also consider scenarios with less expensive transit projects. Finally, the Widen Freeway for Express Lanes Scenario is the least cost-effective scenario due to the cost of widening the highway, although this scenario does provide substantial travel benefits.

4.5 Leadership Committee Findings

- (1) Doing only the currently planned projects in the corridor is unacceptable.
 - (a) Without additional transportation investments, congestion on I-5 and corridor arterials will greatly increase. This will dramatically affect access to important port and industrial property and access to jobs and housing in the bi-state region.
- (2) The magnitude of the problem requires new freight and passenger capacity across the Columbia River.
 - (a) Addressing congestion in the corridor will require addressing the bottleneck created by the existing Interstate Bridge.

-
- (3) The complexity of the problem requires that the new capacity be multi-faceted.
 - (a) It should include highway, transit, rail, and demand management, while also supporting the vitality of the river-based economy.
 - (4) The region should maximize the capacity of the existing system.
 - (a) This can be accomplished by encouraging the Transit and Demand Management Scenarios, including transit, car-pooling, flex time, ramp metering, and incident response.
 - (5) The region's decision-makers should begin now to pursue a phased approach to addressing freight and passenger mobility in the I-5 Trade Corridor.
 - (a) The building blocks we recommend for further evaluation (not in order) should be:
 - (i) Improving bottlenecks and weaving problems on I-5 at:
 - (1) the Rose Quarter and Delta Park in Oregon
 - (2) Downtown Vancouver and 99th to 134th in Washington
 - (ii) Providing new highway and transit capacity across the Columbia River and in the I-5 corridor.
 - (iii) Improving critical freight arterials in the corridor such as Marine Drive and Columbia Boulevard.
 - (iv) Improving the freight rail system in the corridor, in cooperation with private operators of the rail system.
 - (b) The cost of individual improvements ranges from a few million dollars to several hundred million. Together the cost of these elements could exceed \$1 billion. While this is a significant cost, not addressing the identified problems will have significant impacts on the region's economy and quality of life.
 - (6) Even with the above improvements, there will be a capacity problem.
 - (a) It is important for the future economic health of the region to look at other solutions, including:
 - (i) Managing additional demand through peak-hour pricing of new capacity.
 - (ii) Instituting measures that would promote transportation-efficient development, including a better balance of housing and jobs on both sides of the river.
 - (iii) Providing for further, longer term highway express or HOV lane capacity in the corridor.

5 Funding

As in many western states, Washington and Oregon's transportation needs far exceed available transportation revenues. Over the last 10 to 15 years, both Oregon and Washington have been blessed with a healthy and growing economy, which, combined with the livability of the Pacific Northwest area, have fueled unprecedented growth. The growth has created a demand and need for substantial improvements to the transportation system in order to maintain the mobility of freight and individuals. Unfortunately, the main sources of revenue supporting improvements to the transportation system (state gas taxes and vehicle registration fees) have not kept pace with inflation, let alone growing transportation needs. This problem is exacerbated by the need to maintain and preserve an aging transportation system.

5.1 Current Transportation Resources

Transportation in Oregon and Washington is generally funded by dedicated transportation user fees. In Oregon, of ODOT's \$2 billion 1999-01 budget, 68% comes from state transportation revenue from gas taxes and vehicle registration fees, 31% from federal transportation funds, and 1% from state General Funds and lottery proceeds.

The Oregon State Highway Plan shows that investments totaling \$29 billion should be made over the next 20 years to address highway needs. These investments would maintain and improve the condition of the state highway system and add highway capacity to address traffic congestion. The state and federal revenues that are projected to become available for state highways over the same period total \$14 billion, leaving a \$15 billion gap between needs and resources.

There is a proportionately larger gap at the regional level. While about \$1 billion in state, federal and local revenues will become available over the next 20 years, high priority investments identified in the Regional Transportation Plan total almost \$7 billion. A number of regionally significant projects outside the I-5 corridor cannot be financed today.

Like Oregon, Washington State's transportation system is funded through a system of transportation user fees. About 69% of WSDOT's 1999-01 budget comes from state transportation revenue with the balance coming from federal funds and other reimbursements. WSDOT does not receive any state General Funds or proceeds from the state lottery.

Both states are changing how transportation is taxed. Washington voters repealed the Motor Vehicle Excise Tax and replaced it with a \$30 per year license fee (Initiative 695). WSDOT estimates that Initiative 695 will reduce transportation revenues by \$4.2 billion over the next six years. Oregon voters will decide whether to replace Oregon's truck weight-mile tax with a diesel fuel tax and higher registration fees for heavy trucks. The replacements will not reduce support for Oregon's highways; the new tax system is designed to raise as much revenue as the weight-mile tax that it would replace.

The Washington Highway Plan finds the Washington state highway system in a similar financial condition. Prior to the passage of Initiative 695, needed investments outpaced revenues by about 2 to 1. The Metropolitan Transportation Plan for Clark County finds about \$4 of needed investments for every dollar of projected revenue.

The transportation scenarios outlined in this report are estimated to cost from \$250 million to \$2 billion. None of the improvements beyond the Baseline Scenario is funded in existing regional transportation plans.

5.2 Financing Corridor Improvements

Given the limited transportation resources in both Oregon and Washington, it is unlikely that the major improvements that are needed in the I-5 Trade Corridor could be funded out of existing revenues. Despite this, there are several sources of financing that, when combined, could be used to fund improvements in the corridor.

5.3 Federal Assistance

The most likely source of federal funding for improvements in the I-5 Trade Corridor may be discretionary grants and Congressional earmarks. Most federal transportation money is allocated to the states by formula. The formula funds that come to both Oregon and Washington are generally dedicated to specific programs such as interstate maintenance, safety, and bridge rehabilitation. The federal funding that comes to the states and is uncommitted is distributed through each state's transportation capital plan and is generally distributed to projects throughout the two states. While it may be possible to fund some of the small- and medium-sized improvements needed in the corridor through the two states' regular capital plans, the scope of the improvements needed in the corridor and the competition for the funds makes this a relatively small source of funding.



Fremont Bridge

There are several federal discretionary programs authorized by Congress and administered by the U.S. Department of Transportation that could fund certain improvements in the corridor. These discretionary programs include the National Corridor Planning and Development (NCPD) Program, the Intelligent Transportation Systems Program, the Bridge Program, the Navigational Hazards Program, and the Section 3 Transit Program. The national competition for funding from each of these programs is intense. The federal discretionary bridge program provides an indicator of demand for funding. The program for federal fiscal 1999 was \$109 million, including money allocated in 1998. FHWA received 66 applications totaling more than \$1.1 billion. FHWA

funded 11 projects. These grants were in the range of \$5 million to \$11 million, with the largest (\$30 million) going to strengthen the Golden Gate Bridge to withstand earthquakes.

In addition to the discretionary programs, when Congress reauthorizes the federal transportation act, now known as the Transportation Efficiency Act for the 21st Century (TEA-21), specific projects are often earmarked for funding. Some 1,850 highway projects were earmarked in TEA-21, accounting for \$9.4 billion. The average amount earmarked for a highway project was about \$5 million. TEA-21 also included approval for 108 major transit projects for federal funding and earmarked \$2 billion for 51 projects, an average of \$40 million per project (including \$25 million for the South/North LRT project).

5.4 Tolling

Tolling is authorized by legislation in both Oregon and Washington and has historically been used to fund bridges and ferries. For example, a toll on the first Interstate Bridge financed construction of the second of the two Interstate Bridges between Portland and Vancouver. Currently, there are tolls on two bridges and one ferry across the Columbia River.

A toll on either the Interstate or Glenn Jackson bridges, or both, has the potential to raise a significant amount of new revenue. For instance, a \$2 per car toll on I-5 is comparable in today's dollars to the toll that financed the Interstate Bridge construction in the 1950s. Such a toll could provide sufficient cash flow for bonds to finance construction of major projects in the transportation scenarios.

Federal policy supports tolling and market pricing of roads. TEA-21 authorizes tolls on interstate bridges to build replacement bridges or make other improvements and also on interstate highway segments as part of a pilot program.

State legislative review would be needed for specific proposals. Oregon statutes may need to be changed if a proposal uses toll revenues for a purpose beyond building a bridge. While toll projects are authorized in Washington, legislative approval of tollways is required from the state.

Highway user groups have opposed tolls in the past. The findings of the "Traffic Relief Options Study" (available from Metro) indicate that the public might be more accepting of tolls on new capacity-related facilities than they would be of tolls on existing roads and bridges.

5.5 Regional Taxes / Fees

The tax structures are very different on either side of the river. Portland and Vancouver must work together to develop a consolidated approach to the solution.

–Anthony Ching



While neither Oregon nor Washington has authorized region-wide transportation taxes in the four-county metro area, both states have authorized local taxes at the county and city level. The two local option transportation taxes/fees authorized in both states are gasoline taxes and auto registration fees. Multnomah County currently levies a three cent per gallon tax, and Washington County levies a one cent per gallon tax. Oregon has authorized a local option auto registration fee up to \$15, subject to voter approval. Voters in the three Oregon metro counties rejected proposed fees in November 1996. Washington law authorizes a \$15 local vehicle license fee. Washington’s Initiative 695, which was recently passed, requires voter approval of all taxes and fees.

Table 4 shows how much money would be raised annually by local fees if they were approved region-wide.

Table 4. Annual Estimated Revenue from Local Fees.

Fee Type	Annual Estimated Revenue
\$0.01 per gallon fuel tax	\$5 million to \$7 million
\$1.00 per vehicle per year registration fee	\$1.4 million

If local option taxes are used to finance the transportation scenarios, authorizing statutes may need to allow the revenue to be used outside the jurisdiction that imposes the fees.

5.6 General Revenues

General Funds comprise 36% of Oregon’s \$29.6 billion budget and 50% of Washington’s \$41 billion budget. Very little General Fund revenue in either state is allocated to transportation. Instead, both states have prioritized General Fund spending for services such as public education, human services, and public safety. Given the demand for General Funds, this prioritization is not likely to result in large amounts of new spending by either legislature on transportation projects, even in the I-5 Trade Corridor.



The region’s ability to develop, finance, and implement a strategic multi-modal transportation plan for this corridor will be the key to maintaining the livability and economic vitality of our area.

– Wesley Hickey

5.7 Other Financing Mechanisms

The federal Transportation Infrastructure Finance and Innovation (TIFIA) is a federal credit program whose goal is to leverage

federal funds. TIFIA provides three forms of assistance: secured loans, loan guarantees, and standby lines of credit.

TIFIA may assist in structuring the financial aspects of projects in the transportation scenarios, provided a new source of revenue could be identified, but will not provide new resources.

Grant Anticipation Revenue Vehicles (GARVEE) is another form of federal credit that allows a state to issue bonds backed by the state's future federal highway apportionments. Like TIFIA, GARVEE bonds may assist in structuring the finances for projects but will not provide new resources.

5.8 Leadership Committee Findings

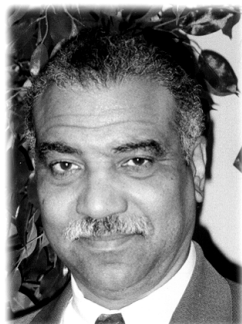
- (1) Funding for major improvements in the I-5 Trade Corridor cannot be accomplished with existing resources.
 - (a) The transportation needs in the Portland/Vancouver region far exceed available funding.
 - (b) In the Portland metropolitan area, the Regional Transportation Plan identifies almost \$7 billion in high priority needs over the next 20 years, yet only \$1 billion in state, federal, regional, and local transportation revenue is available.
 - (c) In Clark County, the Metropolitan Transportation Plan identifies approximately \$2 billion in needs over the next 20 years, yet only \$500 million in state, federal, regional and local transportation revenue is available. Ballot measures in both states have and could reduce available transportation measures even further.
- (2) The region should advocate strongly for federal participation in funding improvements in the corridor.
 - (a) The I-5 Trade Corridor is a critical link in this nation's freight movement network.
 - (b) There is a national interest in ensuring that goods can continue to move through the corridor in an efficient and effective manner.
 - (c) Therefore, the region should seek funding to the fullest extent possible from all appropriate federal highway, transit, and rail programs authorized by Congress.
- (3) Assuming the current structure of public funding, tolling will be required to pay for a new Columbia River crossing and other corridor improvements.
 - (a) Improvements in the I-5 Trade Corridor are likely to be costly, particularly if a new crossing of the Columbia River is pursued.
 - (b) Funding for such bridges has historically been provided through tolls. This continues to be a viable means of financing such improvements.

- (c) The region should consider tolls on other bi-state facilities if it is necessary to balance the traffic flow.
- (4) Both states should make funding of infrastructure improvements in the corridor a priority.
 - (a) Trade activity in the corridor benefits all of Oregon and Washington. Both state legislatures need to recognize the importance of this corridor and consider allocation of transportation and general funds to fund improvements.
- (5) Private financing should be sought where appropriate.
 - (a) There may be certain projects such as improvements to the freight rail system where funding should come primarily from the private sector.
 - (b) Further work will need to be done to identify specific freight rail needs in the corridor.

6 The Next Steps

Our planning needs to continue to support a balance of jobs and housing — this transportation corridor is a critical piece of that puzzle.

— Carl Talton



This Freight Feasibility and Needs Assessment Study is the first step in a three-step process (Fig. 19). The goals of the process are to examine a range of potential options in the

corridor, agree on a scenario for addressing the issues in the corridor, and prepare potential construction projects for environmental analysis and project development. This report concludes Task 1 of Phase I, which was to identify the magnitude of the problem and explore concepts for improving the corridor.

Task 2 of the study will focus on developing a Strategic Plan to identify a long-range regional vision for improvements and management scenarios that will preserve the integrity of the corridor. Task 2 will include extensive public involvement on a range of issues including land-use and transportation impacts, environmental impacts, specific design of future improvements and possible funding scenarios. Task 2 is funded by a grant from the FHWA's Corridor and Border Infrastructure Planning Program.

Phase II of the project could involve project development and Environmental Impact Statements for specific improvements identified in Task 2. Phase II will be initiated after the completion of Task 2.

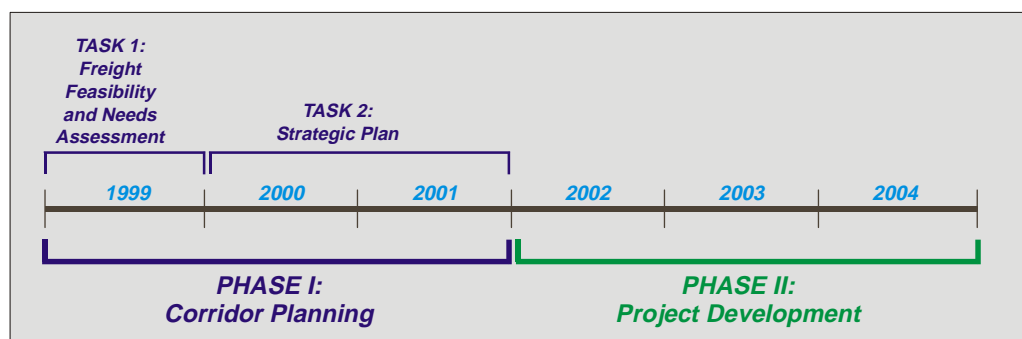


Fig. 19. Process Timeline.

6.1 Leadership Committee Findings

- (1) The Portland/Vancouver region needs to develop a Strategic Plan for improvements in the I-5 Trade Corridor.
 - (a) The Leadership Committee has identified the need for a multi-faceted solution in the I-5 Trade Corridor including demand management techniques, and improvements to the highway, transit and rail system.

- (b) The Strategic Plan should be developed with extensive citizen and resource agency participation in both states and needs to fully evaluate the environmental and social impacts of potential improvements.
 - (c) The specific improvements in the corridor and their phasing will need to be identified and formally accepted into the regional transportation plans in the Portland and Vancouver metropolitan areas.
 - (d) The Strategic Plan must take into account and be coordinated with regional economic development, transportation, and other relevant plans.
- (2) The Strategic Plan should address several areas, including:
- (a) Highway, transit and rail improvements in the corridor.
 - (b) Education and outreach about the critical nature of improvements in the corridor.
 - (c) Demand management techniques for the corridor.
 - (d) Local and regional land-use impacts of corridor improvements in each state.
 - (e) Environmental effects of corridor improvements.
 - (f) Public/private partnerships that may accelerate improvements in the corridor.
 - (g) A finance plan for corridor improvements.
- (3) The region's local, state and federal officials must work together to advocate for improvements in the corridor.
- (a) The problem and the solutions we have identified will require cooperation at all levels of government in both states to ensure that the I-5 Trade Corridor and the Columbia River crossing issue in particular is a priority for both states.

Appendix

Baseline Scenario and Planned Improvement Projects

Table A. Transportation Projects Comprising the Baseline Scenario.

Project	Description
Marine Drive improvements, Phase 1.....	Widen Marine Drive between slough bridge and new bridge to five lanes
South Rivergate overpass.....	Separate rail and vehicular traffic at South Rivergate entrance
Lower Albina RR crossing.....	Auto crossing at Tillamook only; close six other street crossings
Going Street overcrossing improvements.....	Widen intersection and add additional eastbound lane on structure
Airport Way widening.....	Widen to six lanes adjacent to PIC (NE 82nd to I-205)
47th Avenue roadway and intersection improvements.....	Improvements (e.g., sidewalks, bike facilities) from Cornfoot to Columbia
Airport Max.....	Light rail extension from Gateway to PDX
Marine Drive intersection improvements.....	Modify three intersections in Bridgeton, near Marine Drive
Broadway-Weidler, Phase 2 and Phase 3.....	Main Street improvements from I-5 to NE 24th
NE Alberta pedestrian improvements.....	Streetscape improvements from MLK to NE 33rd
Cascades/Airport Way interchange.....	Construct a full interchange at Cascades (new road)
Airport Way return/exit ramp improvements.....	Improvements at entry/exit to terminals
TEA-21 transit priority signal improvements.....	MLK; Killingsworth; 82nd
MLK@Columbia interim improvement.....	Right turn westbound Columbia to MLK
MLK Main Street improvements.....	Phase 2 and Phase 3
ODOT STP and RTC Metropolitan TIP.....	Outside study area
Expanded transit service.....	Existing resources for service expansion
NW 26th Street extension.....	New road; Mill Plain to Port of Vancouver entrance
Mill Plain extension.....	Columbia Street to 26th Street extension; new road
I-5 widening to three through-lanes.....	Main Street to 99th

Table B. "Hot Spots" Planned Improvements.

Project	Description
I-5/I-205 134th interchange	Interchange improvements, park-and-ride
Fruit Valley Road widening, from 34th Street to 78th Street	Roadway widening from 34th to 78th
SR500/St. John's Road intersection removal	Provide new urban style (single-point) interchange
SR500/42nd & Falk Road	Remove at-grade intersection and construct 42nd overpass
SR500/54th & Stapleton	Remove at-grade intersection and construct 54th overpass
4th Plain/Kyocera access	Improve intersection
6th Street RR overcrossing	Provide grade-separated crossing
T-4 Circulation overpass	Overpass between auto terminal landing and upper level
LRT Rose Quarter to Expo	Provide MAX extension along Interstate Avenue
North Lombard improvements	Improve roadway from Rivergate Blvd. to Slough bridge
Columbia Blvd./33rd intersection	Reconfigure interchange to better accommodate trucks
Alderwood Road widening	Widen roadway between 82nd and Cornfoot
Marine Drive improvements Phase 2	Road over rail between Nordstrom and Montgomery Ward; near T6
Columbia Blvd./Alderwood intersection	Widen and signalize intersection
Columbia Blvd./Lombard connector	Remove bridges and provide at-grade intersections with 82nd
Columbia Blvd./I-205 interchange	Provide capacity improvements to ramp intersections
I-205/Airport Way interchange	Modify to provide two-lane on-ramps and off-ramps
82nd/Airport Way overcrossing	Construct grade separated overcrossing
I-205 auxiliary lanes	Provide northbound auxiliary lane from I-84 to Columbia Boulevard
82nd/Alderwood improvement	Modify traffic signal and add right-turn lanes
Lombard: Rivergate-Ramsey	Widen Lombard 600 ft south of Rivergate to 1,320 ft north of Ramsey
Lombard: St. Johns-Columbia	Smooth curves on Lombard bridge and Columbia
Cornfoot Road extension: Alderwood-82nd	Extend roadway from Alderwood to 82nd Avenue
Argyle: MLK-14th Place	Extend Argyle westerly from 14th Place to MLK Jr. Blvd.
River Road extension	Extend River Road between Going Street and Albina RR crossing
11th-13th Avenue connection	Increase capacity of connection between Columbia and Lombard
Alderwood: 82nd-Clark	3-lane road extension
Cornfoot: 47th-Airtrans Way	Widen Cornfoot to three lanes from 47th to Airtrans Way
Marx Drive: 92nd-87th	Improve Marx Drive between 87th and 92nd
NE Marine Drive	Signalize 122nd intersection, reduce speed limit
Cornfoot Road intersection improvement	Provide channelization, construct new traffic signal at Airtrans
NE Columbia/Cornfoot Road connection	Construct two-lane slough crossing between 57th and 62nd
Alderwood Road/Cully realignment	Re-align Alderwood to line up with Cully at Columbia Boulevard
Marx Drive extension to Holman at NE 82nd	Extend roadway to 82nd Avenue
Ramsey Street extension	Extend street 350 ft to the east
Simmons Street extension	Extend street 750 ft south of Lombard
NRG Pacific Gateway Boulevard	New roadway from Marine Dr. to BNSF railroad
West Hayden Island Bridge	Construct vehicular bridge to West Hayden Island
Leadbetter Street extension	Extend Leadbetter to complete loop with Marine Drive
Transit and Demand Management Scenarios	TDM Scenarios to reduce vehicle trips
Intelligent Transportation Systems	Local and regional ITS applications



Portland/Vancouver I-5 Transportation and Trade Partnership



*Findings and Recommendations
of the Governors Task Force*

Final Strategic Plan



June 2002

Portland/Vancouver I-5 Transportation and Trade Partnership Task Force

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**Findings and Recommendations
of the Governors Task Force**

Final Strategic Plan

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Part I

Background

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In 2001, Governors Gary Locke of Washington and John Kitzhaber of Oregon appointed a Task Force to address the growing congestion on Interstate 5 (I-5) in the metro areas of Vancouver (Washington) and Portland (Oregon). The 26 members of the I-5 Portland/Vancouver Transportation and Trade Partnership Task Force are listed on the inside front cover. The study area was defined as I-5 between the I-205 interchange in Washington and the I-84 interchange in Oregon and referred to as the I-5 Trade Corridor. The primary goals of the Task Force were to determine the level of investment needed in the corridor for highway, transit, and heavy rail improvements, and how to manage the transportation and land-use systems to protect investments.

The Task Force led an intense 18-month effort to develop a strategic plan to address the growing congestion. The process involved transportation experts, elected officials, representatives from business and industry, citizens' groups, and the public. The Final Strategic Plan is presented in this document.

The Plan is divided into two parts. **Part I** begins by explaining why I-5 is such an important transportation corridor in the region. Next, current and projected conditions in the region are described, followed by an explanation of the work that was done prior to the creation of the Task Force. Finally, the process that was used to develop the Plan is described.

Part II contains key findings and recommendations.

Nine attachments and a glossary provide additional information.

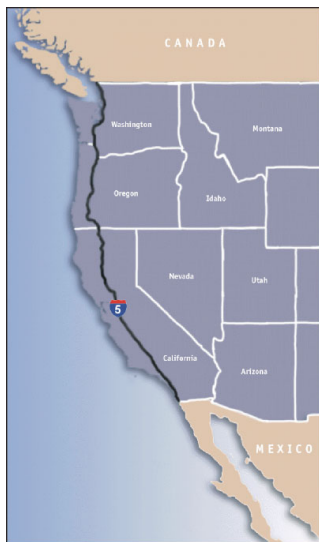
The importance of I-5 to the region

As the only continuous interstate on the West Coast, I-5 is critical to the local, regional and national economy. At the Columbia River, I-5 provides a connection to two major ports, deep-water shipping, up-river barging, two transcontinental rail lines, and much of the region's industrial land.

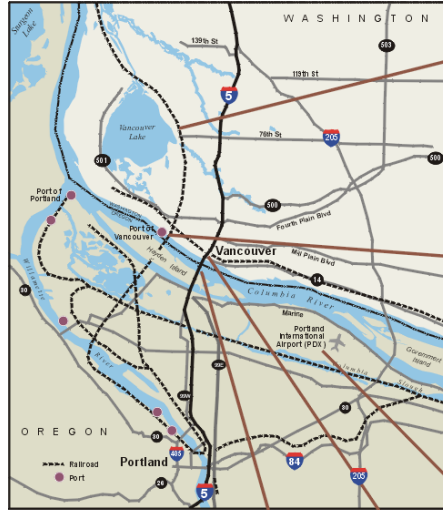
In 1997, 14 million tons of freight valued at \$17 billion were shipped from the Oregon side of the metro area to locations in Washington. Shipments southbound from Washington into the Oregon side of the region totaled 28.5 million tons valued at \$7.5 billion. Both the Ports of Portland and Vancouver and much of the Portland/Vancouver region's industrial land are within the I-5 Trade Corridor.



The I-5 Trade Corridor.



I-5 is the only continuous interstate on the West Coast, extending from Canada to Mexico.



I-5 is vital to transportation and trade in the region.



For residents of the Portland/Vancouver area, the I-5 Columbia River Bridge is one of two crossings over the Columbia River for travel by transit or automobile. The bridge connects the communities of Portland and Vancouver for work, recreation, shopping and entertainment. An average of 125,000 trips are made across the I-5 bridge every day.

Existing and projected conditions

Regional growth and an increase in trade are driving the demand for more travel in the I-5 Trade Corridor. Comparing existing conditions in 2000 to those projected for 2020:

- the population of the Portland/Vancouver area will increase 39%, from 1.8 million to 2.5 million
- trade in the region is expected to increase 51%, from 293 million tons to 441 million tons
- daily traffic volume across the Interstate Bridge is expected to increase 44%, from 125,000 to 180,000
- traffic conditions will decline in the following ways unless improvements are made:
 - vehicle hours of delay during the evening peak period will increase 77%, from 18,000 hours to 32,000 hours
 - vehicle hours of delay on truck routes during the evening peak period will increase 93%, from 13,400 hours to 25,800 hours
 - transit travel times will double, from 27.3 minutes to 55 minutes

Initial approach to the problem

In 1999, a bi-state leadership committee considered the problem of growing congestion on the highway and rail systems in the I-5 Trade Corridor. The committee made these recommendations:

- *The Portland/Vancouver region should initiate a public process to develop a plan for the I-5 Trade Corridor.*
- *Doing nothing is unacceptable.* Increased congestion will significantly affect the regional economy by limiting the region's ability to attract and retain business. Although there are planned transportation improvements in the corridor, they are insufficient to address the problem.
- *The solution must be multi-modal—highway, transit, and rail improvements, and better management of traffic demand.* Increasing highway capacity alone will not solve the problem, for example.
- *Funding for the scale of improvements that are needed far exceeds the state and federal funds that are available.* Given the current structure of public funding, tolling will be required to pay for a new Columbia River crossing and other improvements. Tolls are not new to the area, having been used to fund the construction of the I-5 bridges.
- *The region must consider measures that promote transportation-efficient development such as a better balance of housing and jobs on both sides of the river.*

Developing the Strategic Plan

The public was heavily involved in the development of the Strategic Plan. A Community Forum of interested stakeholders from both states was invited to provide input at each milestone, and there were six rounds of public meetings. A total of nearly 1,700 people participated. **Table 1** lists the Community Forum meetings and Open Houses that were held. Public involvement was encouraged in a variety of ways:

- advertisements in regional and local papers
- mailing list of 10,000 people
- E-mail address list of 2,000 people
- door-to-door delivery of project information to businesses, homes and apartments along the potential improvement corridors
- billboard advertisements
- bus advertisements
- project Web site, which has been accessed more than 400,000 times
- Web-based survey tools
- press releases
- public notices
- toll-free telephone number
- participation in community-based events such as neighborhood fairs
- soliciting speaking engagements with 275 business, community, and neighborhood groups
- presentations to more than 70 groups

Table 1. Overview of I-5 Partnership Task Force development process for the Strategic Plan.

Date	Task	Activities	Community Forums and Open Houses		
			Date	Type of meeting	Subject
Jan 2001 to May 2001	Visioning and development of options	<ul style="list-style-type: none"> • Development of a Problem, Vision and Values Statement • Identification of a wide range of ideas for the corridor • Development of evaluation criteria • Development and selection of a range of multi-modal Option Packages for the corridor to be evaluated 	Jan 2001	Community Forum	Visioning /brainstorming
			Feb 2001	Open Houses	Visioning / brainstorming
			Apr 2001	Open Houses	Review of draft Option Package combos
			May 2001	Community Forum and Open Houses	Review of final draft Option Packages
June 2001 to Nov 2001	Evaluation of Option Packages/land use analysis	<ul style="list-style-type: none"> • Evaluation of Option Packages • Analysis of the land-use implications of making/not making transportation investments 	Nov 2001	Community Forum and Open Houses	Review of evaluation results
Dec 2001 to Jan 2002	Development of draft recommendations	<ul style="list-style-type: none"> • Consideration of evaluation results and feedback from the public and Community Forum members to develop draft recommendations. Draft recommendations focused primarily on transit and highway investments for the I-5 Corridor 	Jan 2002	Community Forum and Open Houses	Review of working draft recommendations
Feb 2002 to May 2002	Re-evaluation and development of additional draft recommendations	<ul style="list-style-type: none"> • Consideration of additional design and evaluation work in the Bridge Influence Area (SR 500 to Columbia Blvd) to assess the level of improvements needed in this section of the corridor and to develop new conceptual designs that had less community impact, particularly in Vancouver • Evaluation of the needs of the heavy rail system and commuter rail • Development of draft recommendations for Transportation Demand Management and Transportation System Management (TDM/TSM), Environmental Justice, Land Use, and Finance 	May 2002	Community Forum and Open Houses	Review of additional work and additional draft recommendations
May 2002 to June 2002	Development of final recommendations	<ul style="list-style-type: none"> • Evaluation of results and feedback from the public and Community Forum members • Development of final recommendations for the I-5 Trade Corridor 	June 2002	Open Houses	Review of final draft recommendations

The key components of the process to develop the Strategic Plan were:

- developing a Problem, Vision, and Values Statement
- developing multi-modal Option Packages
- evaluating the Option Packages
- developing recommendations

Table 1 describes the components in more detail.

Problem, Vision and Values Statement. The statement was based on input from the Community Forum and the public and is the foundation of the Strategic Plan.

The I-5 Trade Corridor is the most critical segment of the regional transportation system in the Portland/Vancouver metropolitan area. The corridor provides access to many of the region's most important industrial sites and port facilities and is a link to jobs throughout the Portland/Vancouver region. Due to infrastructure deficiencies, lack of multi-modal options, land-use patterns, and increasing congestion, businesses and individuals experience more frequent and longer delays in the corridor. Without attention, the corridor's problems are likely to increase significantly, further impacting the mobility, accessibility, livability and economic promise of the entire region.

The Strategic Plan should be a multi-faceted, integrated plan of transportation policies, capital expenditures, personal and business actions, and incentives to address the future needs of the I-5 Trade Corridor. When implemented, the Strategic Plan will improve the quality of life by:

- providing travel mobility, safety, reliability, accessibility and choice of transportation modes for users whether public, private, or commercial, and recognizing the varied requirements of local, intra-corridor, and interstate movement
- supporting a sound regional economy by addressing the need to move freight efficiently, reliably, and safely through the corridor
- supporting a healthy and vibrant land use mix of residential, commercial, industrial, recreational, cultural and historical areas
- respecting and protecting natural resources including air quality, wildlife habitat and water resources
- supporting balanced achievement of community, neighborhood, and regional goals for growth management, livability, the environment, and a healthy economy with promise for all
- distributing fairly the associated benefits and impacts for the region and the neighborhoods adjacent to or affected by the corridor

The result will protect our future with an improved and equitable balance of livability, mobility, access, public health, environmental stewardship, economic vitality and environmental justice.

Option Packages. Development of the Option Packages was based on input from the public and on the Problem, Vision and Values Statement. Five multi-modal Option Packages were selected for further analysis:

- Express Bus / 3 Lanes
- Light Rail / 4 Lanes
- Light Rail / 3 Lanes
- West Arterial Road
- Express Bus / 4 Lanes

All Option Packages included new river crossing capacity across the Columbia River for transit and vehicles, a substantial increase in basic transit service levels in Portland and Clark County, and the implementation of a strong transportation demand management program on both sides of the river. Maps of the Option Packages, with descriptions of the physical improvements and comparisons of transportation performance, are in **Attachment A**.

During the analysis, each Option Package was compared to three scenarios:

- Existing Conditions 2000— current conditions in the I-5 Trade Corridor
- No Build 2020—what is expected to happen in 2020 if the region builds only the currently funded projects
- Baseline 2020—what is expected to happen in 2020 if the region constructs the funded projects in the No Build 2020 scenario AND the other projects listed in the region's 20-year plans (see **Attachment A**)

After adopting draft recommendations in January 2002, the Task Force asked for additional evaluation and design work to be completed on the Bridge Influence Area, between SR 500 and Columbia Boulevard, and including light rail between the Expo Center and Downtown Vancouver. This focused examination of the bridge and its influence area resulted in the development of four river crossing concepts, which are shown in **Attachment B**.

The analysis for the Strategic Plan also focused on the needs of the freight and passenger rail system. This analysis was a cooperative effort among the owners of the rail system (Burlington Northern/Santa Fe and Union Pacific) and the users of the system (Amtrak, the states of Oregon and Washington, the Ports of Vancouver and Portland, and the cities of Portland and Vancouver). The rail analysis focused on an agreement among the parties about existing conditions, expected growth rates, short-term/incremental improvements to gain capacity and the long-term needs of the system.

Other areas of analysis and work that contributed to developing the key findings and recommendations are as follows.

- Metroscope, a new land use and transportation model, was used to analyze the implications of making or not making improvements in the I-5 Trade Corridor. The analysis compared two scenarios: doing nothing more than Baseline 202 improvements, and an improvement scenario similar to the Light Rail / 4 Lane Option Package.
- An analysis of commuter rail as a component of a multi-modal system between Portland and Vancouver was undertaken.
- Two work groups of community stakeholders, one in Oregon and one in Washington, were invited to help the Task Force develop key findings and recommendations in environmental justice. Ideas from these two work groups form the basis for much of the ongoing work that will need to be done in the Corridor to (1) identify, avoid and mitigate impacts from potential improvements, (2) ensure that benefits and impacts are equitably distributed, and (3) ensure that outreach efforts include meaningful involvement of low income and minority residents in the corridor.
- Three work groups of technical staff from Oregon and Washington agencies were brought together to assist the Task Force in developing key findings and recommendations in the Land Use Accord, Transportation Demand Management and Transportation System Management (TDM/TSM, and financing options and tools.

Within time and budget constraints, the analysis used the best travel-forecasting techniques and cost estimation methods available. However, the purpose of the analysis was to compare options. Although the cost estimates are fully appropriate for comparison of alternatives, they were based on “conceptual designs” that are not developed in sufficient detail for budgeting purposes. In addition, all costs are estimated as if the options were constructed in 2001 and use 2001 dollars. No finance costs are included. More detailed cost estimates will be prepared in the environmental impact statement (EIS) phase of the study and again for the projects selected for construction after preliminary engineering has been completed.

What’s next

The Strategic Plan will be sent to the Oregon Transportation Commission, the Washington Department of Transportation, and the metropolitan planning organizations in Portland and Southwest Washington for review and potential adoption into their transportation plans. After adoption, the environmental review and project development phase may begin.

Before any improvements suggested in the Strategic Plan can be made, a formal environmental process must be conducted under the requirements of the National Environmental Policy Act (NEPA). Part of the NEPA process is to determine the environmental and community impacts, if any, of proposed improvements and to develop mitigation plans for impacts that cannot be avoided. The process ensures that the public is heavily involved and that issues of environmental justice are thoroughly explored.

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Part II

Key Findings and Recommendations

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1 THE NEED FOR ACTION

1.1 KEY FINDINGS: Portland/Vancouver's unique trade and transportation advantage

- 1.1.1 The Portland/Vancouver area's location at the convergence of two major rivers, two transcontinental rail lines, two interstate highways, and one international airport is a unique trade and transportation advantage. This advantage allows companies to transport goods from ships and planes to trucks and rail cars in a low-cost, timely manner. The transportation facilities in the I-5 Trade Corridor are at the heart of this system.
- 1.1.2 Because of this advantage, Portland ranks first on the West Coast in terms of the value of wholesale trade per capita. Employment in the transportation and distribution sectors represents a higher share of total employment than it does in most other cities, including Seattle, Los Angeles, and Houston.
- 1.1.3 The critical mass of trade and transportation companies allows all businesses to benefit from "bulk" prices in the transportation industry that they would not enjoy in other, more populated regions.
- 1.1.4 More than 6,000 distribution and logistics companies employ more than 100,000 people in the metro area and pay them family wages. This accounts for 10% of the Region's workforce. The combined payroll for these sectors totals \$4.7 billion—13% of the Region's total \$36 billion annual payroll.
- 1.1.5 Of the freight moving in the Portland/Vancouver metro area, the majority (64%), is carried by truck. The remainder is carried by a variety of modes including pipeline (10.8%), ocean (9.7%), rail (5.6%), barge (5.4%), intermodal (4.5%), and air (0.1%).

1.2 KEY FINDINGS: Projected growth

- 1.2.1 Projected regional growth and an increase in trade are driving the demand for more travel in the I-5 Trade Corridor. Today the Portland/Vancouver area's population is about 1.7 million. By 2020, the population is expected to increase to 2.4 million. Likewise, the amount of trade in the Region is expected to increase from 168 million tons in 1996 to 275 million tons in 2020.
- 1.2.2 The I-5 Trade Corridor will experience significant growth in truck traffic over the next 20 years. Compared to Existing Conditions 2000, conditions will decline under the No Build 2020 scenario. Vehicle hours of delay on truck routes will increase by 93%, congested lane-miles on truck routes will increase by 58%, and the value of truck delay will increase by 140%.

1.3 KEY FINDINGS: Freeway system

1.3.1 Over 10,000 trucks are in the I-5 Trade Corridor every day carrying goods ranging from auto parts and furniture to fruit juice and clothing. Half of the goods the trucks carry are from or bound for Portland. The value of these shipments is more than \$26 billion a year. The value of these shipments is equivalent to one third of the metro area's gross product.

1.3.2 Freeway conditions will decline in the future. As a result of growth, daily traffic demand volumes on I-5 are expected to increase 44%, from 125,000 in 2000 to 180,000 by 2020. Without transportation improvements in the Corridor, there will be a significant impact on travel time, delay and congestion.

1.3.3 Under the No Build 2020 scenario during the evening peak period:*

- Vehicle travel times between Downtown Portland and Salmon Creek will increase 22%, from 38 minutes in 2000 to 44 minutes in 2020.
- Vehicle hours of delay on all routes in the study area will increase 77%, from 18,000 hours in 2000 to 32,000 hours in 2020.
- Congested lane miles on I-5 and I-205 will increase 40%, from 24% in 2000 to 33.7% in 2001.
- The value of truck delay in the study area will increase 140%, from \$14.1 million in 2000 to \$34 million in 2020.
- Vehicle hours of delay on truck routes in the study area will increase 92%, from 13,390 hours in 2000 to 25,767 hours in 2020.

1.3.4 Baseline 2020 improves these measures of transportation performance, but conditions remain worse than today. Comparing Baseline 2020 with today's conditions during the evening peak period:

- Vehicle travel times will increase 5%, from 38 minutes in 2000 to 40 minutes in 2020.
- Vehicle hours of delay for all routes in the study area will increase 18%, from 18,000 hours in 2000 to 21,477 hours in 2020.
- Congested lane miles on I-5 and I-205 will increase 26%, from 24% in 2000 to 30.4% in 2020.
- The value of truck delay in the study area will increase 88%, from \$14.1 million in 2000 to \$26.5 million in 2020.
- Vehicle hours of delay on truck routes in the study area will increase 28%, from 13,390 hours in 2000 to 17,088 hours in 2020.

1.4 KEY FINDINGS: Transit system

1.4.1 Compared to Existing Conditions 2000, transit conditions will decline in the future under the No Build 2020 scenario. Travel times in the I-5 Trade Corridor will double, from 27.3 minutes

* See **Attachment A** for graphs of some of the transportation findings.

in 2000 to 55 minutes in 2020. This increase results from the fact that transit riders will face a transfer from MAX to the bus system at the Expo Center and buses will encounter congestion at the freeway on-ramps and across the bridge. Due to the increase in travel time, the number of people using transit in the I-5 Trade Corridor from Downtown Vancouver will decline from 5.6% in 2000 to 4.9% in 2020, and the operating cost of maintaining current levels of bus service will increase significantly due to longer travel times.

- 1.4.2 Baseline 2020 improves transit travel times due to increased overall transit service in the Region, but travel times remain significantly higher than today (27 minutes today; 41 minutes in 2020). The operating cost to maintain the same level of bus service will likely increase proportionately with the travel time increase.

1.5 KEY FINDINGS: Heavy rail system

- 1.5.1 Healthy and viable rail service in the I-5 Trade Corridor is a critical component of the regional economy. It is an integral part of the Region's comparative advantage in providing an inter-modal focus of marine, barge, highway, and rail services that contributes to the Portland/Vancouver area's recognition as a major national and international trade and distribution center.
- 1.5.2 The Region contains five major rail yards and numerous smaller yards and port terminals. The Region's rail system serves the states' largest collection of industrial customers and accesses a major, deep draft, ocean port. Intercity passenger service (Amtrak/Cascades) operates over private railroad tracks. The two transcontinental railroads (BNSF and UP) along with Amtrak operate over the BNSF Columbia River Rail Bridge.
- 1.5.3 Currently, 63 freight trains and 10 Amtrak trains per day cross the BNSF Bridge, not including local switching operations. Freight trains are projected to reach 90 per day in 20 years and long-range, intercity passenger service plans call for 26 trains per day. Congestion on the Region's rail system is approximately 100 hours of accumulated delay per day, which is roughly 50% of the delay experienced in Chicago or Los Angeles. Relatively speaking, there are fewer trains experiencing more delay on our system.
- 1.5.4 Congestion in the Portland/ Vancouver rail network presents a constraint on the viability of the Region's continued economic growth.
- 1.5.5 Congestion in the rail network further constrains the opportunity for enhanced intercity passenger rail and commuter rail service along this segment of the federally designated Pacific Northwest High Speed Rail Corridor.
- 1.5.6 The capacity of the Portland-Vancouver rail network is not sufficient to meet current or future freight and intercity passenger needs. There is insufficient capacity to support development of the Ports of Portland and Vancouver. There will not be capacity to support increased intercity passenger service from Eugene to Portland/Vancouver to Seattle.

1.6 KEY FINDINGS: Overall

- 1.6.1 In the absence of both freeway and transit investment in the I-5 Trade Corridor, congestion and delay will grow steadily, resulting in the AM and PM periods of congestion spreading into the early morning, midday, and evening hours.
- 1.6.2 Rush hour congestion is a fact of life in an urban area and is to be expected and tolerated to some degree. However, unpredictable delays and congestion throughout the day cannot be tolerated without an adverse impact on the Portland/Vancouver Region's economy and quality of life.
- 1.6.3 Future delays in the I-5 Trade Corridor could impact the economy in the following ways:
- Freight and trade will incur additional cost from congestion, especially during the midday.
 - The lack of reliability will increase transportation costs more than the increases in delay.
 - Increases in cost and uncertainty will influence business location and expansion decisions.
 - The lack of accessibility will limit the ability to attract future jobs in key industrial areas such as the Columbia Corridor.
- 1.6.4 Congestion on the rail system threatens the Region's status as the Pacific Coast's low-cost rail port and puts rail companies and their regional customers at a disadvantage relative to other regions. It also threatens our plans to expand intercity passenger rail service between Oregon and Washington.
- 1.6.5 The problems in the I-5 Trade Corridor cannot be solved with freeway improvements alone. A high quality bi-state transit system is needed to provide an alternative to driving that provides an improvement in transit travel times and reliable service throughout the day.
- 1.6.6 The problems in the I-5 Trade Corridor cannot be solved with transit, land use, and demand management actions alone. Additional capacity will need to be added to the road system to ensure that today's accessibility and reliability can be maintained and improved.

RECOMMENDATION 1: The need for action

- R 1.1 Physical improvements in the I-5 Trade Corridor beyond the Baseline 2020 projects are warranted and necessary to meet the transportation, economic, and livability needs of the Portland/Vancouver Region.
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2 ADDITIONAL TRANSIT CAPACITY AND SERVICE

2.1 KEY FINDINGS: Transportation performance

- 2.1.1 The Express Bus–Long and the Light Rail Loop Option Packages significantly improve travel times compared to Baseline 2020, and slightly improve travel times compared to today.
- 2.1.2 The Express Bus–Short Option Packages provides a slight improvement to travel times compared to Baseline 2020, but when compared to existing transit travel times, transit trips can be expected to be approximately 9 minutes longer than they are today.
- 2.1.3 Transit ridership across the Columbia River (I-5 and I-205 Corridors) is expected to increase under all transit options, with the greatest increase resulting from the Light Rail Loop. Compared to Baseline 2020, Express Bus–Short increases ridership by 38%, Express Bus–Long increases ridership by 63%, and Light Rail Loop increases ridership by 94%.
- 2.1.4 The Light Rail Loop provides the most consistent travel time and the best reliability of the transit options considered because it runs in its own right of way and is not impeded by roadway congestion.

2.2 KEY FINDINGS: Environmental and community impacts

- 2.2.1 There could be impacts to historic resources for all transit options, but most of the impacts to historic resources appear to either be indirect or minor.
- 2.2.2 All transit options are likely to have a moderate impact on fish habitat, due to the fact that they involve new bridges that could have in-stream piers potentially affecting rearing or migration habitat.
- 2.2.3 Because the improvement area in the I-5 Trade Corridor is highly urbanized, impacts to wildlife habitat, wetlands and native plant communities are likely to be minor for the highway improvements needed to support the Express Bus Option Packages.
- 2.2.4 For light rail, the I-5 and I-205 segments would have minor impacts to wildlife, wetlands and plant communities. The current concept for the east/west segment could have moderate impacts to natural areas. Actual impacts for each of the segments would depend on the final alignment.
- 2.2.5 While it is not possible to make the transportation improvements considered in this planning effort without some level of impact to existing properties, the impacts to properties are highly dependent on the design and alignment of the projects.
- 2.2.6 For freeway improvements in the I-5 Trade Corridor that are needed to support Express Bus, the greatest potential for impacts to property is on Hayden Island.

2.2.7 For the light rail loop, the I-5 and I-205 segments would have few displacements. As studied for this planning effort, it appears that there is a greater potential for property impacts on the east/west segment of the light rail loop. Refinement of various alignment options could reduce or avoid many of these impacts.

2.3 KEY FINDINGS: Cost

2.3.1 Express bus is the lowest cost of transit options due to the fact that it operates on the highway in an already established right of way (Express Bus–Short = \$14 million and for Express Bus–Long = \$32 million [in 2001 dollars]).

2.3.2 Light rail is the highest cost of the transit options due to the fact that it operates in its own right-of-way with a track system (\$1.222 billion [in 2001 dollars]).

2.3.3 The actual costs will vary depending on final design, mitigation, inflation and other factors.

2.4 KEY FINDINGS: Other

2.4.1 Compared to light rail, buses have the following advantages:

- Buses can be flexibly routed to serve different origins and destinations, and to address particular traffic congestion problems.
- Buses can more effectively serve outlying population centers such as Battle Ground and Ridgefield.
- Buses can be readily placed on new routes.

2.4.2 Compared to light rail, express buses serve a more limited transportation market. As evaluated, express bus was a point-to-point system that served the commuter market and ran Monday through Friday in the morning and evening peak periods only.

2.4.3 Compared to express bus, light rail has the following advantages:

- Does the most to promote balanced (multi-modal) use of the system—transit ridership in downtown Vancouver increases by 40 to 50% with light rail, compared with 8 to 10% for express bus.
- Serves a range of trip purposes throughout the day, seven days a week.
- Provides consistent service to multiple points along the line and can be a catalyst for community redevelopment.
- Is consistent with regional and local goals, and reinforces the Vancouver and Portland Central cities and regional centers such as Vancouver Mall and Gateway.

2.4.4 Across all measures, I-5 performs better when paired with light rail than with the express bus packages that were tested because light rail attracts more riders.

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RECOMMENDATION 2: Additional transit capacity and service

- R 2.1 A light rail loop system, including feeder buses, and new and expanded park and ride lots, should be established in Clark County. In the interim, bi-state transit needs will continue to be served by express bus.
 - R 2.2 The light rail loop system should provide transit mobility, both within Clark County and between Washington and Oregon, in the I-5 and I-205 Corridors
 - R 2.3 The light rail loop system may be constructed in phases.
 - R 2.4 Peak-hour, premium express bus service in the I-5 and I-205 Corridors to markets not well served by light rail may be provided as a supplemental service to light rail.
 - R 2.5 Transit service in the Corridor should be increased over the next 20 years as planned in the Metro and RTC 20-year transportation plans.
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3 ADDITIONAL FREEWAY CAPACITY

3.1 KEY FINDINGS: Fixing two-lane sections

- 3.1.1 There are three remaining two-lane sections on I-5 in the study area: (1) I-84 – Fremont Bridge near the Rose Quarter, (2) Delta Park to Lombard, and (3) 99th Street to I-205 in Clark County.
- 3.1.2 Widening these two-lane sections to three lanes, combined with an overall improvement in transit service throughout the Portland/Vancouver Region as called for in Baseline 2020, allows freeway travel times through the Corridor to remain about the same as they are today.
- 3.1.3 An environmental impact statement (EIS) has been completed for the project to widen I-5 to three lanes in each direction between 99th Street to I-205 in Clark County. This project is ready for construction and awaits funding.
- 3.1.4 An environmental assessment is currently underway for the project to widen I-5 to three lanes in each direction between Delta Park and Lombard. The environmental impacts of this project (air quality, natural resources, property impacts) are not expected to be significant.
- 3.1.5 At Columbia Boulevard in Portland, the on-ramp currently joins the freeway to become the third lane on the freeway, thus providing ease of entry to the freeway for trucks. With the widening to three lanes, the Columbia Boulevard on-ramp would become a merge lane. Analysis shows that we can expect the reconfigured on-ramp merge from Columbia Boulevard to operate acceptably with this improvement. The existing ramp has a rising grade of 6% and enables heavy trucks to attain a speed of only 25 mph when entering the freeway. The proposed ramp would have a 4% grade and a 1,400-foot acceleration lane, enabling trucks to attain a speed of

45 mph within the acceleration lane before entering the freeway. The new on-ramp would operate at a Level-of-Service “C-D” during the peak periods, which indicates generally smooth merging conditions.

3.1.6 Widening I-5 to three lanes in the vicinity of the Rose Quarter is likely to have implications for the entire freeway loop around Downtown Portland. Changes to this or any other part of the freeway loop should consider the implications on the entire loop.

3.1.7 There are significant challenges at the junction of I-5 and I-84 near the Rose Quarter. These include safety and operational problems due to closely spaced interchanges and the land use objectives for the Rose Quarter area and Lloyd Center district.

RECOMMENDATION 3a: Fixing two-lane sections

R 3a.1 I-5 should be widened to three lanes in each direction between (a) Delta Park and Lombard and (b) 99th Street and I-205 in Clark County

R 3a.2 The Delta Park to Lombard project should go to construction as quickly as possible.

R 3a.3 The transportation issues south of the I-5/Fremont Bridge junction must be addressed and solved. The Mayor of Portland, the Governor of the State of Oregon, and JPACT should join together to appoint a group of public and private sector stakeholders to study and make recommendations for long-term transportation solutions for the entire I-5/I-405 freeway loop.

3.2 KEY FINDINGS: Overall freeway improvements

3.2.1 Two central questions for this planning effort have been:

- Should the freeway be three through-lanes in each direction between I-84 in Portland and I-205 in Clark County, or it should be expanded to four through-lanes in each direction?
- Should there be new river crossing capacity for vehicles?

3.2.2 The current configuration of interchanges close to the existing Interstate Bridges results in operational problems that make the six-lane bridge function more like a four-lane bridge. This results in significant congestion and delay during the morning and evening peak periods. All Option Packages for making the freeway three lanes or for expanding it to four lanes assumed an additional or new bridge in the I-5 Trade Corridor to address the problems with the existing bridges.

3.2.3 Compared to Baseline 2020, both the three-lane and four-lane options significantly improve travel times in the Corridor.

- During the evening peak periods, the Baseline 2020 travel time between Downtown Portland and Downtown Vancouver for autos and trucks is 30 minutes. Under the three-lane options, travel times are reduced by about 9 minutes; under the four-lane option, travel time is reduced by 12 minutes.

- During the evening peak periods, travelers will experience about 21,450 hours of delay. Under the three-lane options, vehicle hours of delay are reduced by between 22 and 26% to approximately 16,000 hours of delay. Under the four-lane option, delay is reduced by 26%, also about 16,000 hours of delay.

3.2.4 Improved travel times and reduced delay observed in the three-lane and four-lane Option Packages are primarily attributable to the new capacity across the Columbia River in the I-5 Trade Corridor.

3.2.5 If the four lanes are configured as a reversible express lane system (five lanes in the peak direction and three lanes in the non-peak direction), additional transportation performance benefits can result. Time travel savings increase by an additional 10 minutes and delay is reduced by an additional 13% to approximately 13,000 hours of delay.

3.2.6 Options that add a fourth lane to the freeway in each direction have the potential to significantly impact traffic operations on the Portland freeway loop. The four-lane options would increase southbound traffic volumes on I-405 by 9–12%, from 18,293 vehicles under 2020 Baseline to 20,000–25,000 vehicles under the four-lane options. Near the Rose Quarter, traffic volumes would increase by 15–30%, from 12,525 vehicles under 2020 Baseline to 14,361–16,351 vehicles under the four-lane options. The higher traffic volumes would be observed if the fourth lane were added as a reversible express lane.

3.2.7 Options that limit the freeway to three lanes in each direction would increase southbound volumes on I-405 by less than 1% compared to Baseline 2020, and would increase southbound volumes on I-5 near the Rose Quarter by 5–7%, also compared to Baseline 2020.

3.2.8 I-5 is the most direct route for the majority of trips across the Columbia River due to the high number of employment and other activity centers that are served by I-5. With a new river crossing, people have a better ability to choose the shortest and most direct path for their trip.

3.2.9 With the improvements on I-5, volumes on the I-205 Bridge decrease because some trips that now occur on I-205 would shift to I-5. This would allow the I-205 Bridge to better serve future planned growth in the I-205 Corridor.

3.3 KEY FINDINGS: Environmental and community impacts

3.3.1 Historic

- There could be impacts to historic resources for both the three-lane and the four-lane options, but most of the impacts to historic resources appear to either be indirect or minor.
- Expanding the freeway to four lanes in each direction results in the potential for one major impact to one historic property owned by Multnomah County.
- A replacement bridge would involve a full impact on the Columbia River Bridges. The existing northbound bridge is listed on the National Register of Historic Places and the southbound bridge is eligible for listing.

3.3.2 Natural resources

- Both the three-lane and four-lane options would have a moderate impact on fish habitat, because they involve new bridges that could have in-stream piers that would potentially effecting rearing or migration habitat.
- Because the improvement area in the I-5 Trade Corridor is highly urbanized, impacts to wildlife habitat, wetlands and native plant communities are likely to be minor for the Baseline 2020, three-lane and four-lane options.

3.3.3 Property impacts

- While it is not possible to make the transportation improvements considered in this planning effort without some level of impact to existing properties, these impacts are highly dependent on the design and alignment of the projects.
- For improvements in the I-5 Trade Corridor, the greatest potential for impacts to property is on Hayden Island. A replacement bridge has the least number of impacts due to the fact that it follows near the existing bridge and freeway alignment. In Washington, the design of freeway interchange improvements between SR 14 and SR 500 can greatly influence property displacements and impacts. Interchange improvements in Washington can be designed to minimize the number of property impacts.

3.3.4 Air quality

- In the future, air quality is expected to be considerably better than it is today for carbon monoxide (CO), volatile organic compound (VOC) and nitrogen oxides (NOx). This is due primarily to cleaner burning fuels and lower emission vehicles. Comparing Existing Conditions 2000 to Baseline 2020, CO = 30% reduction, VOC = 73% reduction, and NOx = 85% reduction.
- While air quality is expected to improve, the three-lane and the four-lane options have the potential to increase CO, VOC, and NOx emissions when compared to Baseline 2020.
- Based on the analysis completed to date, the differences among Option Packages regarding air quality are relatively small. Adding a fourth lane to the freeway appears to have the most impact on air quality, compared to other options.
- Air quality impacts are a concern that has been raised by advocates and community members alike. Additional examination of air quality impacts is warranted.

3.4 KEY FINDINGS: Cost

3.4.1 As conceptualized, preliminary cost estimates for the freeway options in 2001 dollars are:

- Three-lane = \$1 billion (includes costs for interchange improvements between SR 500 and Lombard, and new river crossing capacity)
- Four-lane = \$1.6 billion

3.4.2 The actual costs will vary depending on the final design, mitigation, inflation and other factors.

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RECOMMENDATION 3b: Overall freeway capacity

- R 3b.1 The Task Force recommends that the I-5 freeway between the Fremont Bridge in Portland and the I-205 interchange in Vancouver be a maximum of three through-lanes in each direction.
 - R 3b.2 The Task Force considered expanding the capacity of the Corridor to four through-lanes in each direction but does not recommend this option.
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3.5 KEY FINDINGS: High occupancy vehicle (HOV) lanes

- 3.5.1 Provision of new river crossing capacity makes a continuous HOV system between Portland and Vancouver a possibility.
- 3.5.2 HOV performance is highly dependent upon the design of the new freeway system. Current design concepts require changes to better accommodate the HOV system. In some cases the bridge design affects HOV performance. For example, multiple bridges split freeway traffic and would limit HOV access. In addition, direct access ramps will need to be considered at key locations such as SR 500.

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RECOMMENDATION 3c: High occupancy vehicle (HOV) lanes

- R 3c.1 Further exploration of HOV in the EIS is required to optimize the design of the system and to determine its overall effectiveness.
 - R 3c.2 One of the three through-lanes should be designated for use as a high occupancy vehicle (HOV) lane during the peak period, in the peak direction. Further exploration is required in the environmental impact statement to optimize its design, particularly within the Bridge Influence Area, and to determine its overall effectiveness in meeting the regional objectives for the I-5 Trade Corridor.
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3.6 KEY FINDINGS: Columbia Boulevard Interchange

- 3.6.1 Making Columbia Boulevard into a full access interchange will provide a direct connection to I-5 for one of the Region’s busiest freight routes. It will reduce congestion at the Marine Drive interchange, improve truck utilization of Columbia Boulevard, and reduce traffic in the Kenton neighborhood.
- 3.6.2 Design of this interchange needs to be done in conjunction with the design of the entire Bridge Influence Area to ensure overall system functionality.

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RECOMMENDATION 3d: Columbia Boulevard interchanges

R 3d.1 The Columbia Boulevard interchange in Oregon should be made into a full interchange (add ramps for southbound traffic to exit at Columbia Boulevard and for northbound traffic to enter the freeway from Columbia Boulevard).

R 3d.2 Both the Delta Park to Lombard project and the Columbia Boulevard interchange project should be considered for design at the same time. As part of this design effort, there needs to be a phasing and financing plan, with the recognition that the Delta Park project is the first priority.

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4 BRIDGE AND BRIDGE INFLUENCE AREA (SR 500 TO COLUMBIA BLVD)

4.1 KEY FINDINGS: Freight mobility and the economy

4.1.1 According to USDOT's Freight Analysis Framework, the I-5 Trade Corridor carries the highest volume of freight in the states of Oregon and Washington. It is the key route for freight originating or destined for Portland and Seattle.

4.1.2 USDOT's Freight Analysis Framework also shows this segment of I-5 as one of the most congested freight routes in the nation.

4.1.3 By 2020, if we make no improvements in both our freeway and transit system, we can expect delay to nearly double, from about 18,000 hours today to about 32,000 hours in 2020. This delay and the resulting congestion and loss of reliability have an economic cost to our community. Not only will the cost of doing business increase, individual business productivity will be reduced, resulting in a poor quality transportation system to key employment and industrial centers that also threatens our long-term ability to attract and retain living wage employment in the Region.

4.1.4 The BIA improvements would:

- Reduce bottlenecks on the freeway and balance traffic flow.
- Improve key freight interchanges including Columbia Boulevard, Marine Drive, and Mill Plain Boulevard.
- Increase reliability and predictability on I-5.
- Improve bi-state transit service.

4.1.5 The benefits for the economy and freight include:

- Improved access to and from key industrial destinations such as the Port of Vancouver, Rivergate and the Columbia Corridor.

- Improved access to and from key employment centers such as Downtown Portland and Downtown Vancouver, Columbia Corridor, Swan Island, and Lloyd Center.
- Improved travel times and reduced congestion on I-5.
- Increased reliability and predictability in transit service.

4.1.6 The benefits of BIA improvements help to create a positive business climate and help make the Region an attractive place to locate and expand business.

4.2 KEY FINDINGS: River crossing capacity/Bridge Influence Area

4.2.1 Overall, the Bridge Influence Area (BIA) concepts show an improvement in freeway traffic speeds during the peak periods compared to Existing Conditions 2000 and Baseline 2020.

4.2.2 Within the range of concepts considered, however, there are some important differences:

- A replacement bridge provides the best performance in both the morning and the afternoon peak period.
- An eight-lane system plus the arterial connection performs better in the afternoon than in the morning. The morning problems with this concept are primarily a function of design. The concept places the HOV lane on a separate bridge. Because access to the separate bridge is limited in the BIA, many of the HOV trips return to the mainline just as they approach the existing bridge. This is occurring in about the same location as where the SR 14 on-ramp merges onto I-5 south. In combination, the two merges in the same location create congestion on the freeway. Additional engineering work may be able to solve the problems we observe for this concept.
- A collector/distributor system shows the least improvement in performance. In the morning it provides some improvement over Existing Conditions 2000 and Baseline 2020, but in the afternoon it provides little benefit. The design problems associated with this system are the least “fixable” due to its configuration.

4.2.3 An arterial bridge, constructed in combination with additional freeway lanes across the river could benefit the overall performance of the freeway system. It would provide a separate local connection across the river, reducing the need to use the mainline freeway system. The Baseline 2020 analysis shows that an arterial roadway would be heavily used primarily by localized trips.

4.2.4 A two-lane, arterial-only bridge (no increase in freeway lanes) will not address the problems on the freeway. The arterial-only connection would only slightly improve freeway performance by removing local trips. Users of the freeway system would continue to experience a significant increase in congestion and delay throughout the I-5 Trade Corridor.

4.2.5 BIA improvements are likely to result in minimal traffic increases on I-5 outside the Bridge Influence Area. Traffic, however, will increase on roadways with direct access to the BIA. These traffic increases are different in Portland and Vancouver. Portland would see increases on arterial streets near the BIA, while Vancouver’s increases would be on state freeways.

4.3 KEY FINDINGS: Cost

- 4.3.1 Potential highway and transit costs in the BIA are all in the range of \$1.2 billion (in 2001 dollars). This estimate includes major maintenance and seismic retrofit costs for the existing bridges.
- 4.3.2 The actual costs will vary depending on the final design, mitigation, inflation and other factors.
- 4.3.3 There is not a significant enough cost differential to eliminate any of the options based on cost alone. A full exploration of life cycle costs of the existing bridges and seismic retrofit costs should be completed during the EIS.

4.4 KEY FINDINGS: Property impacts

- 4.4.1 Potential property impacts vary depending on the Concept. Potential impacts range between 15-43 displacements and 42-59 encroachments for the full bridge influence area (SR 500 to Columbia Boulevard). Generally, for all Concepts, the greatest number of potential displacements and encroachments would be to non-residential properties.
- 4.4.2 The replacement bridge Concept has the least number of likely property impacts due to the fact that the structure would be located near the existing bridge and freeway alignment.
- 4.4.3 The majority of the property impacts would occur in Portland where improvements cross Hayden Island.
- 4.4.4 Additional survey, engineering and design work in the EIS process is needed before the actual number and extent of the displacements and encroachments is known.

4.5 KEY FINDINGS: Environmental impacts

- 4.5.1 Since all concepts included additional crossings of the Columbia River and North Portland Harbor, there may be potential impacts to fish habitat associated with bridge construction.
- 4.5.2 Three of the four concepts encroach into the Delta Park green space area (60 to 120 feet depending on concept).
- 4.5.3 Three of the four concepts have encroachments onto the radio tower wetlands site (100 to 240 feet depending on concept).
- 4.5.4 All concepts have encroachments onto the Ft. Vancouver Historical Site (60 to 120 feet depending on concept). An encroachment over 60 feet would impact the FHWA building located near the SR14 ramp to I-5 northbound. However, no historic buildings would be impacted.
- 4.5.5 All concepts would impact the Historic I-5 Columbia River Bridge with the full replacement bridge providing the most impact to the historic structure. The existing northbound bridge is

registered on the National Register of Historic Places and the southbound bridge is eligible for registration.

- 4.5.6 The EIS process will allow a full exploration of impacts to natural, cultural, historic, fish and park resources to determine the best balance for the environment and the community. Additionally, potential impacts to the radio tower wetland and Delta Park vary by design concept and would undergo a detailed evaluation in an EIS.

4.6 KEY FINDINGS: Safety

- 4.6.1 BIA improvements address traffic safety concerns resulting from the high number of closely spaced entrances and exits. Improvement concepts would significantly reduce the number of entrances and exits by utilizing collector-distributor lanes adjacent to the freeway lanes. In addition, for the locations where ramps remained closely spaced, bridges would typically be used to separate the entering and exiting traffic.
- 4.6.2 None of the concepts considered would encroach on the restricted air space for the Pearson Air Park.
- 4.6.3 Impacts to marine navigation would be highest for those concepts that build a supplemental bridge. Multiple bridges with low-level lift span bridges would be built in close proximity to one another. Marine navigation hazards in the shipping channel would increase. The replacement bridge concept designed a high level-fixed span bridge that would relocate the navigational channel from the north shore to the center of the Columbia River. (Improvement to the rail bridge would also occur.) This concept would virtually eliminate the need for barge operators to navigate a curved path between the bridges.
- 4.6.4 Life-safety and emergency response to a catastrophic event is also a safety concern. The existing bridges do not meet current seismic standards and in the event of a major earthquake, they could fail. New bridges would be built to higher standards and would have a higher probability of withstanding a major earthquake.

4.7 KEY FINDINGS: Implementation

- 4.7.1 Bridge concepts with ten freeway lanes, and bridge concepts with eight freeway plus arterial lanes, appear promising.
- 4.7.2 Collector-distributor bridge systems have design problems and therefore provide little transportation benefit. Such design problems will be difficult to overcome.
- 4.7.3 A joint use (Hwy/LRT) bridge could be cost-effective but needs further study in an EIS. Constructing both LRT and freeway improvements on a single bridge could potentially result in some cost savings compared to building separate bridges. However, many other factors should also be considered, including right-of-way impacts, whether the existing bridges will be main-

tained or replaced, implications for siting the LRT station on Hayden Island, and construction staging.

4.7.4 Supplemental or replacement bridge: The existing bridges provide three lanes of traffic in each direction. They cannot be widened economically. To provide an addition of two lanes of traffic in each direction (for a total of up to five lanes), the bridges will either have to be replaced with a wider bridge, or a supplemental bridge will need to be constructed adjacent to the existing bridges. While further study is needed to conclude whether a new bridge should be supplemental to the existing bridges or should replace them, the analyses have identified several factors that will influence that decision:

- Traffic operations: With a supplemental bridge, freeway traffic in one or both directions would be split into two traffic streams across the river. With two separate traffic streams, along with many closely spaced interchanges near the river, it is difficult to balance traffic flows, and the analyses indicated that congestion would be significant on the bridge serving the near-by interchanges. By comparison, a replacement bridge would keep all directional traffic on one bridge, resulting in more balanced traffic flow.
- Cost: Current cost estimates indicate that there is little cost differential between a supplemental and a replacement bridge. Further exploration of cost issues will need to continue in an EIS.
- Right-of-way impacts: Replacing the existing bridges with a new bridge would focus the new construction within the existing right-of-way, thus minimizing impacts to adjacent parcels on Hayden Island and in downtown Vancouver.
- Impacts to property and natural, cultural and historic resources: All concepts are likely to have an impact on one or more of the key resources in the BIA. Concepts that build a new bridge (either supplemental or replacement) east of the existing bridges (upstream) have a higher probability of impacting the Fort Vancouver National Historic Site than those that replace the existing bridges in place, or those that build a new supplemental bridge to the west (downstream).

4.7.5 Some river crossing concepts include the conversion of one of the existing freeway bridges for LRT use. While that is technically feasible, the cost of retrofitting the bridges to include the modified decking, electric systems, cathodic protection, and other conversion costs would be significant. If upgrading the bridge to meet current seismic standards is required, the retrofit costs could easily exceed the costs of a new LRT bridge. Further study of this concept would require a detailed investigation of the retrofit costs and a comparison of those costs to a new bridge.

4.7.6 Concepts that provide for separate LRT and freeway bridges could potentially allow the LRT and highway projects to move forward independently of each other. However, further analysis is required to address the joint or separate bridge decision. Such a decision is likely to be based on LRT and highway alignment design requirements, right-of-way and environmental impacts, land use opportunities and constraints relative to siting an LRT station on Hayden

Island, construction costs, traffic staging, operating concerns, and potentially other concerns as well.

4.7.7 If subsequent studies indicate that the two modes can and should be considered separately, there is potential time savings for LRT, which may be implemented in a shorter time period given that substantial environmental and design work has already been completed in the South/North EIS.

RECOMMENDATION 4: Bridge Influence Area

- R 4.1 New transit and vehicle capacity should be constructed across the Columbia River in the I-5 Trade Corridor.
- R 4.2 For vehicles, there should be three through-lanes (and not more than three) in each direction and up to two auxiliary and/or arterial lanes in each direction across the Columbia River (total five lanes in each direction). For transit, there should be two light rail tracks across the Columbia River in the I-5 Trade Corridor.
- R 4.3 In the Bridge Influence Area, SR 500 to Columbia Boulevard, the freeway needs to be designed to balance all of the on and off traffic, consistent with three through lane Corridor capacity and up to five lanes of bridge capacity, in each direction.
- R 4.4 In adding river-crossing capacity and making improvements in the Bridge Influence Area, every effort should be made to (a) avoid displacements and encroachments, (b) minimize the highway footprint in the Corridor, and (c) minimize use of the freeway for local trips.
- R 4.5 The proposed design should include safety considerations.
- R 4.6 As a first step towards making improvements, the bi-state region should undertake an Environmental Impact Study for a new river crossing and potential improvements in the Bridge Influence Area.
- R 4.7 In the EIS, the following BIA elements should be studied:
 - Eight- or ten-lane freeway concepts
 - Replacement or supplemental bridge
 - Joint use or non-joint use freeway/LRT bridge
 - Eight-lane freeway with joint LRT/two-lane arterial
 - HOV throughout the I-5 Trade Corridor
- R 4.8 Evaluate whether or not a six-lane freeway plus two two-lane arterials, one in the vicinity of the I-5 Trade Corridor and one in the vicinity of the railroad bridge, is a viable alternative for consideration in the EIS.
- R 4.9 The following concepts do not show promise for addressing the Corridor’s problems and should not be considered in an EIS:
 - Collector-distributor bridge concepts
 - Arterial-only bridge concepts
 - Tunnel concepts
- R 4.10 Special consideration needs to be given to the architectural aesthetics of any new structures to be built, particularly any new bridge structures.

5 ADDITIONAL RAIL CAPACITY

5.1 KEY FINDINGS: Freight and intercity passenger rail

- 5.1.1 Several low-to-medium cost solutions can significantly improve existing rail capacity. A series of projects have been identified by the railroads, Ports and the Oregon and Washington Departments of Transportation as viable, if funding were available. They are already well into planning or development, are operational, or are “relatively” low cost (\$132 million) compared to more major improvements.
- 5.1.2 Additional passenger service in the Portland/Vancouver corridor will require major rail capacity improvements north of Vancouver, and south of Portland, as well as agreements between the railroads and affected state departments of transportation.
- 5.1.3 The principal “incremental” improvements include:
- Two-main track bypass around BNSF’s Vancouver Yard.
 - Revised crossovers and higher turnout speeds at North Portland Junction.
 - Second main track and increased track speeds between N. Portland Junction, Peninsula Junction, and Fir on UP’s Kenton Line.
 - Expanded capacity and longer tracks at Ramsay and Barnes Yards.
 - Connection in the SE quadrant at E. Portland between UP’s Brooklyn and Graham Lines.
 - Increased track speeds between UP Willsburg Junction and UP Albina.
 - An upgraded “Runner” or River Lead between Albina and East Portland, and a second track through the East Portland interlocking.
- 5.1.4 The “incremental improvements” are sufficient to address capacity needs for 5 to 10 years, given a growth rate of 1.625 to 3.25% per year, at a performance level of 200 hours of delay (96 hours).
- 5.1.5 In 10 to 20 years, additional improvements beyond the identified “incremental improvements” will be needed to accommodate growth of both intercity passenger and freight rail, depending on economic growth rates and acceptable levels of service.
- 5.1.6 Within 10 to 20 years, improvements to accommodate the growth on the rail system may include the separation of the UPRR and BNSF rail lines in the N. Portland Junction and additional capacity across the Columbia River.
- 5.1.7 The incremental improvements, and later additional improvements noted in Section 5.1.5 above, will provide acceptable freight capacity for 10 to 20 years, and some marginal capacity to accommodate the 10-year plans for eight additional intercity passenger trains, but not for commuter rail service.
- 5.1.8 Determining the exact nature and cost of these incremental and additional, future improvements will require further study.

5.1.9 If rail capacity does not increase, reliability will decline and travel time and shipping costs may increase. Rail shippers may be forced to divert traffic, change modes or relocate. Intercity passenger service may not be able to be expanded.

- If intercity passenger rail service is to expand, privately owned rail facilities will require public-private cooperation to address capacity issues that constrain the system.
- The economics of freight movement make freight rail not as competitive with trucks at distances less than 500 miles, depending on commodity shipped.
- If capacity improvements are not implemented, rail congestion will increase, and shippers will consider alternative modes of moving freight, particularly by truck.
- The cost of delay to the freight railroads—as related to direct rail operating costs—will vary depending on geographic area, and types of trains and commodities shipped. An average direct cost of delay is estimated at \$300 per hour of train delay. This figure, however, does not reflect the full impacts of the costs of delay to the railroads (potential loss of business revenue), and to the regional economy (jobs, loss of local businesses, and impacts on port development).
- A lift span in the center of the railroad bridge would result in greater and safer use of the center span of the Interstate Bridges by barge traffic, resulting in fewer lifts of the Interstate Bridge and reducing delay on I-5.

5.2 KEY FINDINGS: Commuter rail

5.2.1 Commuter rail service cannot operate effectively on the freight rail network over the next 10 to 20 years, even with the identified incremental and additional network improvements. Commuter rail service could be instituted only on a separated passenger rail-only network. A separated passenger rail-only, high-speed rail system would improve intercity passenger rail service and could drive the feasibility of commuter rail in the Region. However, the capacity analysis shows taking intercity passenger rail service off of the freight rail network would not free up enough capacity on the existing rail network.

5.2.2 The unconstrained commuter rail system modeled for the I-5 Partnership process provides fast travel times. It serves areas not well served by transit, particularly suburban and outlying areas (Salmon Creek, North Clark County, I-205 Corridor and East Clark County). It does not appear to serve the same market as light rail.

5.2.3 The cost of a separated passenger network is \$1.5 to \$1.7 billion. These higher costs have a higher level of uncertainty than the other studied options. This uncertainty is attributed to geologic issues, the potential for significant right-of-way costs, the need for environmental mitigation, and the need for additional connecting transit service, feeder bus service, and Rose Quarter station and connections.

5.2.4 The Commuter Rail service modeled assumes new dual tracks over the entire length of service area (Ridgefield to Washougal). Train frequencies, average speed, travel times, and estimated ridership is based on dual tracks throughout proposed network. A combination of dual tracks,

and single tracks with periodic sidings for train meets and passing may be possible, but will likely result in less frequent service, slower average speed, longer travel times, and reduced ridership.

- 5.2.5 Potential commuter rail right-of-way displacements associated with a new, dual-track system, include approximately 35 residences on the Ridgefield line, 55 residences on the Washougal line, four to five industrial properties in Portland and eight in Vancouver. The alignment may also require the relocation of SR 14 or the Evergreen Highway at several “pinch points” along the Washougal line. Finally, there will likely be additional neighborhood impacts from noise, traffic, retaining walls, and the high volume of feeder bus connections necessary to serve the 78th St./Lakeshore and Ridgefield stations.
- 5.2.6 Further study would be needed of the capacity of a joint LRT/transit bus/commuter rail service transit center at the Rose Quarter Transit Center to accommodate the high volume of transferring transit riders anticipated. The commuter rail service modeled assumes sufficient LRT and bus capacity for the necessary regional connections, but does not include the cost for a Transit center. Finally, this particular alignment is not consistent with the City of Portland’s plan designation of Union Station as its Regional Transportation Center.
- 5.2.7 Commuter rail may impact the direction of growth in the Region by facilitating the development of lower density residential housing patterns in suburban and outlying areas of Clark County, instead of to more serviceable urban locations.
- 5.2.8 The environmental impacts from commuter rail include the crossing of significant wetlands by the Ridgefield line, and the mitigation costs are not included in the above cost estimates.
- 5.2.9 In regions with similar population characteristics as the Portland/Vancouver area, all-day commuter rail service is not common. Most such systems operate peak-period service only. Systems that offer limited mid-day service have generally experienced a 10 to 20% increase in ridership over their daily, peak-period ridership. The four-hour PM peak ridership estimate is 8,150, and using the 10 to 20% factor, 8,965 to 9,780 all-day riders.
- As modeled, commuter rail with the light rail transit loop will reduce river crossings by 1,700 vehicles during the four-hour PM peak period, or about 560 vehicles in the peak hour, both directions, both bridges. This is a 2% reduction in vehicle crossing of the Columbia River in the PM peak four hours.
 - Commuter rail creates potential funding competition between it and LRT because both are eligible for the same federal “New Starts” funding pool.

RECOMMENDATION 5a: Freight rail

- R 5a.1 The proposed Bi-State Coordination Committee should establish a public/private forum to implement these rail recommendations. The “Bi-State Rail Forum” should be comprised of representatives from Oregon and Washington Departments of Transportation, regional planning agencies (Metro, RTC), Ports of Portland and Vancouver, cities of Portland and Vancouver, Amtrak and the Union Pacific and Burlington Northern/Santa Fe Railroads. The Rail Forum would serve as an advisory group to the Bi-State Coordination Committee for the identification of needed rail capacity improvements, highway/rail grade separations, and Port access projects.
- R 5a.2 The Bi-State Coordination Committee, through the Rail Forum, should initiate an aggressive program to:
- Facilitate the efficient rail movement of freight in the Portland/Vancouver Region
 - Coordinate the multi-modal transportation services offered in the area to increase port access and streamline the movement of freight throughout the I-5 Trade Corridor
 - Coordinate with other freight movers (truck, barge, marine, aviation) to facilitate inter-modal connections, minimize conflicts among modes, and maximize cooperation.
 - Develop strategies to implement the specific findings of the I-5 Partnership Rail Capacity Study, including prioritizing and scheduling the “incremental improvements.”
 - Study and pursue the rail infrastructure improvements required to accommodate anticipated 20 year freight rail growth in the I-5 Trade Corridor and frequent, efficient intercity passenger rail service between Seattle, Portland and Eugene. This may include: the separation of the UPRR and BNSF rail lines in the N. Portland Junction and additional capacity across the Columbia River.
- R 5a.3 The Bi-State Coordination Committee, through the Rail Forum, should also:
- Negotiate the cost allocation responsibilities between public and private stakeholders
 - Work collaboratively with regional governments and agencies to advocate for the funding and implementation of rail projects at federal, state, regional and local levels.
 - Explore means to facilitate the operation of the BNSF Columbia River Rail Bridge by seeking funding for the replacement of the existing “swing span” with a “lift span” located closer to the center of the river channel. Locating a “lift span” in the center of the river will facilitate safer barge movements between the I-5 Interstate Bridge and the BNSF rail bridge. A “lift span” can be opened and closed more quickly than a “swing span,” thus reducing the delay of crossing the river for freight rail.
 - Coordinate with the Congressional delegations of both states, regional agencies, and railroads, to encourage the US Coast Guard to recognize the hazard to navigation caused by the existing BNSF railroad bridge, and to award Truman-Hobbs Act funding to replace the existing “swing span” with a “lift span.”

RECOMMENDATION 5b: Intercity passenger rail

- R 5b.1 The Bi-State Coordination Committee, through the Rail Forum, should:
- Coordinate efforts by both states to encourage greater funding at the state and federal level for additional intercity passenger rail service along the federally designated, Pacific Northwest High Speed Rail Corridor, recognizing the need to ensure compensating capacity to the private railroads for any loss of freight capacity

- Coordinate with the Congressional delegations of both states to encourage passage of pending federal legislation for enhanced funding of High Speed Rail service in the Corridor.
- Work cooperatively with freight railroads to add capacity to the existing rail lines, where appropriate, to enable additional operation of intercity passenger rail service. This capacity might be achieved either by compensating capacity used by the addition of intercity passenger trains on the freight network rail lines, or by separating passenger train service from the freight network and putting it on a passenger rail-only network, as appropriate.
- Support efforts to add capacity outside the Portland/Vancouver Region that will improve train speeds and enable additional intercity passenger rail service.

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RECOMMENDATION 5c: Commuter Rail

R 5c.1 Commuter rail should not be studied in an EIS at this time.

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6 LAND USE AND LAND USE ACCORD

6.1 KEY FINDINGS: Land use

6.1.1 Without changes in land use policy, the following land use development trends can be expected, regardless of the transportation actions taken in the I-5 Trade Corridor:

- Population and employment growth in the Portland/Vancouver Region are developing in a dispersed pattern. A significant share of households and employment are locating at the urban fringe, within adopted zoning.
- There will be more job growth in Clark County than anticipated in our current adopted plans. Even with a reduced percentage of commuters crossing the river, I-5 will be congested.
- Industrial areas are at risk of being converted to commercial uses, threatening the availability of industrial land in the Portland/Vancouver Region and increasing traffic congestion in the I-5 Trade Corridor.

6.1.2 Without investment in the I-5 Trade Corridor, we can expect that traffic congestion and reduced travel reliability will have an adverse economic effect on industries and businesses in the Corridor.

6.1.3 With highway and transit investments in the Corridor, there will be travel-time savings that can be expected to have the following benefits:

- Attract employment growth toward the center of the Region to the Columbia Corridor along the I-5 Trade Corridor from elsewhere in the Region.
- Strengthen the regional economy by attracting more jobs to the Region.
- New job opportunities for residents near the I-5 Trade Corridor because of their close proximity to the Corridor improvements being considered.
- Mixed-use and compact housing development around transit stations.

6.1.4 Highway and transit investments in the Corridor also carry risks if growth is not well managed:

- Increased demand for housing in Clark County due to the location of jobs in the center of the Region
- Increased pressure to expand the Clark County urban growth area along the I-5 Trade Corridor to the north.
- Industrial areas are at greater risk of being converted to commercial uses at new and improved interchanges with the improved travel times at these locations.

6.1.5 Growth must be managed to ensure that:

- Growth in Clark County does not result in new capacity being used by commuters, instead of for goods movement.
- The expected life span of investments is not shortened
- Scarce industrial land is not converted to commercial uses.
- Local jurisdictions implement necessary zoning and regulatory changes to attract mixed use and compact housings around transit stations.

6.1.6 The recommendations and potential improvements called for in this Strategic Plan are largely compatible with state, regional and local land use plans. See **Attachment C**.

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RECOMMENDATION 6: Land use and land use accord

- R 6.1 To protect existing and new capacity and support economic development, RTC and Metro, along with other members of the current Bi-State Transportation Committee, should adopt and implement the Bi-State Coordination Accord. (See **Attachment D**). Key elements of the Accord include the following:
- Jurisdictions and agencies agree to protect the I-5 Trade Corridor and will manage development to:
 - Preserve mobility and protect industrial land along I-5
 - Protect existing, modified and new interchanges
 - Adopt development plans for transit station areas
 - Coordinate management plans
 - The Bi-State Transportation Committee will expand its role to review and advise JPACT, RTC, other councils, commissions and boards on:
 - Management plans, interchange plans and agreements and transit station plans for the I-5 Trade Corridor.
 - Other transportation, land use and economic development issues of bi-state significance.

- Jurisdictions and agencies agree before new river crossing capacity is added to adopt drafts of management plans, agreements and actions and include in environmental documents.
- Jurisdictions and agencies agree before I-5 is widened at Delta Park to:
 - Form the Bi-State Coordination Committee.
 - Have the Committee review environmental documents.
- Complete plans to manage existing interchanges with deliberate speed.

R 6.2 The Accord signatories need to develop the operational details of the Accord through the proposed Bi-State Coordination Committee.

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7 TRANSPORTATION DEMAND/SYSTEM MANAGEMENT (TDM/TSM)

7.1 KEY FINDINGS: TDM/TSM

7.1.1 Transportation Demand Management (TDM) and Transportation System Management (TSM) are essential strategies for improving our mobility. TDM is about reducing auto trips, shortening some, eliminating others, and making our transportation systems more efficient. TSM measures are designed to manage the transportation system to improve its operation, reliability and efficiency for all users. TSM measures can also be targeted to improve the transportation system for specific users such as carpools, transit or freight.

7.1.2 TDM/TSM can be thought of like a package of common business-management practices known as “asset management.” Just as business tries to increase efficiency, respond to its market and use new technology, so does TDM/TSM. Just as business tries to maximize its capital return through adding second employee shifts, TDM tries to maximize the existing highway capacity by managing peak demand and reducing the share of single occupant vehicle trips. Business may use “just-in-time” inventory while TSM uses traffic signal timing and timed transfers. A business uses express checkout stands and frequent flyer benefits while TDM offers HOV bypasses and discounted transit passes. Business develops new products—or new and improved products—while TDM develops new services like vanpooling or new and improved transit routing.

7.1.3 There is no single silver bullet in the TDM/TSM arsenal. However, additional transit service is the single most important investment necessary to achieve TDM/TSM targets and TDM/TSM strategies are most effective when used in a coordinated approach. Current TDM measures focus primarily on peak period commute trips. Future TDM/TSM activities must be broadened to face the challenge of non-work trips as well.

7.1.4 Some TDM/TSM actions can be specifically targeted to the I-5 Trade Corridor. However, most TDM/TSM actions can only be broadly applied, region-wide. The Bi-State Region has basic

TDM/TSM service levels in place. Policies and employer-based programs have increased the visibility and success of demand management programs and have helped to extend them throughout the Region.

7.1.5 TDM and TSM actions are an important part of the I-5 Trade Corridor Strategic Plan. They can minimize transportation capacity needed in the I-5 Trade Corridor and maximize the transportation system’s reliability, efficiency and usable life. While the focus is on achieving Corridor-wide targets, these targets cannot be met without regional goals being in place.

7.1.6 The TDM/TSM recommendations will be most effective only if the Region also provides and implements the other Strategic Plan recommendations, especially:

- Transit services will be provided to Clark County with an LRT loop and supplementary express bus service.
- Current planned park and ride lots will be funded and constructed. Additional park and ride spaces will be made available to support the light rail system.
- An HOV lane will operate in both directions between Going Street in Portland and 134th Street in Vancouver.
- The new river crossing(s) will include a quality bicycle/pedestrian facility.
- Land use actions that support alternative mode share will continue to be pursued in the Region and I-5 Trade Corridor.

7.1.7 Costs and effectiveness for the most-promising TDM/TSM actions have not currently been quantified due to the interrelated nature of the activities and lack of detailed accounting for individual TDM and TSM costs. For example, TDM education program success depends on the availability of good transit service, the price of parking, the quality of the education program and many other costs that are not estimated separately in practice.

RECOMMENDATION 7: TDM/TSM

R 7.1 **Final targets:** Ultimately, the proposed Bi-State Coordination committee should adopt *final* TDM/TSM targets for the I-5 Trade Corridor and the Region that are acceptable, attainable and measurable.

R 7.2 The following **interim targets** should be adopted now by the jurisdictions and agencies in the I-5 Trade Corridor and ultimately by the proposed “Bi-State Coordination Committee.” The Region’s Travel Demand Forecasting Model, monitoring programs, or other mutually agreeable methods should measure them:

- Increase Non-Single Occupancy Vehicle share, including transit and vanpools, across the Columbia River (I-5 and I-205) in the peak periods to 43%* by the year 2020. Year 2000 non-SOV use is estimated at 38%** for the PM peak.
- Maintain average, mid-day travel speeds through the I-5 Trade Corridor at 70% of the maximum posted speed limits (50 to 60 mph) for trucks on I-5 traveling between I-405 and I-205 to avoid spreading the peak hours of congestion into the mid day period when the most trucks are on the road. Currently the

* Data Source: Metro’s Regional Travel Forecast Model for year 2020. This scenario assumes additional TDM measures beyond Metro’s Regional Transportation Plan TDM assumptions. The percentage excludes trucks and inter-regional trips, i.e., external-to-external trips.

** Data Source: Metro’s Regional Travel Forecast Model for year 2000. The percentage excludes trucks and inter-regional trips, i.e., external-to-external trips.

average mid-day speed is at 58 mph between I-84 and I-205 on I-5 (speed limits in the corridor range between 50 and 60 mph).

- Reduce daily VMT/capita for the urban areas of the four-county region by 10% by 2020. Current daily regional VMT/capita is estimated at 16.4 miles/person.
- Increase peak period, travel reliability through the I-5 Trade Corridor and major arterials in the Corridor by maintaining travel times for all vehicles.***

R 7.3 **Overall objectives:** In addition to the other Task Force infrastructure and land use recommendations, the Region's commitment to basic TDM/TSM services should be expanded and enhanced, existing gaps in services should be filled, and funding should be increased beyond current levels. A mix of promising TDM/TSM actions described in the attached "Action Items and Rough Costs Matrix" should be implemented for:

- Alternative mode services that provide an option to driving alone
- Alternative mode support that makes it easier to use other modes
- Worksite-based strategies that focus on education and incentives at the workplace
- Public policy and regulatory strategies that influence mode choice
- Pricing strategies that change parking or road prices
- TSM strategies that improve efficiency of the road system

R 7.4 **Support transit:** Additional transit service is the single most important investment necessary to achieve the TDM/TSM targets. Additional service coverage, frequency and availability throughout the day will provide the foundation for success. The Region's transit agencies, with the support of other jurisdictions and agencies, should seek the necessary public funding for transit service improvements. On a region-wide basis, the Region spends \$162 million per year to operate the transit system. An additional \$155 million per year is needed to operate transit services at the "Priority" level assumed in the Baseline 2020. Note: TriMet needs the higher "Preferred" level of funding to meet Metro's 2040 Goals.

R 7.5 **Fund study for plan:** The regional transportation partners, with the guidance of the proposed "Bi-State Coordination Committee," should collaboratively prepare an "I-5 TDM/TSM Corridor Plan" to identify the final TDM/TSM targets, implementation details, funding sources, priorities and costs. Upon its completion, the proposed Bi-State Coordination Committee should review the plan, finalize both Corridor and regional targets, and lead an effort to secure additional funding for the selected TDM/TSM measures. The proposed Bi-State Coordination Committee should establish a geographically balanced TDM subcommittee to assist its I-5 Corridor and regional TDM/TSM target-setting and plan implementation. The cost of completing the "I-5 TDM/TSM Corridor Plan" is approximately \$250,000.

R 7.6 **Plan elements:** The plan should:

- Evaluate the proposals in the "Action Items and Rough Costs Matrix" (**Attachment E**).
- Include person and truck travel survey results to document existing travel patterns and supplement other ongoing behavior survey data.
- Identify the short-term (before construction of improvements), mid-term (during construction) and long-term (after construction) TDM/TSM actions for the I-5 Trade Corridor and Region, in addition to the recommended current actions noted below.
- Identify the level of funding needed to achieve the level of trip reduction agreed to by the proposed Bi-State Coordination Committee (based on final Corridor and regional targets).
- Identify lead agency/jurisdictional responsibilities for implementation and tracking success.

***This issue and the final target reference points should be part of the study noted in sections F and G, below. Travel time reliability could be improved by decreasing the number, severity and duration of incidents in the Corridor through improved incident response. Improving the travel time reliability on I-5 should be balanced with the suitable travel times on the adjacent arterials.

R 7.7 **Recommended current actions:** The jurisdictions and agencies in the I-5 Trade Corridor and the Region should take action now. At a minimum, the Region should maintain and strengthen the TDM and TSM programs on both sides of the river. Additionally, the Task Force recommends implementation of the “current actions” and the additional “new money” investments noted in the following table. The estimated annual costs for the current actions are roughly \$1.9 million per year or about \$9.5 million over five years. While the recommended TDM/TSM actions are I-5 Corridor-focused, the Task Force recommends a regional approach, given the inherent inter-relationship of the I-5 Corridor and the regional transportation system.

Recommended current action items — I-5 Trade Corridor focused	Annual cost estimates
1. Education and outreach to provide information about work destination based, peak hour travel options. The first phase would be a survey to document existing origin and destination travel patterns.	\$1,000,000
2. Promote business subsidy of transit passes for employers.	\$10,000
3. Promote carpoolmatchNW.org to assist in carpool formation.	\$150,000
4. Offer guaranteed rides home at work sites.	\$20,000
5. Explore methods to better integrate C-TRAN and Tri-Met printed and real-time customer information to expedite Bi-State travel using both systems, e.g., C-TRAN service information on Tri-Met Real Time Kiosks and expanding the number of kiosks would cost approximately \$300,000.	\$300,000
6. Explore business and community interest for additional and/or expanded Transportation Management Association in the I-5 Trade Corridor between the Columbia River and Lloyd District, including Swan Island, Rivergate and Interstate Avenue. (One-time study).	\$50,000
7. Increase coordination between Oregon and Washington Transportation Management Centers to improve freeway management and operations, including incident management.	\$200,000
8. Identify priority locations for planned ramp meters and deploy integrated, bi-state, ramp meter timing for the I-5 and I-205 Corridors.	\$140,000
Total estimated annual cost	\$1,870,000

R 7.8 **Recommended Mid-Term Actions:** The regional partners should begin planning for the TDM/TSM measures necessary during the construction of the I-5 Trade Corridor improvements.

R 7.9 **Recommended Long-Term Actions:** TDM and TSM strategies from the “I-5 TDM/TSM Corridor Plan” should be evaluated further in the environmental process for the I-5 Trade Corridor improvements. The TDM/TSM strategies should be part of any final I-5 Trade Corridor project.

R 7.10 **Timing:** The proposed Bi-State Coordination Committee needs to agree on the “I-5 TDM/TSM Corridor Plan,” TDM/TSM targets for the I-5 Trade Corridor and the Region, and the appropriate levels of financial commitment and implementation that must be in place before construction begins on any new river-crossing capacity.



8 ENVIRONMENTAL JUSTICE

8.1 KEY FINDINGS: Environmental justice

- 8.1.1 The states of Washington and Oregon have initiated the Portland/Vancouver I-5 Transportation and Trade Partnership in response to the problem of growing congestion on the highway and rail systems.
- 8.1.2 The I-5 Partnership Task force has adopted a Problem, Vision and Values Statement to guide its work. The statement reads in part: “The principles of environmental justice will be followed in developing the Strategic Plan and making recommendations for the corridor.”
- 8.1.3 There are four fundamental environmental justice principles:
- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
 - To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
 - To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.
 - To incorporate analysis in the EIS process of cumulative risks and disparate impacts due to multiple exposures.*
- 8.1.4 Highway and transit projects recommended by the I-5 Partnership Task Force are in or near low-income and/or minority communities both in Oregon and Washington.
- 8.1.5 To begin defining how the draft recommendations for improvements to the I-5 Trade Corridor may impact and benefit low-income and minority residents, a series of meetings—two meetings in each state—were held with community stakeholders.

RECOMMENDATION 8: Environmental justice

- R 8.1 A community enhancement fund for use in the impacted areas in the I-5 Trade Corridor in Oregon and Washington should be established. Such a fund would be in addition to any impact mitigation costs identified through an environmental impact statement and would be modeled conceptually after the “1% for Arts” program, the I-405 Mitigation Fund and the St. John’s Landfill Mitigation Fund. The Bi-State Coordination Committee would recommend the specific details in conjunction with the Environmental Justice Work Group noted in Section R8.6 below.
- R 8.2 Continued work should be done to complete a list of communities, organizations and agencies to outreach to low income and minority communities during the EIS process.
- R 8.3 ODOT and WSDOT, in cooperation with the potentially impacted communities, should develop a methodology and criteria to map low income and minority communities in areas potentially affected by the recom-

* A reasonable effort, consistent with applicable EPA standards should be made in the EIS to assess cumulative impacts.

mendations from the I-5 Partnership. The methodology and criteria will be applied to 2000 Census data (currently income data only exists for 1990 and new data will not be available until the summer of 2002) for use in the EIS.

- R 8.4 A list of potential positive and negative community impacts were identified by the stakeholders and should be taken into the EIS process to be used as a beginning point to conduct further analysis on impacts. (See **Attachment F**).
 - R 8.5 Should there be a finding during the EIS process that there are disproportionate impacts for environmental justice communities, the list of potential community benefits identified by the stakeholders should be a starting point for a community conversation about how to offset impacts and/or bring benefits to the impacted community. (See **Attachment G**).
 - R 8.6 During the EIS process, special attention needs to be paid to conducting outreach to low-income and minority residents in the Study Area. Community stakeholders generated a list of outreach and involvement ideas. This list should be taken into the EIS process and used as the basis to develop a public outreach and involvement plan that includes outreach to low income and minority communities. (See **Attachment H**).
 - R 8.7 A Public Involvement and Environmental Justice Working Groups should be formed at the beginning of the EIS. Work group membership should include representatives from environmental justice communities along the corridor. The Public Involvement working group should address public outreach. The Environmental Justice working group membership should include liaisons to the Public Involvement working group to ensure community concerns are incorporated into the EIS and that adequate emphasis is placed on the potential impacts and benefits to low income and minority communities.
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9 ADDITIONAL ELEMENTS AND STRATEGIES CONSIDERED

9.1 KEY FINDINGS: West Arterial Road

- 9.1.1 The West Arterial Road is a possible complement to, but does not substitute for, I-5 improvements. While this potential improvement falls slightly behind on all measures of transportation performance, it does provide significant benefits. Compared to Baseline 2020, time travel savings between downtown Portland and downtown Vancouver are approximately 6 minutes, delay is reduced by 20%, and congestion is reduced by 17%.
- 9.1.2 This option has several benefits to the regional transportation system including relieving traffic on I-5, providing an additional connection between Oregon and Washington, relieving the St. Johns neighborhood of through truck traffic, and providing an efficient south-north arterial for (a) freight movement between key industrial areas in the Portland/Vancouver area and (b) other traffic in North Portland.

- 9.1.3 However, the traffic impacts to Vancouver neighborhoods and the downtown Vancouver district are significant. It is very likely that arterial roads leading to this new connection would need to be widened to accommodate the traffic traveling between the West Arterial Road and the freeway. The widening of these arterial roads would need to be mitigated.
- 9.1.4 The West Arterial Road, as currently conceived, would have similar property impacts as improvements in the I-5 Trade Corridor. This does not account for property impacts that would occur if arterial roads need to be widened to accommodate traffic access to this new road.
- 9.1.5 Due to the fact that the West Arterial Road crosses Hayden Island, home to a variety of wild-life species and a high quality wetland, it has the greatest potential for impacts to natural resources of all the Option Packages with moderate to major impacts likely.
- 9.1.6 While the West Arterial Road appears to result in less emissions directly at the freeway, emissions would increase on arterial roads.
- 9.1.7 The estimated cost of West Arterial Road is \$947 million (2001 dollars).

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RECOMMENDATION 9a: West Arterial Road

R 9a.1 Further study of this option should be pursued and identified as a potential transportation solution for consideration in the future and should not be an alternative studied in the EIS for the Bridge Influence Area.

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9.2 KEY FINDINGS: Additional elements and strategies

- 9.2.1 As part of the Task Force’s work, many potential elements and strategies that are not specifically commented on in this draft document were considered, including:
 - Addressing the Corridor’s problems with land use actions and/or transportation demand management alone.
 - A new freeway with bridge outside the I-5 Trade Corridor (east of I-205, west of I-5) to connect Oregon and Washington.
 - Monorail
 - Personal rapid transit
 - Hovercraft bus
 - People-mover
 - Water taxi
 - Ferry
 - Helicopter
 - Gondola
- 9.2.2 The Task Force also considered various combinations of these elements and strategies.

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RECOMMENDATION 9b: Additional elements and strategies

R 9b.1 The Task Force does not believe the additional elements and strategies show promise for addressing the corridor's problems and should therefore not be considered in an EIS.

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10 FINANCING OPTIONS

10.1 KEY FINDINGS: Financing Options

- 10.1.1 Highway and transit improvements in the I-5 Trade Corridor between Portland and Vancouver will be an expensive undertaking. Capital costs (in 2001 dollars) are estimated at Bridge Influence Area (\$1.2 billion),* and Light Rail Loop (\$1.0 billion).
- 10.1.2 Capital projects of the magnitude recommended by the Task Force typically require a variety of funding and financing mechanisms. The Region will not be able to rely on any single revenue source.
- 10.1.3 There are several promising federal, state and local revenue sources that could be available for financing the proposed projects (**Attachment I**).
- 10.1.4 The revenue-generating capacity of several of these sources taken together is quite large and provides the ability to bond all or most of the capital cost of the projects.
- 10.1.5 While it will be a difficult undertaking, requiring substantial political leadership, Oregon and Washington, in cooperation with federal and local governmental partners and, perhaps, private sector entities, have the financial capacity to construct the projects.
- 10.1.6 By constructing elements of the highway and transit improvements as separate components or in phases, the financial impacts can be spread over a greater number of years and can enable a wider range of funding sources to be used for construction.
- 10.1.7 Developing a final funding package for the bi-state improvements will be a complicated process that will involve a number of diverse entities, including state legislatures, federal agencies, and various financial institutions.
- 10.1.8 To be fully effective, the capital investments must be supported by a significant increase in basic transit service. The light rail loop in Clark County must be served by frequent bus service. In addition, the single most important investment necessary to achieve the TDM/TSM

* BIA costs include light rail costs of approximately \$150 to \$200 million. The costs, in 2001 dollars, could range from \$1.2 to \$1.5 billion for the BIA, and \$1 to 1.3 billion for light rail depending on the final design, mitigation measures, and other unanticipated factors

targets is additional transit service coverage, frequency and availability throughout the day. Successful implementation of the draft recommendations will require a significant increase in transit operating revenue.

- 10.1.9 A focused bi-state and regional effort is needed to determine how to meet the Region's goals for increased transit service. C-TRAN operating revenue and service is particularly at risk. Due to the passage of I-695 in 2000, C-TRAN's tax revenue was cut in half. They are currently filling that revenue gap with funds in their reserve account, but without an increase in basic operating revenue by 2007, transit services will be cut dramatically.

RECOMMENDATION 10: Financing

- R 10.1 Oregon and Washington, and the Portland/Vancouver Region, should work together to identify opportunities to fund the widening of I-5 to three lanes in each direction between Delta Park and Lombard. This project is anticipated to be ready for construction by September 2004.
- R 10.2 Other capital elements of the transit and highway recommendations will take longer to fund. As a first step towards development of a financing plan for the highway and transit improvements, Oregon and Washington, together with regional partners and representatives of both legislatures should begin working together to explore long-term funding opportunities.
- R 10.3 TriMet and C-TRAN should undertake separate, yet coordinated efforts to develop a plan to increase operating support to enable an expansion in transit service starting within the next five years. For C-TRAN, a Transit System Development Plan should be developed in conjunction with the next planning steps for the light rail loop system.
- R 10.4 Efforts to increase transit operating revenue for TriMet and C-TRAN should be coordinated and discussed by the new Bi-State Coordinating Committee. The goal should be to establish regional transit financing commitments that will allow for an aggressive bi-state TDM program and expansion of transit service to support construction of the phased light rail loop.

11 Next steps and implementation

RECOMMENDATION 11: Next Steps and Implementation

- R 11.1 This Strategic Plan should be sent to the Oregon Transportation Commission, the Washington Department of Transportation, and to the metropolitan planning organizations in Portland and SW Washington for review and potential adoption into their transportation plans.
- R 11.2 Parallel with the adoption of the transportation recommendations into the regional transportation plans, the metropolitan planning organizations in Portland and SW Washington should adopt a Bi-State Coordination Agreement and establish the Bi-State Coordination Committee. Once established, the Bi-State Coordination Committee should proceed with all deliberate speed to:

- Form the TDM/TSM Forum and begin its work on the I-5 TDM/TSM Corridor Plan.
- Begin discussions and planning for investing more in the I-5 Trade Corridor, including focused TDM/TSM actions that can be taken now.
- Form the Rail Forum and begin its work.

R 11.3 As to highway and transit capital investments in the corridor:

- Oregon and Washington, and the Portland/Vancouver Region, should work together to identify opportunities to fund the widening of I-5 to three lanes in each direction between Delta Park and Lombard. This project is anticipated to be ready for construction by September 2004.
- As a first step towards making improvements, the bi-state region should undertake an Environmental Impact Study for a new river crossing and potential improvements in the Bridge Influence Area. That study and the implementation of these recommendations should be guided by the Task Force’s Problem Vision and Values Statement.
- In the EIS, the following BIA elements should be studied:
 - Eight- or ten-lane freeway concepts
 - Replacement or Supplemental Bridge
 - Joint use or non-joint use Freeway/LRT Bridge
 - Eight-lane freeway with joint LRT/two-lane arterial
 - HOV throughout the I-5 Trade Corridor.
 - In addition, a six-lane freeway plus two two-lane arterials, one in the vicinity of the I-5 Trade Corridor and one in the vicinity of the railroad bridge, should be evaluated to determine if it is a viable alternative for consideration in the EIS.
 - The following concepts do not show promise for addressing the Corridor’s problems and should not be considered in an EIS:
 - Collector-distributor bridge concepts
 - Arterial-only bridge concepts
 - Tunnel concepts
- Public Involvement and Environmental Justice Working Groups should be formed at the beginning of the EIS. Working group membership should include representatives from environmental justice communities along the Corridor. The Public Involvement working group should address public outreach. The Environmental Justice working group membership should include liaisons to the Public Involvement working group to ensure community concerns are incorporated into the EIS and that adequate emphasis is placed on the potential impacts and benefits to low income and minority communities.
- Parallel to this EIS process, a plan for funding the highway and transit capital expenditures should be developed.

R 11.4 As to transit operations, TriMet and C-TRAN should work with all deliberate speed to undertake efforts to increase operating support to enable an expansion in transit service starting within the next five years. This effort should be coordinated through the Bi-State Coordinating Committee.

R 11.5 ODOT and WSDOT should continue to work with environmental justice stakeholders to complete the research to identify groups and communities to conduct outreach with during the EIS process, and to identify the low income and minority communities that could be affected by the recommendations in this plan.

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The I-5 Portland/Vancouver Transportation and Trade Partnership Task Force developed a number of multi-modal Option Packages. From these, five were selected for further analysis. All five Option Packages contain transit and road elements, a call for increased transportation demand management and transportation system management, and a major increase in transit service throughout the Portland/Vancouver region.

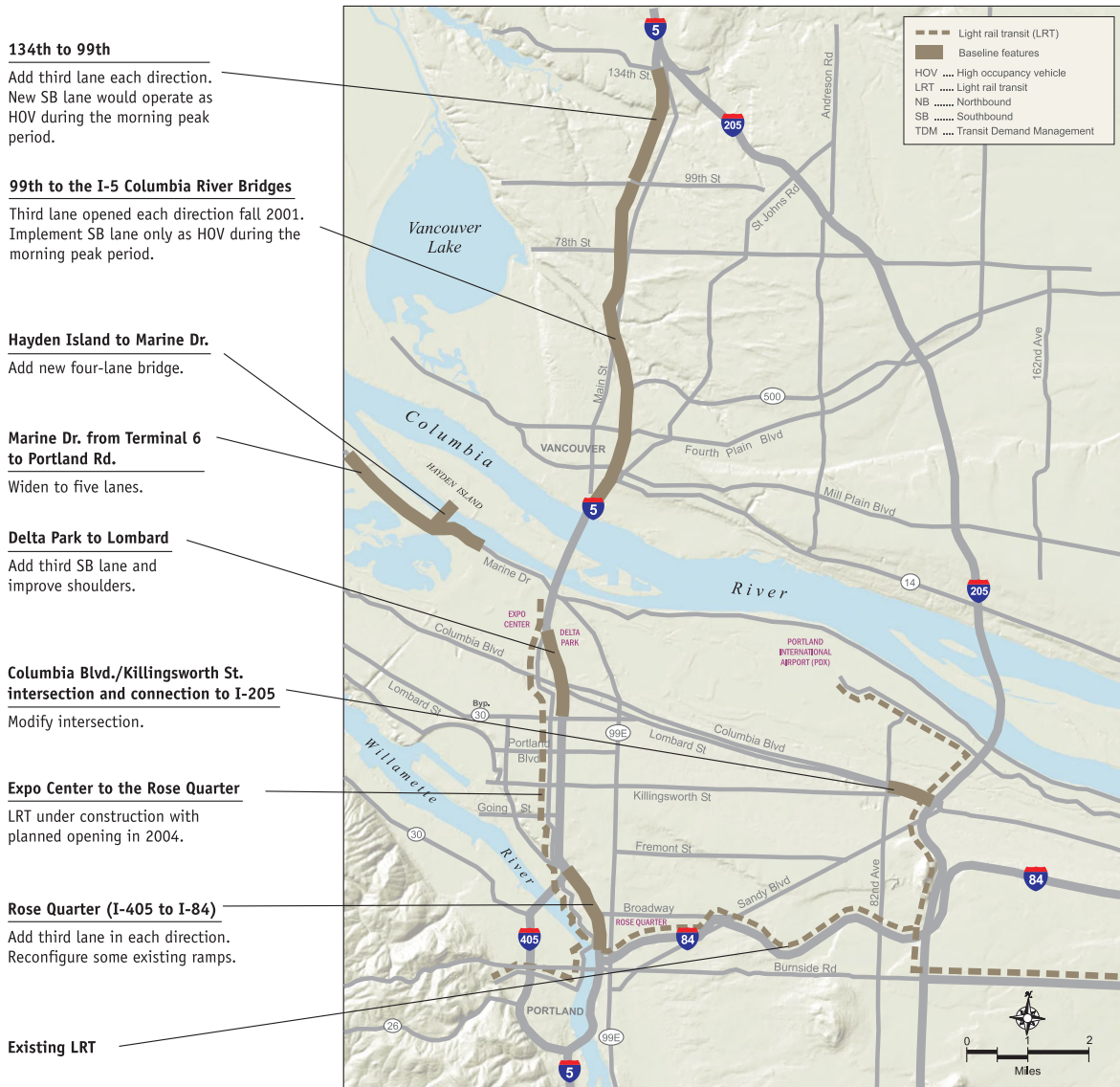
The five Option Packages are:

- Express Bus/3 Lanes
- Light Rail/3 Lanes
- Express Bus/4 Lanes
- Light Rail/4 Lanes
- West Arterial Road

This attachment contains information about the Option Packages. **Figure A-1**, Baseline 2020, is not an Option Package but shows transportation improvements that are already planned over the next 20 years. **Figures A-2 – A-6** describe the improvements that would be made in each of the Option Packages (in addition to the improvements in Baseline 2020). **Figures A-7– A-22** compare the Option Packages based on transportation performance, such as hours of vehicle delay, transit travel time, and vehicle user cost savings.

The Task Force has recommended the Light Rail/3 Lane Option Package (**Figure A-3**).

Baseline 2020

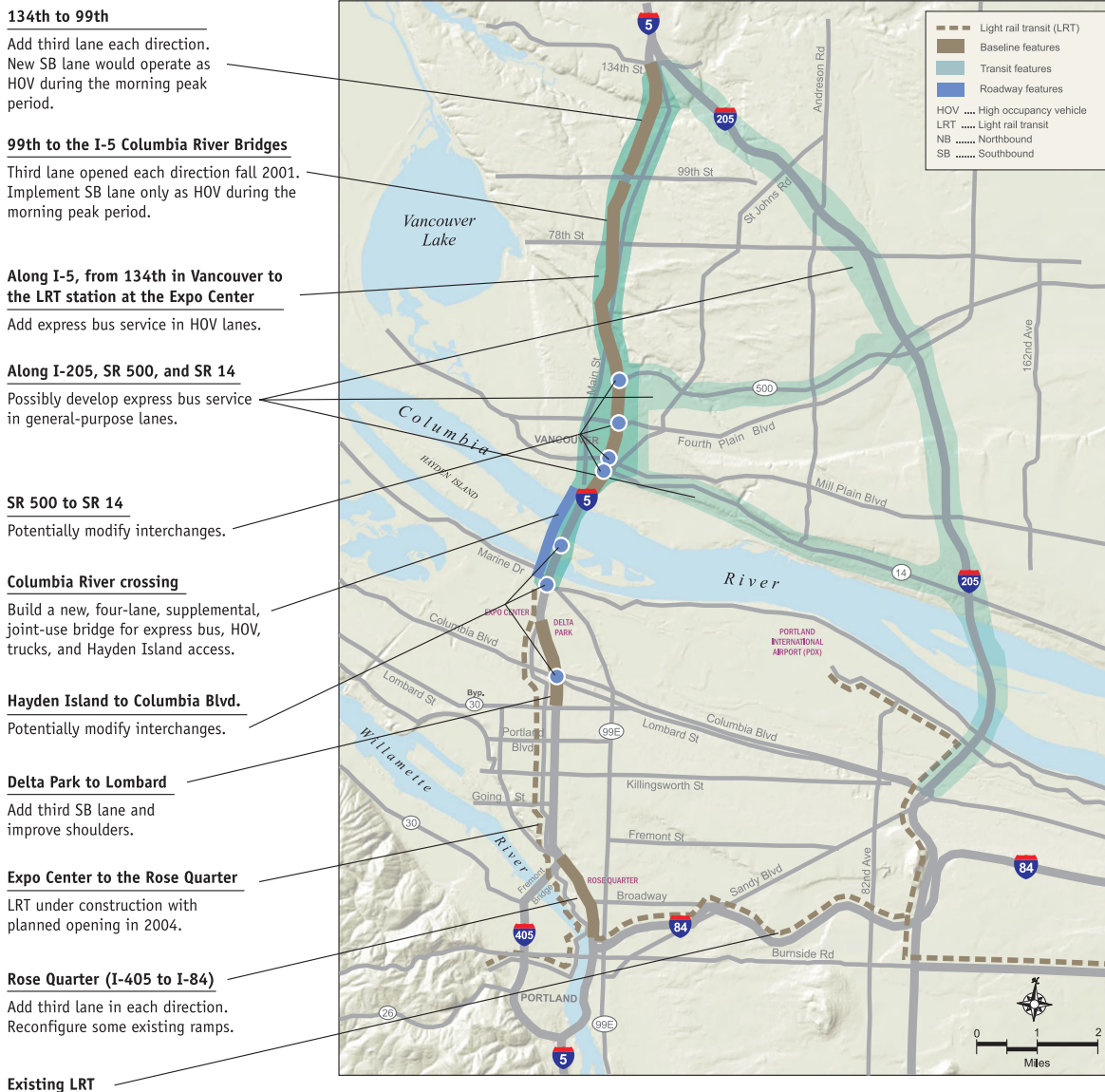


The Baseline 2020 option includes the regional transit and roadway improvements and transportation demand management (TDM) measures in the adopted transportation plans for Clark County and the Portland metropolitan area. This

figure shows the locations of the major improvements expected to affect transportation to, from, and along I-5. Baseline features are common to all options.

Figure A-1. Baseline 2020 transportation improvements.

Express Bus / 3 Lanes



The major feature of this option is the connection of the express bus service in Clark County with the Portland metropolitan LRT system. The option also includes a new, supplemental I-5 bridge for express bus, HOV, and vehicular traffic.

Figure A-2. Express Bus/3 Lanes Option Package.

Light Rail / 3 Lanes

134th to 99th

Add third lane each direction. New SB lane would operate as HOV during the morning peak period.

99th to the I-5 Columbia River Bridges

Third lane opened each direction fall 2001. Implement SB lane only as HOV during the morning peak period.

134th to SR 500 along I-5 and I-205

Possibly extend LRT.

Downtown Vancouver to Vancouver Mall area along SR 500 or Fourth Plain

Extend LRT.

SR 500 to SR 14

Modify interchanges.

Along I-205, from NE 83rd Padden Expwy to Parkrose Station

Extend LRT and connect to Airport MAX.

To Downtown Vancouver

Extend LRT.

Build supplemental bridge for . . .

- (1) Joint use — LRT, HOV, trucks, and Hayden Island access — or
- (2) LRT only

Hayden Island to Columbia Blvd

Potentially modify interchanges.

Delta Park to Lombard

Add third SB lane and improve shoulders.

Expo Center to the Rose Quarter

LRT under construction with planned opening in 2004.

Rose Quarter (I-405 to I-84)

Add third lane in each direction. Reconfigure some existing ramps.

Existing LRT

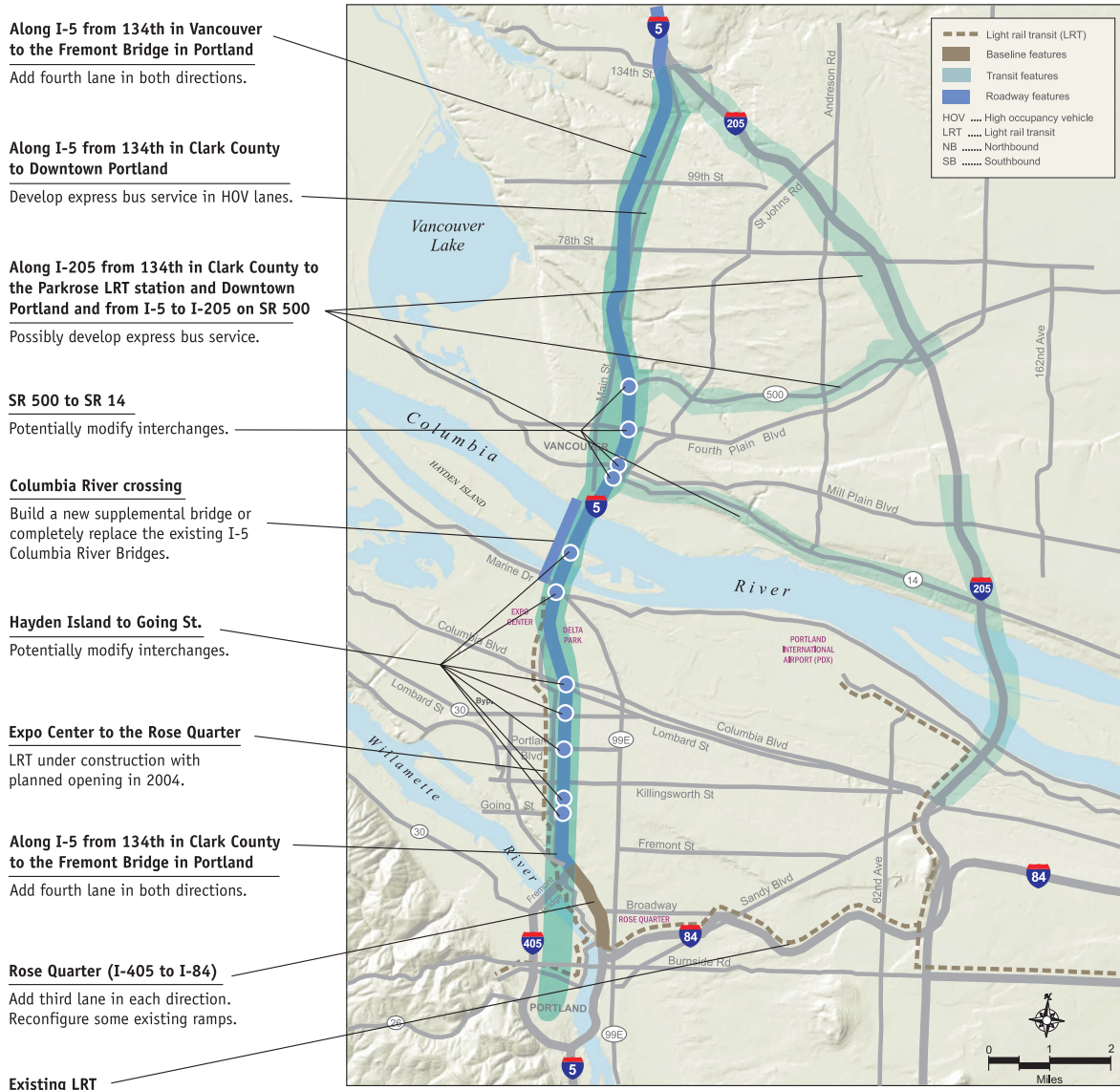


The major feature of this option is the development of an LRT system in Clark County connecting to the Portland metropolitan LRT system along I-5 and I-205. The option also includes a

new supplemental Columbia River bridge. Two variations of the bridge have been studied: (1) a joint-use bridge for LRT and motor vehicle traffic and (2) an LRT-only bridge.

Figure A-3. Light Rail / 3 Lanes Option Package.

Express Bus / 4 Lanes

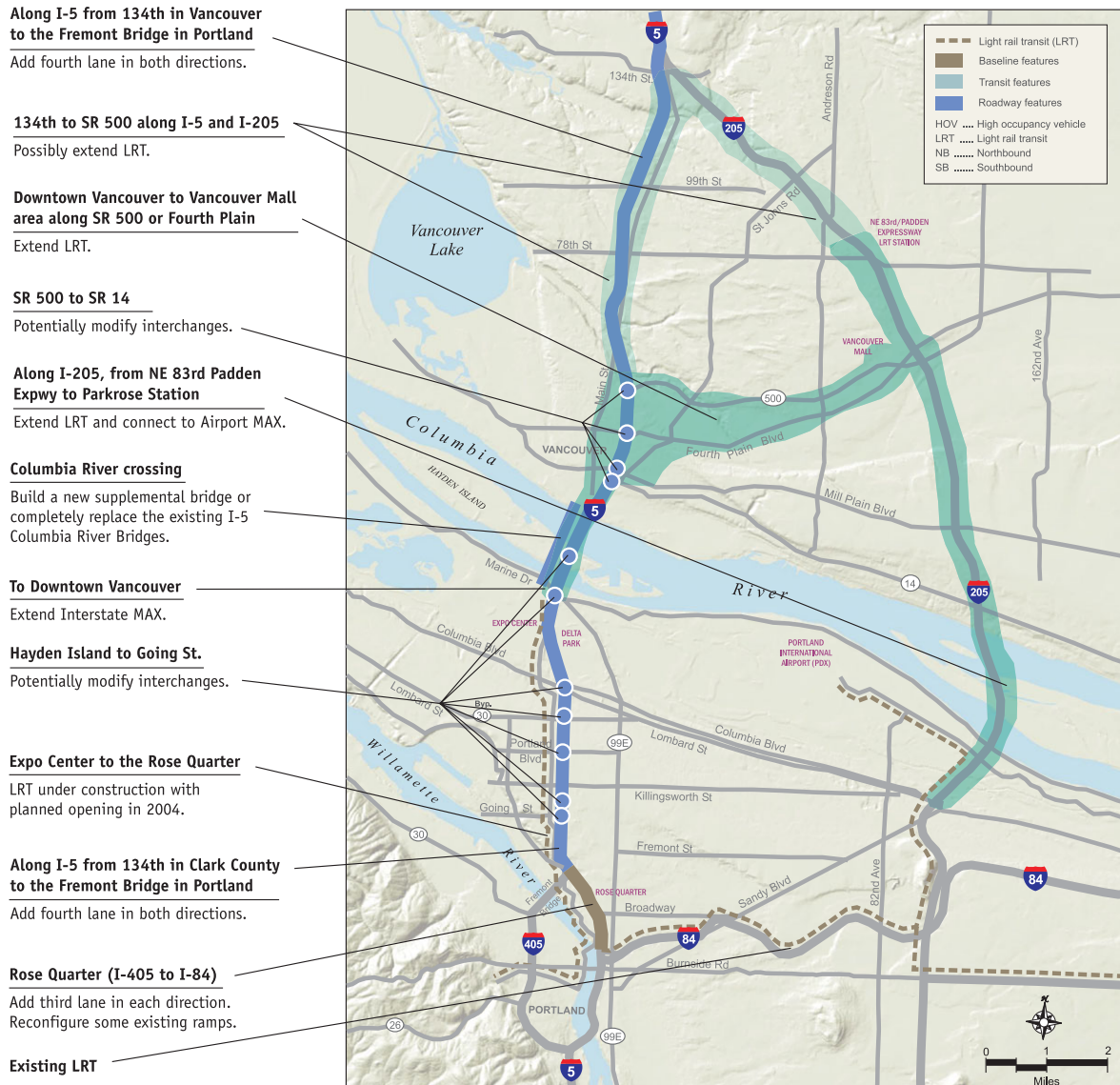


The major features of this option are:

- widening I-5 to add a fourth lane in each direction between 134th in Clark County and the Fremont Bridge in Portland that would operate as an HOV lane during peak periods
- connecting express bus service in Clark County with the Portland metropolitan LRT system

Figure A-4. Express Bus/4 Lanes Option Package.

Light Rail / 4 Lanes



The major feature of this option is the development of an LRT system in Clark County connecting to the Portland metropolitan LRT system along I-5 and I-205. The option also includes

adding a fourth lane in each direction along I-5 from 134th in Clark County to the Fremont Bridge in Portland for HOV, express lanes, or freight use.

Figure A-5. Light Rail /4 Lanes Option Package.

New West Arterial Road

134th to 99th

Add third lane each direction. New SB lane would operate as HOV during the morning peak period.

99th to the I-5 Columbia River Bridges

Third lane opened each direction fall 2001. Implement SB lane only as HOV during the morning peak period.

SR 500 to SR 14

Potentially modify interchanges.

From Mill Plain in Vancouver to US 30 in Portland

New four-lane arterial generally following BNSF rail corridor.

Delta Park to Lombard

Add third SB lane and improve shoulders.

Hayden Island to Columbia Blvd.

Potentially modify interchanges.

Expo Center to the Rose Quarter

LRT under construction with planned opening in 2004.

Rose Quarter (I-405 to I-84)

Add third lane in each direction. Reconfigure some existing ramps.

Existing LRT



The major feature of this option is a new arterial road between Mill Plain Blvd. in Vancouver and US 30 in Portland. along the existing railroad corridor and N. Portland Rd.

Figure A-6. New West Arterial Road Option Package.

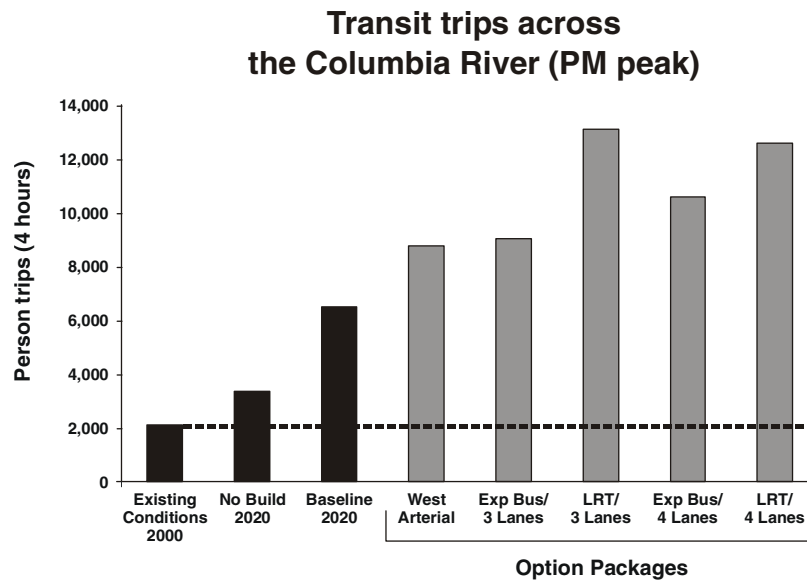


Figure A-7. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in transit trips across the Columbia River (PM peak).

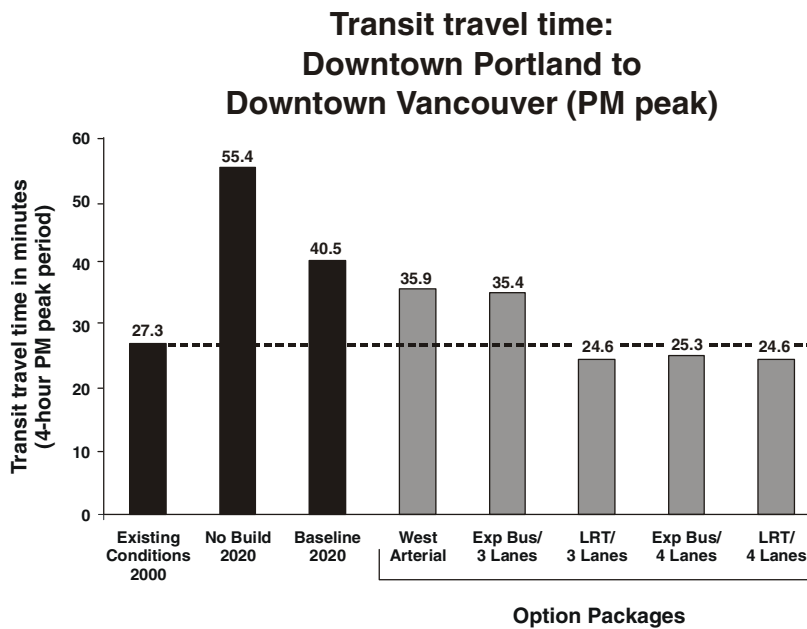


Figure A-8. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in transit travel time from Downtown Portland to Downtown Vancouver (PM peak).

Vehicle travel times: Downtown Portland to Salmon Creek (PM Peak)

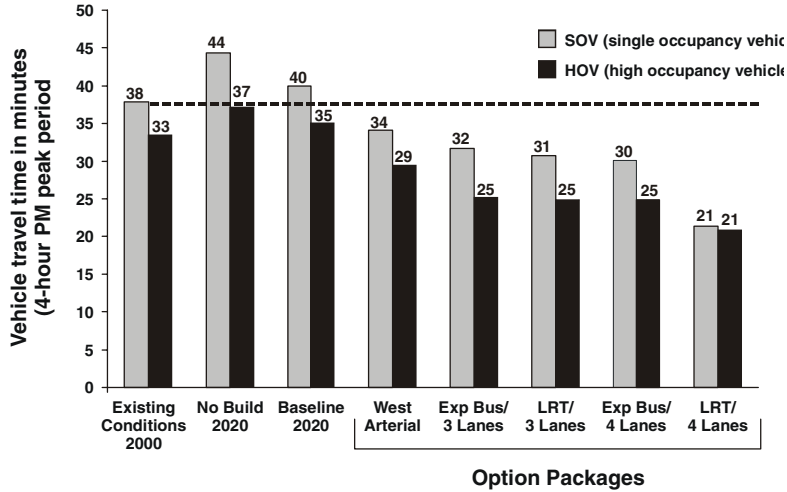


Figure A-9. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in vehicle travel times for SOVs/trucks and HOVs from Downtown Portland to Salmon Creek (PM peak).

Vehicle hours of delay in the Study Area (PM peak)

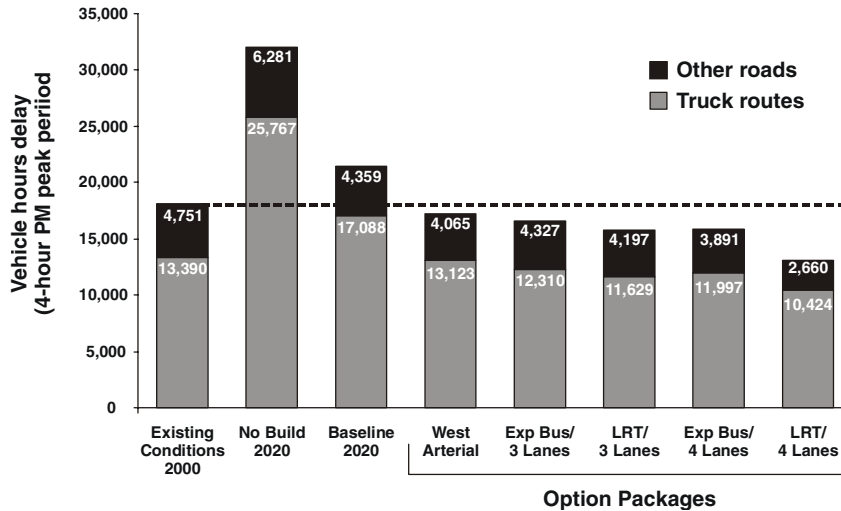


Figure A-10. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in vehicle travel hours of delay in the Study Area (PM peak) for truck routes and other roads.

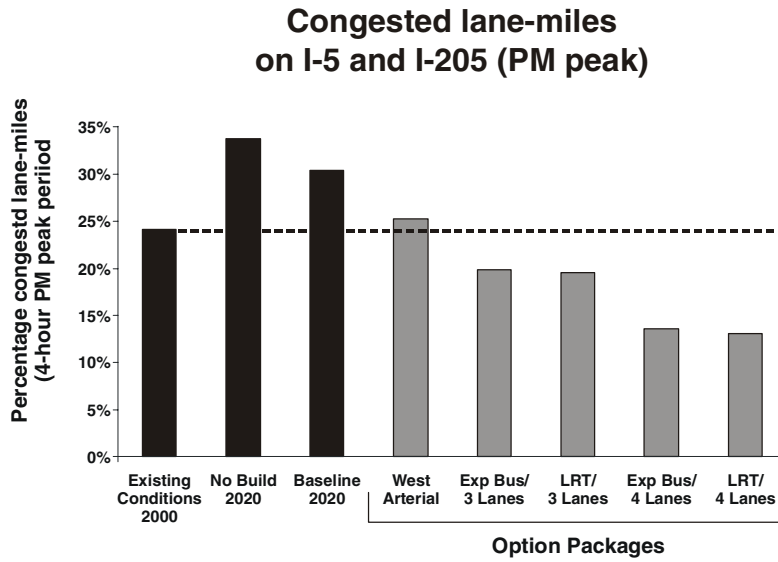


Figure A-11. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in congested lane-miles on I-5 and I-205 (PM peak).

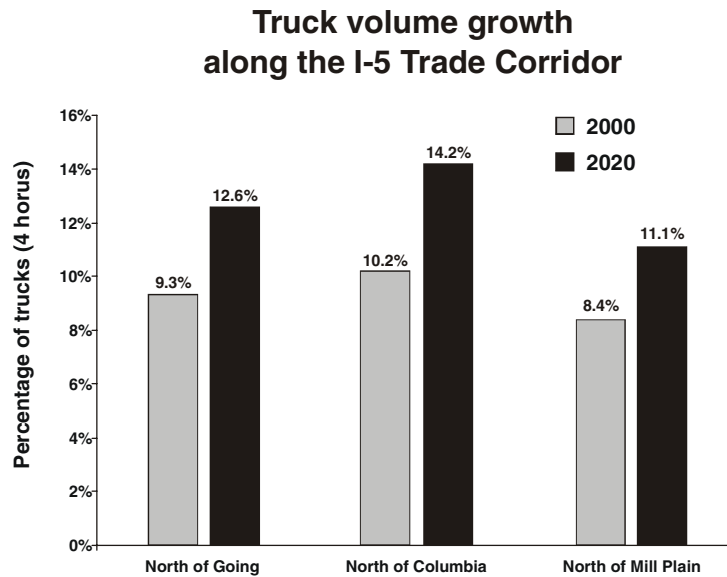


Figure A-12. Truck volumes along the I-5 Trade Corridor at three locations for 2000 and projected for 2020.

Person-trips by mode across the Columbia River by mode* (PM peak/peak direction)

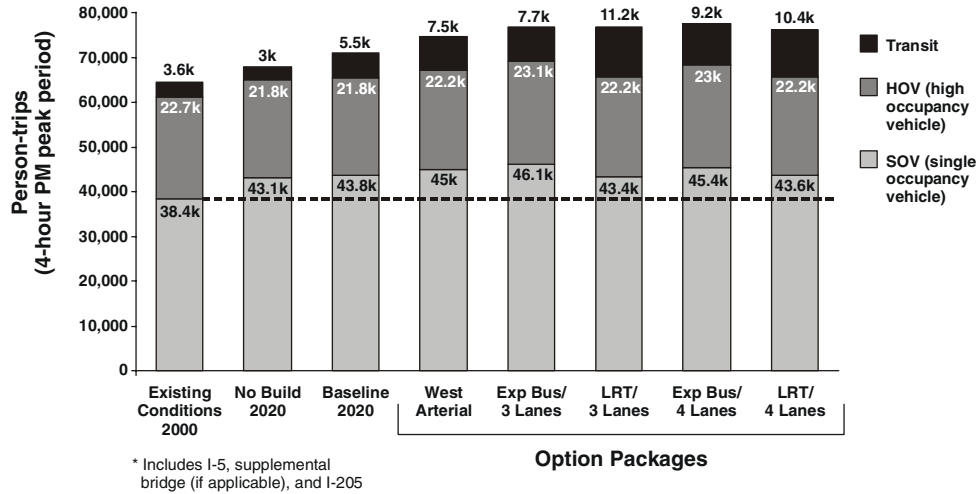


Figure A-13. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in person-trips by mode across the Columbia River by mode (PM peak/peak direction).

Person-trips by corridor across the Columbia River by river crossing (PM peak/northbound)

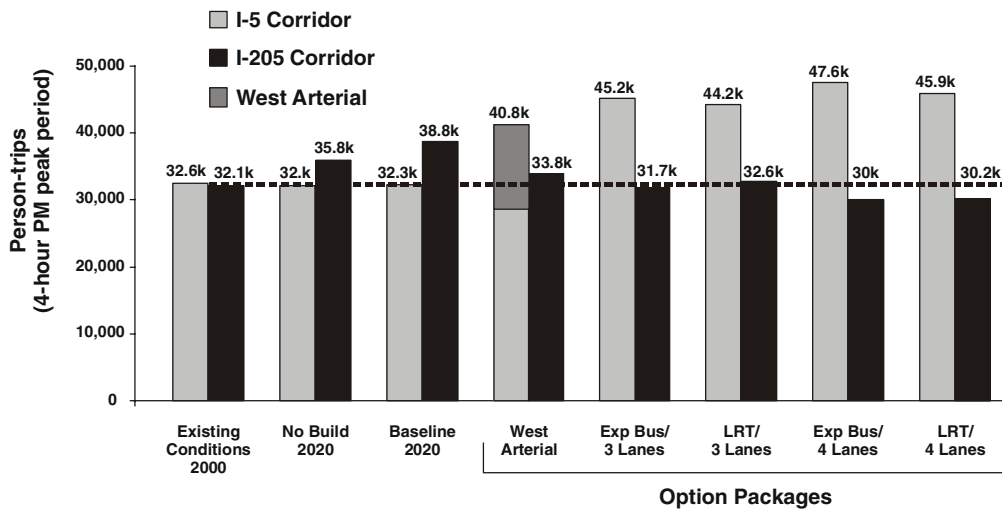


Figure A-14. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in person-trips by corridor across the Columbia River by river crossing (PM peak/northbound).

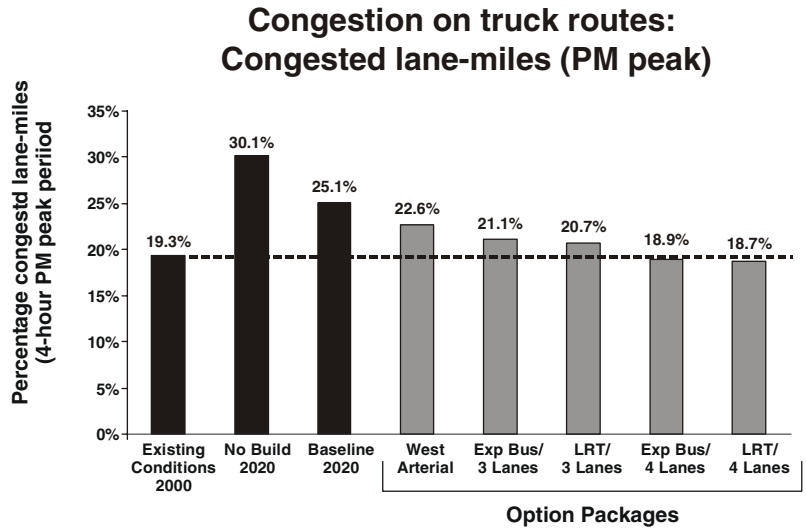


Figure A-15. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in congestion on truck routes in congested lane-miles (PM peak).

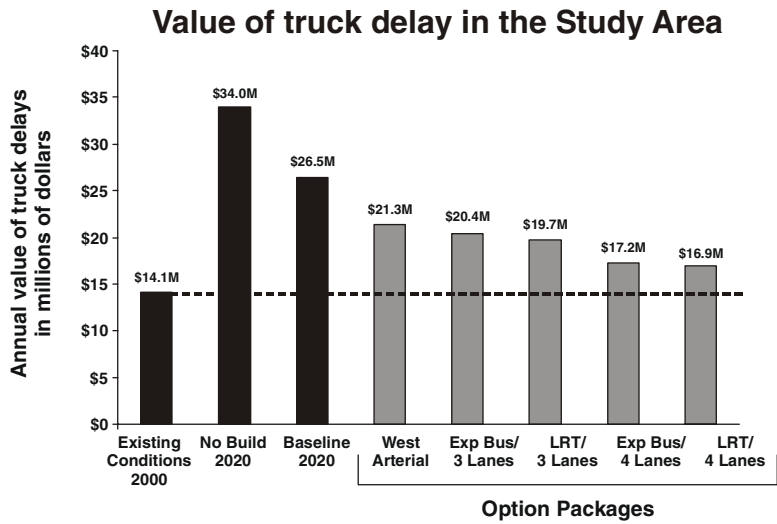


Figure A-16. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in value of truck delay in the Study Area.

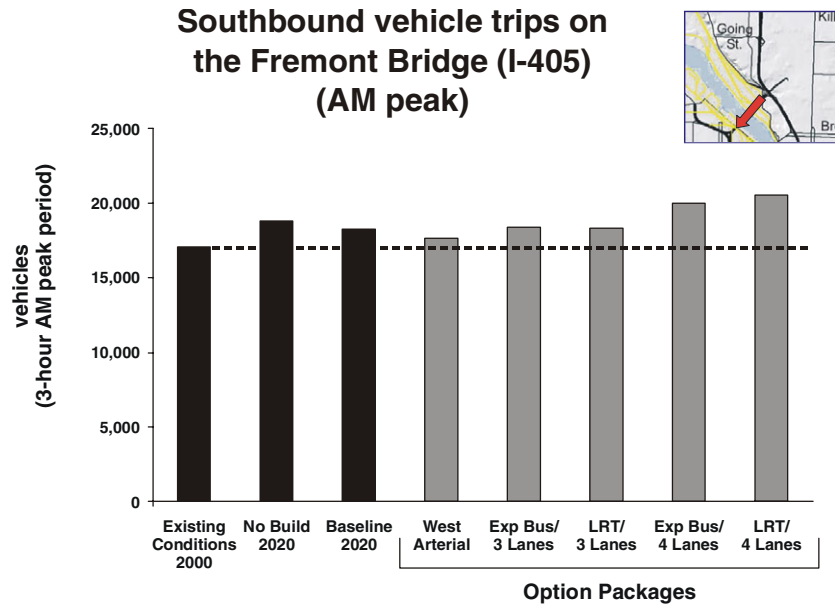


Figure A-17. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in southbound vehicle trips on the Fremont Bridge (I-405) (AM peak).

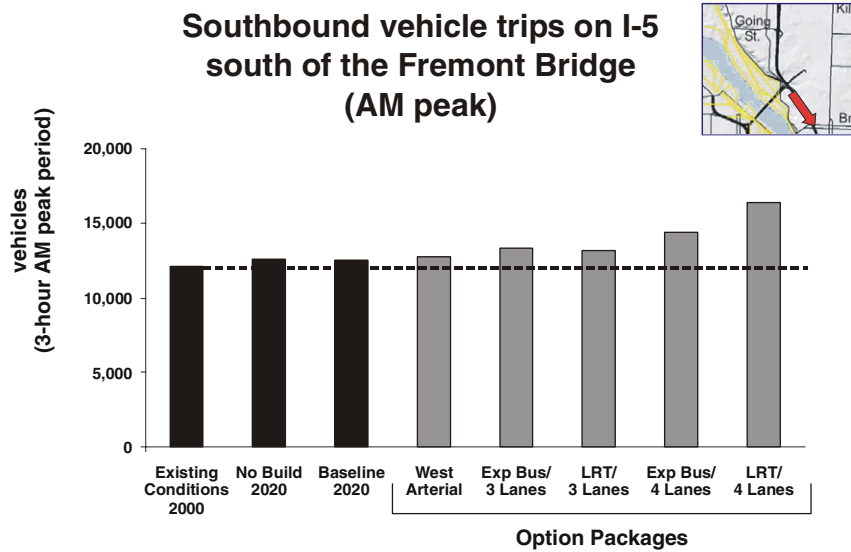


Figure A-18. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in southbound vehicle trips on I-5 south of the Fremont Bridge (AM peak).

Traffic on Vancouver north-south arterial roadways (PM peak)

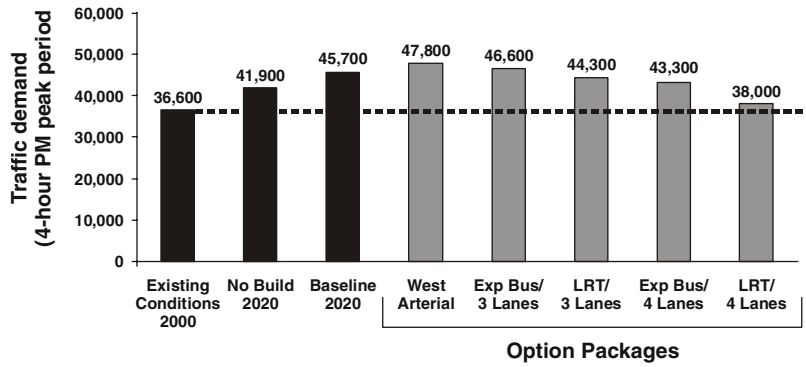


Figure A-19. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in traffic on Vancouver north-south arterial roadways (PM peak).

Traffic on Portland north-south arterial roadways (PM peak)

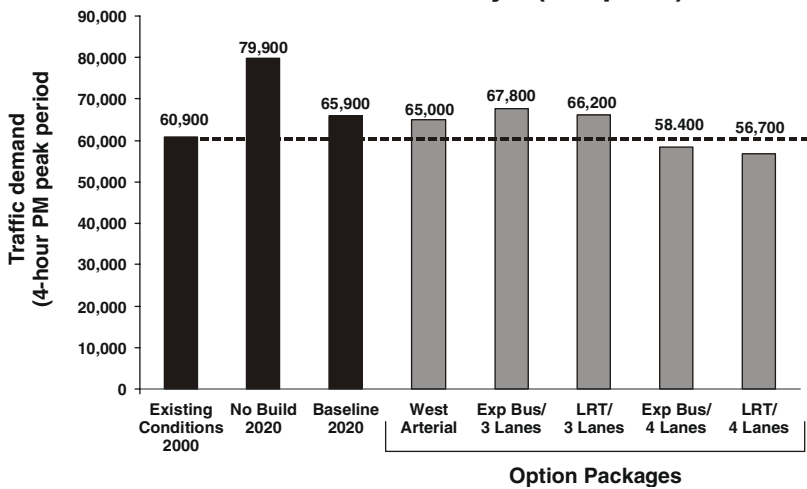


Figure A-20. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in traffic on Portland north-south arterial roadways (PM peak).

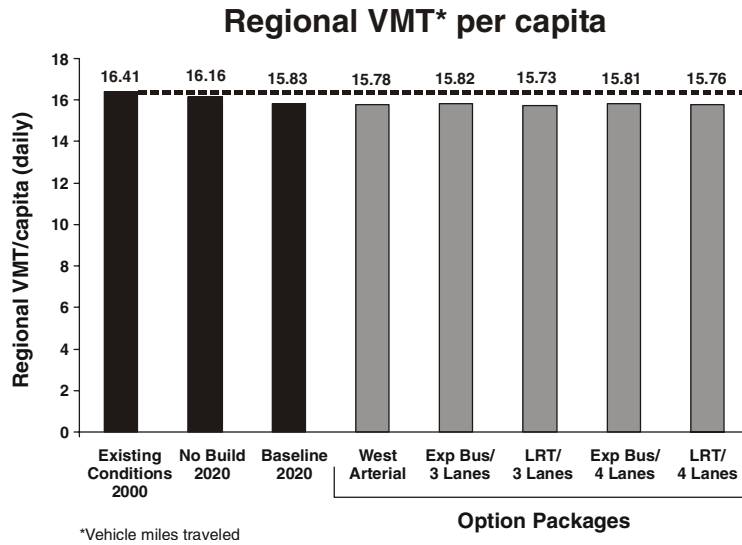


Figure A-21. The Option Packages compared to Existing Conditions 2000, No Build 2020, Baseline 2020, and each other, in regional VMT per capita.

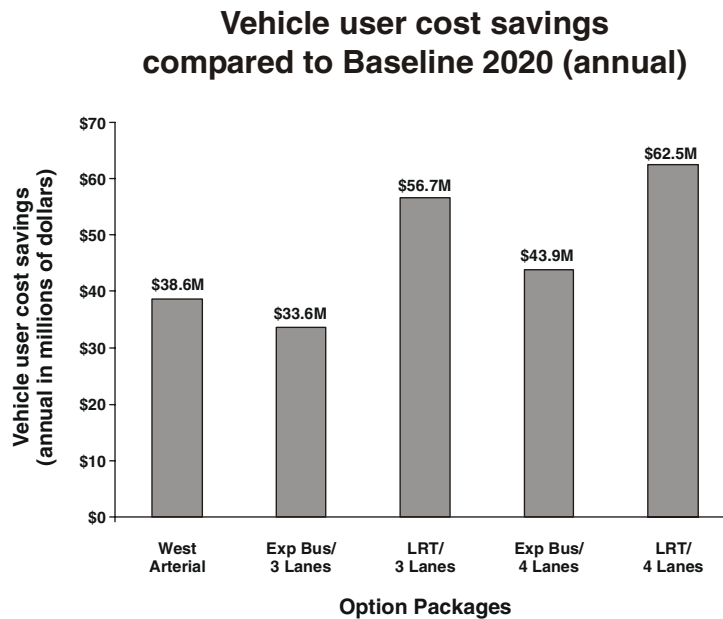


Figure A-22. User cost savings compared to Baseline 2020 (annual) for the Option Packages.

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Bridge Influence Area

A number of river crossing options were considered during analysis of the Bridge Influence Area (BIA). The BIA is defined as I-5 between SR 500 and Columbia Boulevard (**Figure B-1**) and is heavily used. Of the trips across the Columbia River on I-5, 70 to 80% either enter or exit I-5 in the BIA. Between 30 and 40% of those get on and off within the BIA (**Figure B-2**).



Figure B-1. The Bridge Influence Area (I-5 between SR 500 and Columbia Boulevard).

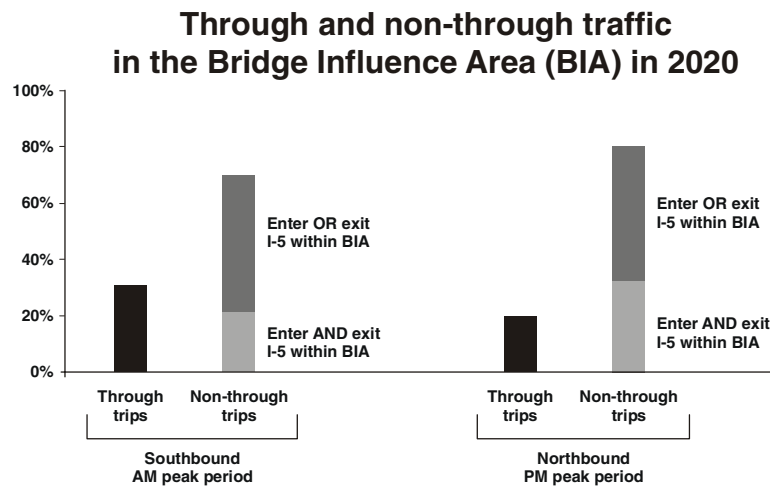


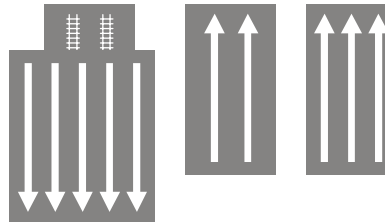
Figure B-2. Traffic in the BIA in 2020.

The Task Force developed eight Columbia River crossing concepts, consisting of combinations of new and existing bridges. The concepts fall into three categories (**Figures B-3 through B-5**).

CATEGORY 1: Five freeway lanes in each direction

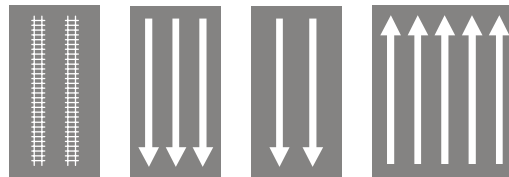
Concept #1

- 5 northbound lanes on existing bridges
- 5 southbound lanes on new double-deck bridge, LRT on lower deck, west of existing bridges



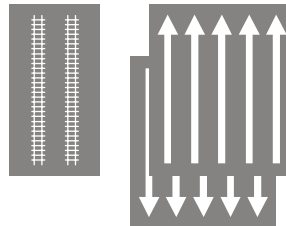
Concept #2

- 5 northbound lanes on new bridge east of existing bridges
- 5 southbound lanes on existing bridges
- New LRT bridge west of existing bridges



Concept #3

- New 5-lane double-deck bridge, northbound upper deck, southbound lower deck
- LRT on existing west bridge



Concept #4

- New 5-lane double-deck bridge, northbound upper deck, southbound lower deck
- LRT on new bridge west of existing bridges
- Only option to shift navigational channel

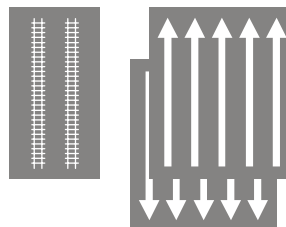
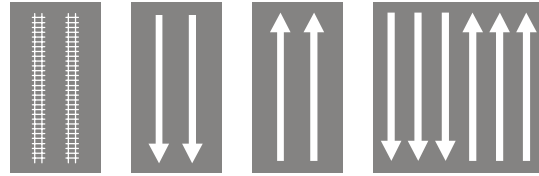


Figure B-3. The four Columbia River crossing concepts in Category 1.

CATEGORY 2: Three through freeway lanes in each direction plus a four-lane collector-distributor bridge/roadway west of the freeway

Concept #5

- New 6-lane bridge east of existing bridges
- 2 lanes northbound/southbound collector-distributor on existing bridges
- LRT on new bridge west of existing bridges



Concept #6

- 3 lanes northbound/southbound on existing bridges
- New 4-lane collector-distributor double-deck bridge with LRT on lower deck

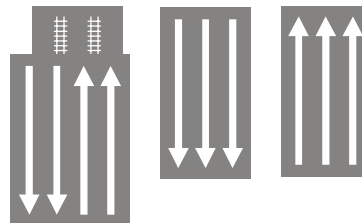
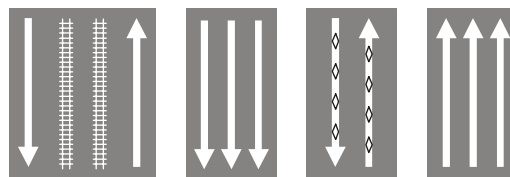


Figure B-4. The two Columbia River crossing concepts in Category 2.

CATEGORY 3: Four through freeway lanes in each direction plus a two-lane arterial system connecting Hayden Island to Marine Drive and Downtown Vancouver

Concept #7

- 3 southbound lanes on existing west bridge
- HOV only, southbound and northbound, on existing east bridge
- 3 northbound lanes on new bridge east of existing bridges
- 2 arterial lanes and LRT on new bridge west of existing bridges



Concept #8

- New 8-lane bridge east of existing bridges
- Local arterials on existing northbound bridge
- LRT on existing southbound bridge

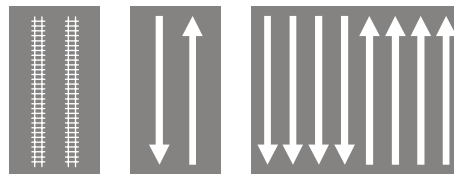


Figure B-5. The two Columbia River crossing concepts in Category 3.

Concepts 1, 4, 6, and 7 were selected for detailed design and evaluation. Analysis of these concepts provides insight into issues of supplemental and replacement bridges, joint use (LRT-highway) and separate bridges, alignments east and west of existing bridges, freeway lanes and arterial lanes across the Columbia River, and a comparison between high-level, fixed span bridges to low-level movable span bridges. See **Figures B-6 through B-9**.

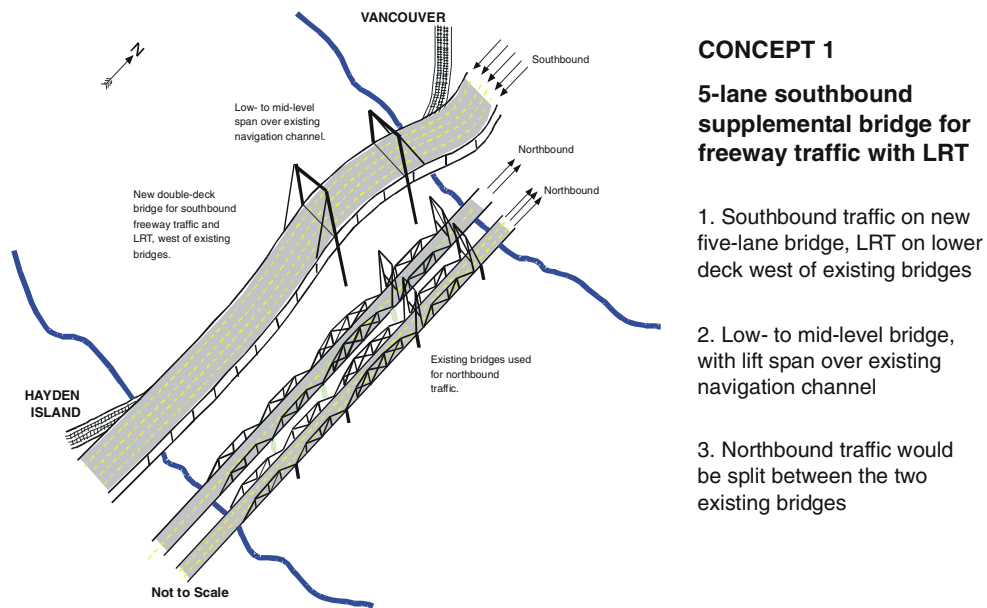


Figure B-6. Columbia River crossing: Concept 1.

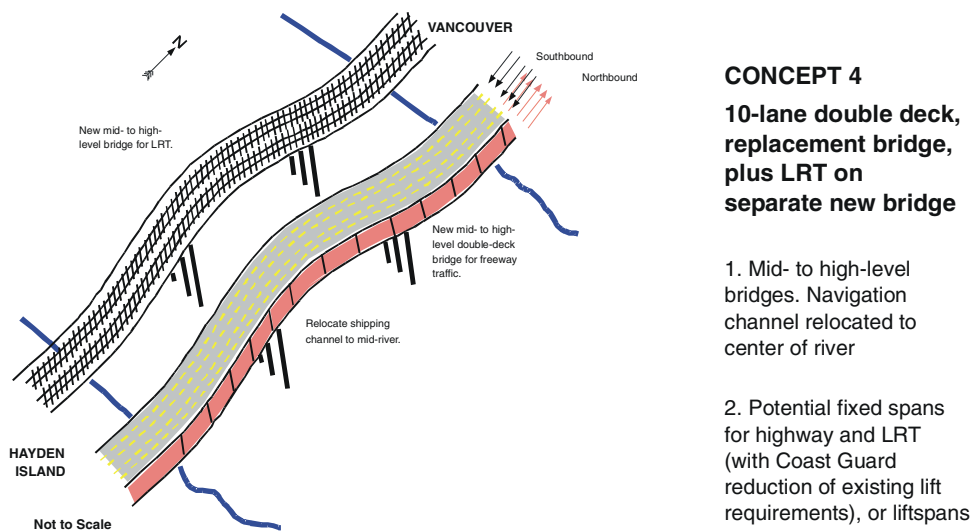
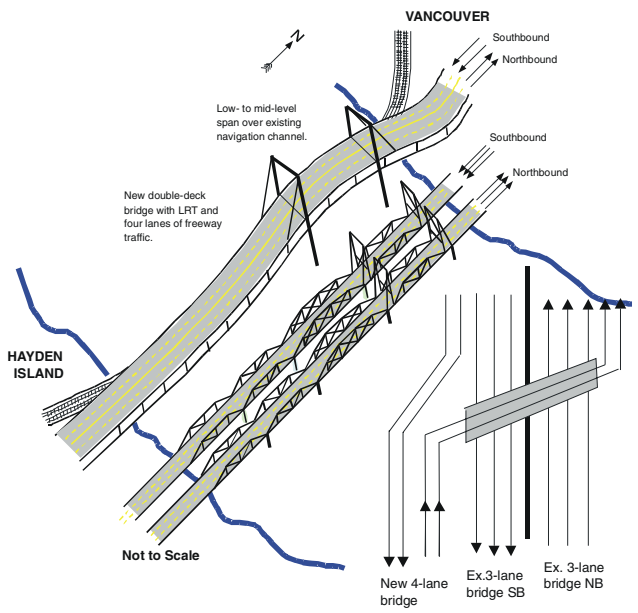


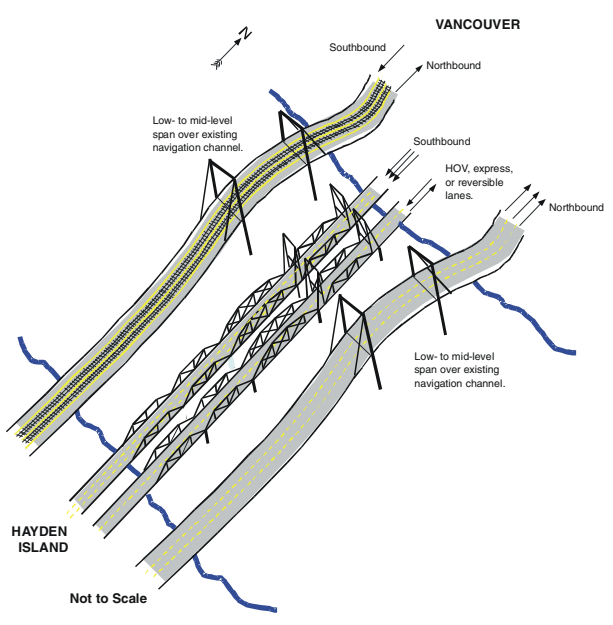
Figure B-7. Columbia River crossing: Concept 4.



CONCEPT 6
4-lane supplemental collector-distributor bridge w/LRT, plus 6-lane freeway

1. Provides for new 4-lane bridge with LRT west of the existing bridges
2. Low- to mid-level bridge with lift span over current navigation channel
3. Uses 4-lane bridge as collector-distributor (e.g., ramp access for Hayden Island). Requires flyover ramps north and south, as shown

Figure B-8. Columbia River crossing: Concept 6.



CONCEPT 7
8-lane freeway concept plus new LRT bridge with two-lane arterial

1. Provides for new 2-lane bridge plus LRT
2. Low- to mid-level bridges with lift spans over current navigation channel
3. Two lanes on existing northbound bridge could be used for HOV, express lanes, or (potentially) reversible lanes

Figure B-9. Columbia River crossing: Concept 7.

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Land Use Compatibility of Task Force Recommendations

This document summarizes the compatibility of the Task Force recommendations with state, regional and local land use plans. In general, existing land use policies in the region support the Task Force's recommendations for road and transit improvements in the corridor, the implementation of TDM/TSM strategies, and the need for the Bi-State Land Use Accord.

Regional land use issues and related population and employment forecasts are discussed first, followed by a discussion of issues from the Washington perspective (state, RTC, county, city) and the Oregon perspective (state, Metro, city).

Overall compatibility with adopted policies

By reducing delay and congestion in the I-5 Corridor and improving bi-state transit service, all concepts support the Metro 2040 Growth Concept and the Clark County Comprehensive Plans to encourage employment growth in the I-5 Corridor.

The build recommendations raise two issues of regional concern. First, improvements in the corridor are likely to increase land values around interchanges. There will be pressure for development around the interchanges that may unexpectedly increase the demands on the freeway system. Second, improvements may also increase pressure to change existing regional plans as demand for housing increases. Without careful planning, traffic increases that result from development around interchanges and expansions of growth boundaries for housing growth can nullify the transportation performance benefits of the build recommendations.

The I-5 Corridor has one of the most complex and diverse land use types in the metropolitan area. The complexity of the activities requires frequent interchanges and additional lanes to provide access, manage the through traffic, and the on/off ramps. The mix of activity centers and industrial areas will require a comprehensive transportation investment and management approach. It is important to note that:

- The majority of the traffic on I-5 between SR 500 and Columbia Boulevard is accessing adjacent industrial, commercial and residential areas.
- Seventy percent of the southbound AM peak traffic either enters or exits I-5 in the Bridge Influence Area (BIA) with 30% of this traffic entering and exiting within the BIA.
- Eighty percent of the northbound PM peak traffic either enters or exits I-5 in the BIA area with 40% of entering and exiting within the BIA.

- I-5 carries a higher number of trucks than any other regional route, and will double by 2020. I-5 plays a critical role for both through truck traffic and access to industrial areas between Portland and Vancouver.
- The need for a full I-5/Columbia Boulevard interchange has been identified in the Transportation Element of the Comprehensive Plan, the Albina Community Plan Concept Map, and Metro’s Regional Transportation Plan.
- I-5 provides the only access to Hayden Island and its residents, hotels and commercial areas.
- The Task Force’s recommended transportation investments will strengthen job growth in the corridor. Modeling shows that travel time savings will result in consistent job growth in the corridor. Estimates show that depending on the level of investment, 4,000 more jobs in north and northeast Portland and 1,000 jobs in Clark County could result compared to a scenario without capacity investments in the I-5 Corridor.
- Without these investments, the result will be more dispersed patterns for population and employment growth than anticipated in current, adopted plans.
- The recommended investments support the City of Vancouver’s Esther Short Subarea and Redevelopment Plan vision for Downtown Vancouver as its regional center. This vision calls for a multi-modal, active 24-hour downtown with 1,010 new housing units for 1,500 new residents and 540,000 square of commercial space for 2,700 workers.
- The recommended investments also support the transportation and distribution industrial sector as a major component of the regional economy. This region ranks first on the West Coast in terms of the value of wholesale trade per capita. The Columbia Corridor/Rivergate area and Port of Vancouver are major import auto distribution centers for Toyota, Hyundai, and Subaru. The Rivergate area is also the location of warehouse distributions for Nordstrom, Columbia Sportswear, and Meier and Frank. North and Northeast Portland and Vancouver is home to many of the region’s inter-modal marine, air cargo, truck and rail terminals.
- Regional transportation plans identify the need for multi-modal investments in the I-5 Corridor, along with a mix of TSM and TDM tools to better manage traffic follows.

Regional population and employment forecasts

The Task Force transportation analysis for the various build options assumed the 20-year population and employment growth forecasts as reflected in current Metro and Clark County plans. Metro and Clark County are required by state law to provide a 20- year land supply to accommodate forecasted population growth. Both are now updating their growth forecasts and the allocations. Each is in the process of amending the Urban Growth Boundary (Metro) and Urban Growth Area (Clark County) to meet the forecasted need.

The Task Force explored the question “Why doesn’t Clark County attract more jobs so that fewer people have to commute across the river?” Within the last few years, Clark County has begun to reverse trends by increasing its share of regional employment growth. Policies in Clark County, Vancouver, and other cities are intended to help attract employment. In fact, regional studies show that the availability of land for jobs in Clark County may help attract more jobs than is currently forecast. Even with a smaller percentage of the work force commuting, transportation studies show that I-5 will still be congested in the PM peak period, although the congestion may not extend over as many hours. Instead of lasting six hours in the afternoon as estimated with the current employment forecasts, an increase in employment in Clark County could reduce the afternoon peak to four hours.

The Washington Transportation Plan, state Highway System Plan and Metropolitan Transportation Plan

The Washington Transportation Plan (WTP) 2003 – 2022, was adopted by the Washington State Transportation Commission in February 2002. The WTP recognizes the significance of the I-5 Corridor to the state of Washington. The Washington State Highway System Plan (HSP) 2003 – 2022, is a component of Washington's Transportation Plan (WTP). It addresses the state’s highway system. The HSP includes a comprehensive assessment of the current deficiencies and conceptual solutions for the state's highway system for the next 20 years. The I-5 Corridor throughout Clark County is identified as deficient in meeting the existing and future transportation needs.

The Metropolitan Transportation Plan, adopted by the Regional Transportation Council in December 2000, is the Clark County region’s principal transportation plan, which supports the County’s Comprehensive Plan. The MTP is a financially constrained plan that meets federal planning requirements for a transportation system, which could be built with revenues reasonably expected to be available to the region for transportation purposes in the next twenty years. The list of conceptual transportation projects in the MTP represents the highest priority projects for the region and includes some I-5 Trade Corridor projects.

Metropolitan Transportation Plan projects on I-5 in Washington

The MTP identifies the need for improvements in the I-5 Corridor and the need to determine the nature of the improvements as part of the Portland-Vancouver I-5 Transportation and Trade Partnership. The fiscally constrained MTP lists the following projects in the I-5 Corridor between the Interstate Bridge and I-205:

- **I-5, Salmon Creek to I-205:** Widen from 2 to 3 lanes each direction (with added HOV lane)
- **I-5/NE 134th Street:** Reconstruct interchange (per I-5/I-205 North Corridor Study recommendations). This is awaiting Federal Highway Administration (FHWA) Access Point Decision Report outcome.
- **Transit, Fixed Route System Expansion:** An increase in C-TRAN service hours that would add transit service in the I-5 Corridor.

- **High Capacity Transit Corridor:** The I-5 Corridor is one of the High Capacity Transit corridors designated in the MTP.
- **Light Rail Extension to Clark County:** Part of the designated Regional Transportation System, but is not part of the financially constrained Plan.

Clark County’s Community Framework Plan

As part of Washington’s Growth Management planning process, Clark County adopted a Community Framework Plan in April 1993 to serve as a guide for the County’s long-term growth over fifty-plus years. The Framework Plan envisions a collection of distinct communities and a hierarchy of growth and activity centers. Land outside the population centers is to be dedicated to farms, forests, rural development and open space.

The twenty-year Comprehensive Growth Management Plan for Clark County guides growth toward the future vision. Growth management plans for the urban areas of Clark County were developed by Clark County in partnership with the cities and towns in the county. The Comprehensive Growth Management Plan for Clark County was adopted in December of 1994. Some revisions were made in May 1996 and during 1998. The plans are currently in the process of being updated.

Within the I-5 Corridor, the Community Framework Plan designated major activity centers in Downtown Vancouver and the Salmon Creek area and a Hazel Dell in Hazel Dell.

Clark County’s Comprehensive Growth Management Plan and Metropolitan Transportation Plan policies

Both the Comprehensive Growth Management Plan and Metropolitan Transportation Plan for Clark County share common transportation planning policies. The I-5 Partnership recommendations are consistent with policy objectives of providing for mobility of people and freight, while reducing reliance on the single-occupant vehicle.

I-5 is designated as a Highway of Statewide Significance (HSS). WSDOT in consultation with other jurisdictions sets the level of service for HSS facilities. WSDOT has set a Level of Service (LOS) “D” for urban facilities on HSS. HSS facilities are exempt from concurrency analysis.

The focus on improving traffic operations and conditions for the Downtown Vancouver employment center and for the freight movement to and from the Port of Vancouver is consistent with the comprehensive plan and MTP to facilitate job growth in Clark County and to facilitate freight movement. The MTP meets federal Congestion Management System (CMS) requirements to develop plans to manage demand before expanding capacity to meet demand. The Task Force’s TDM/TSM recommendations support the RTP policies as tools to manage demand.

Arterials adjacent to I-5 and the MTP

The efforts to maximize use of I-5 for through traffic and minimize use of other arterial roads for through traffic are consistent with the MTP. Further evaluation of the traffic impacts on arterial streets adjacent to I-5 and identification of measures to mitigate traffic impacts will be required in the EIS. Such facilities include Mill Plain and Fourth Plain.

Compatibility with adopted City of Vancouver policies

Each of the proposed improvements is generally compatible with the existing Comprehensive Plan and could be compatible with policies that are being contemplated as part of the ongoing Comprehensive Plan update process. The following comprehensive plan policies are applicable to the proposed BIA concepts.

Transportation access. The proposed improvements will considerably enhance future operating conditions of the freeway system, and indirect benefits (while also in some instances impacts) will accrue to the City's transportation system as a result. Specifically, each of the options proposes enhanced access into the City Center. As the primary regional center and a location that has been planned for considerable growth in activity of the next 20 years, the City's Downtown Transportation System Plan calls for new and enhanced access points into downtown to support the planned residential and commercial/industrial growth. Each of the BIA concepts directly improves and adds access into downtown, directly supporting the existing plans.

The City's transportation plan also contemplates a multi-modal system and relies on the growth in the multi-modal level of service to support the land use plan. Additionally, the City's Plan advances directed policies that support reductions in SOV travel, support effective use of TSM and TDM measures, and encourage growth in urban centers of activity. All of these outcomes are supported, in part, by the Task Force's draft recommendations.

Economic development. Vancouver's Plan contains policies to ensure easy access to employment centers, develop mass transit networks, and encourage priority investments in public facilities that bolster Vancouver's ability to maintain existing and attract additional employment within the City. The proposed concepts directly provide enhanced access into downtown and into the west Vancouver commercial and industrial districts by providing both reduced travel delays along the interstate system and safer interchange areas. Coupled with potential HOV lanes and LRT, the Task Force's draft recommendations also improve mode choice for access to downtown.

Cultural and historic resources. The interchange concepts that serve to directly impact or limit access to designated cultural resources would conflict with the existing City Plan. Specifically, concepts that would destruct, encroach and or appreciably change the character of the Historic Reserve and its environs would conflict with City policy and the long-term plans for that cultural and historic resource.

The City has plans directly related to the rehabilitation and expansion of the Historic Reserve as a cultural district, and numerous transportation plan elements have laid the groundwork for road improvements within the District to enhance access into and within the Reserve environs.

Active and livable neighborhoods. The City’s plans promote urban centers that are directly served by efficient transportation systems. Particular emphasis is given to improving access to multi-modal and transit networks, TDM, and supporting system development to promote reductions in SOV travel. The interchange concepts reviewed by the Task Force are supportive of these policies given the multi-modal options (namely LRT) and the improved access to and from downtown, the primary urban center, and a center where significant residential growth has been planned.

The Oregon Highway Plan

The OHP calls for a transportation system marked by modal balance, efficiency, accessibility, environmental responsibility, connectivity among places, connectivity among modes and carriers, safety, and financial stability. The OHP operates in the context of the federal Transportation Equity Act for the 21st Century, the statewide land use planning goals, the Transportation Planning Rule and the State Agency Coordination Program. The OHP carries out the Oregon Transportation Plan and will be reflected in transportation corridor plans. The Task Force’s draft recommendations are generally consistent with OHP policies and goals.

Metro’s 2040 Growth Concept

The 2040 Growth Concept sets the direction for planning in the Portland Metropolitan area. Local jurisdiction comprehensive plans are required by State law to be consistent with the 2040 Growth Concept. In the I-5 Corridor, the 2040 Growth Concept designated major land use areas include:

- Portland Central City
- Main Streets: Lombard, Killingsworth, Denver, Martin Luther King Jr. Boulevard
- Columbia Corridor/Rivergate Industrial Area
- Interstate MAX Station Communities
- Future Hayden Island Station Community

Metro’s Regional Transportation Plan

The RTP implements the 2040 Growth Concept in the Portland metropolitan area. It identifies three different levels of plans. The “Preferred” is the most extensive and the one that best supports the 2040 Growth Concept. The “Priority” Plan includes strategic investments that, with additional funding, would support the 2040 Growth Concept. The “Financially Constrained” plan meets federal planning requirements for a transportation system that could be built with available financial resources and represents the highest priority projects for the region.

The RTP proposes a Refinement Plan for the I-5 Corridor and concludes “The level of congestion in the corridor suggests that despite a range of different improvements to the I-5 Interstate Bridges and transit service, latent demand exist in the corridor that cannot be addressed with highway capacity improve-

ments alone.” Even with the projects in the “Priority” plan, “congestion exceeds proposed performance measures for the corridor. ...Freight movement to inter-modal facilities and industrial areas would be affected by the spreading of congestion to off peak periods.”

The RTP policies recognize that congestion must be tolerated in urban centers in order to achieve the density and mixed-use development called for in the 2040 land use designations and to avoid the use of urban land for highways. The RTP proposes levels of service standards (“LOS”), measured over two PM peak hours, for corridors that are to be determined at the completion of the corridor refinement plans. For the I-5 Corridor, the RTP proposes LOS “E” in the first hour and “F” in the second hour of the PM peak period. RTP policies tolerate less congestion in corridors in industrial area and inter-modal corridors where LOS “E” for the first hour and “E” for the second hour have been adopted. Mid-day levels of service in industrial areas are higher and call for “D” as an acceptable operating condition.

The focus of the Task Force recommendations on improving traffic operations in the Columbia Corridor/Rivergate industrial areas is consistent with the intent of the RTP to focus transportation investments in serving the movement of goods. The need to avoid spreading peak period congestion into the mid-day is also consistent with RTP policy.

The RTP meets federal Congestion Management System (CMS) requirements to develop plans to manage demand before expanding capacity to meet demand. The RTP sets modal targets for Non-SOV use for each of the 2040 design types. For the Central City, the Non-SOV modal target for daily trips is 60% to 70%. For industrial areas, the target is 40% to 45%. The TDM/TSM recommendations support the RTP policies as tools to manage demand. The RTP identifies the need for additional transit services, beyond that which can be funded with available revenue forecasts, to support the 2040 Growth Concept and the Non-SOV modal targets.

Metro’s RTP projects on I-5

The RTP identifies the need for improvements in the I-5 Corridor and the need to determine the nature of the improvements in a Refinement Plan. The Regional Transportation Plan (“Priority Plan”) calls for:

- **I-5 Interstate Bridge and I-5 Widening:** Add capacity to the I-5/Columbia River bridge and widen I-5 from Columbia Boulevard to the Interstate Bridge based on final recommendations from the I-5 Corridor Study. (#4003)
- **I-5/Columbia Boulevard Improvement:** Construct a full direction access interchange at I-5 and Columbia Boulevard based on recommendations from the I-5 Corridor Study. (#4006)
- **I-5 Corridor Study:** Determine an appropriate mix of improvements from I-405 to I-205, including adding capacity and transit service within the corridor. (#4009)

As a higher priority in the Financially Constrained Plan, the RTP includes:

- **Delta Park Lombard Project:** I-5 North Improvements to widen I-5 to three lanes in each direction from Lombard Street to the Expo Center exit (#4005), and

- **Light Rail Expansion:** Extend light rail service from the Rose Quarter transit center north to the Portland Metropolitan Exposition Center and then potentially to Vancouver, Washington (#1000, #1002).

Main Street projects in Metro’s RTP

The I-5 Corridor has four designated “Main Streets”: Lombard, Killingsworth, Denver, and Martin Luther King, Jr. Boulevard. The RTP supports the “Main Street” land use designation by taking actions to discourage through-traffic on these roads. The Killingsworth and Lombard Main Streets are further supported by designations as streets for frequent bus service.

The Task Force’s efforts in the BIA concepts to maximize use of I-5 for through traffic and minimize use of other arterial roads, particularly Main Streets for through-traffic, are consistent with the RTP. Further evaluation of the traffic impacts on the Main Streets and identification of measures to mitigate traffic impacts will be required in the EIS.

Compatibility with adopted City of Portland Comprehensive Plan policies

Overall, the Task Force’s recommendations are generally compatible with the City of Portland Comprehensive Plan. The combination of freeway improvements and light rail transit support the diversity of existing and planned land uses. The following comprehensive plan policies are applicable to the proposed BIA concepts.

Policy 6.2 Regional and City Traffic Patterns. City policy advances the separation of traffic on different facilities according to the length of trip. Inter-regional traffic should use the Regional Transit and Traffic Way system. City streets should be designed to carry local traffic and not be designed or managed to serve as alternative routes for regional trips.

All of the proposed Task Force concepts support this policy by encouraging inter-regional traffic to use the Regional Traffic Way system and not local city streets. Concept 7 further separates local and regional traffic by providing an arterial connection for local traffic between Portland and Vancouver. The proposed concepts also include light rail, which provides a transit connection to the Regional Transit system.

Policy 6.6 Urban Form/Policy 6.9 Transit Oriented Development. Portland’s policy supports a regional form of mixed-use centers served by a multi-modal transportation system. City policy also emphasizes the need for inter-connected public streets to provide for pedestrian, bicycle and vehicle access. Policy 6.9 advances the need to reinforce the connection between transit and adjacent land use through increased residential densities and transit oriented development.

The Task Force’s draft recommendations also include a new light rail connection, which supports urban form and transit oriented development. Bridge Concepts 1 (a new 5-lane southbound supplemental bridge to the west of the existing bridges) and 6 (a new 4-lane collector distributor bridge to the west of the existing bridges) conflict with these policies by significantly widening the freeway corridor, diminishing the pedestrian environment, and reducing the potential for mixed-use centers and transit-oriented development, specifically on Hayden Island.

On Hayden Island, the Comprehensive Plan envisions primarily commercial land uses in the freeway corridor with residential uses to the east and west of this commercial center. Between Portland Harbor and Columbia Boulevard, the majority of the land is in the industrial sanctuary or open space with a mixture of commercial and residential uses. Additional study is required to further evaluate the appropriate level and type of future development in the Bridge Influence Area. Future plans should balance the opportunity created for station area development with the preservation of industrial activity. On Hayden Island, obstacles such as airport noise and adequacy of the local street network should be assessed in the EIS.

Policy 6.21 Freight Inter-modal Facilities and Freight Activity Areas/Objective 2.14 Industrial Sanctuaries.

City policy advances the development of a multi-modal transportation system for the safe and efficient movement of goods within the City. City Policy also encourages the growth of industrial activities by preserving industrial land in Industrial Sanctuaries primarily for manufacturing purposes.

All of the proposed concepts support the projected increased freight demand for the movement of goods within the corridor. A large amount of the land surrounding the Bridge Influence Area is in the Industrial Sanctuary. Improved freeway access and operations for freight are essential to support the existing and planned industrial uses in the corridor.

Policy 8.15 Wetlands/Riparian/Water Bodies Protection. City Policy stresses the importance of protecting significant wetlands, riparian areas, and water bodies that have significant function and value related to flood protection, sediment and erosion control, water quality, groundwater recharge and discharge, education, vegetation, and fish and wildlife habitat.

All concepts have some impact on wetlands, open space and/or parks lands between Portland Harbor and Columbia Boulevard and would be in conflict with this policy. Concept 4, the Replacement Bridge, minimizes impacts in this area. Additional work is needed to assess how BIA improvements would impact water bodies, their significant functions and values.

Policy 12.1 Portland's Character. City policy advances the need to enhance and extend Portland's attractive identity. New public projects should enhance Portland's appearance and character through innovative design. This includes creating a "built environment" that is attractive and inviting to the pedestrian.

Concepts designed to minimize visual and physical impacts on the surrounding area would support this policy. Bridge concepts 1 and 6, which significantly widen the freeway corridor on Hayden Island and in the Marine Drive interchange, would conflict with this policy.

Overall I-5 land use findings: Effect of investments on growth

The analysis of the transportation options in the I-5 Transportation and Trade Partnership study assumed that the population and employment allocations in 2020 would be the same in all scenarios. Further, the analysis that the level and nature of the investment would change the modal choice, the route and the trip choice, but would not alter the number or locations of employment and households. History tells us otherwise. Transportation investments do change the location and number of jobs and households.

The I-5 Transportation and Trade Partnership study analyzed the potential effects on changes to households and employment with the I-5 investments of an additional freeway lane in the corridor and across the Columbia River, plus a light rail loop in Clark County. The findings of analysis are below.

Without changes in land use policy, the following land use development trends can be expected, regardless of the transportation actions taken in the I-5 Corridor:

- Population and employment growth in the Portland/Vancouver region are developing in a dispersed pattern. A significant share of households and employment are locating at the urban fringe, within adopted zoning.
- There will be more job growth in Clark County than anticipated in our current adopted plans. Even with a reduced percentage of commuters crossing the river, I-5 will be congested.
- Industrial areas are at risk of being converted to commercial uses, threatening the availability of industrial land in the Portland/Vancouver region and increasing traffic congestion in the I-5 Corridor.

Without investment in the I-5 Corridor, we can expect that traffic congestion and reduced travel reliability will have an adverse economic effect on industries and businesses in the corridor.

With highway and transit investments in the corridor, there will be travel-time savings that can be expected to have the following benefits:

- Attract employment growth toward the center of the region to the Columbia Corridor along the I-5 Corridor from elsewhere in the region. The land use model estimates a small but steady increase of jobs to the I-5 Corridor, in both the Columbia Corridor Industrial Area and Clark County with the additional accessibility. This is consistent with Metro's 2040 Growth Concept that supports economic growth in the industrial area and focuses growth inside existing urban areas. This is also consistent with Clark County's goals of attracting more jobs.
- Strengthen the regional economy by attracting more jobs to the region.
- Create new job opportunities for residents near the I-5 Corridor because of their close proximity to the additional employment in the Corridor.
- Support mixed-use and compact housing development around transit stations. Transit station areas can have a positive effect on encouraging redevelopment and supporting transit use, particularly in residential areas. Redevelopment can provide an additional opportunity to accommodate additional housing demand and offer a mix of housing opportunities.

Highway and transit investments in the corridor also carry risks if the development pressure associated with the increased accessibility is not well managed.

- Increased demand for housing in Clark County due to the location of jobs in the center of the region and the faster travel times to jobs in Portland may increase pressure to expand the Clark County urban growth area along the I-5 Corridor to the north. If more new houses are built than jobs in Clark County, I-5 will become overloaded to levels that would exist if no improvements were made. This would be contrary to the regional policy and limit the capacity for freight.

- Industrial areas are at greater risk of being converted to commercial uses at new and improved interchanges with the improved travel times at these locations. As the region's population has increased, the value of land along the freeway has also increased. This increase in value increases development pressure. Value and corresponding development pressure will increase as accessibility is further improved. If not protected, this development will erode the supply of increasingly scarce industrial land, reduce the opportunities to create family wage jobs close to where people live, and generate more traffic than the system can handle, even with new capacity.

Growth must be managed to ensure that:

- Clark County growth does not result in new freeway capacity being used by commuters, instead of truckers for the movement of goods.
- The expected life span of investments is not shortened.
- Scarce industrial land is not converted to commercial uses.
- Local jurisdictions implement necessary zoning and regulatory changes to attract mixed-use and compact housings around transit stations. The availability of land within the Metro UGB and the Clark County UGAs changes where and how the region will grow. If Metro has a tight UGB, it will increase demand for housing in Clark County, even more than the effect of the added accessibility due to the transit and highway investment. If Clark County expands the UGA, it will also attract growth. UGB/A decisions alone can change traffic demands across the river.

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I-5 Bi-State Coordination Accord

The I-5 Portland/Vancouver Transportation and Trade Partnership Task Force recommends that RTC and Metro, along with the other members of the current Bi-State Transportation Committee, adopt and implement the following I-5 Bi-State Coordination Accord and develop the operational details.

I. Purpose

The I-5 Partnership brought together Washington and Oregon citizens and leaders to respond to concerns about growing congestion on I-5 and its effect on the region. Consistent with the Task Force’s “Problem, Vision and Values Statement,” the Accord signatories find and adopt the following principles, statements, goals and actions:

- A. The region functions as one economic marketplace nationally and internationally.
- B. Travel demands in the I-5 Corridor need to be met by (1) providing a balance of transit and road improvements to achieve a mix of transportation choices, (2) reducing single occupancy vehicle use in the peak hours across the Columbia River on I-5 and I-205, and (3) reducing daily VMT per capita for the urban areas in the four-county region.
- C. The region relies on the efficient movement of freight throughout the I-5 Corridor. Mid-day travel speeds for trucks on I-5 and I-205 must be maintained at a level designed to protect and enhance freight mobility. Additionally, the region should proactively work to increase travel reliability for all users.
- D. Healthy and viable rail service in the I-5 Corridor is a critical component of the regional economy. It is an integral part of the region’s comparative advantage in providing an inter-modal focus of marine, barge, highway, and rail services that contribute to the Portland/Vancouver area’s recognition as a major national and international trade and distribution center.
- E. Transportation Demand Management (TDM) and Transportation System Management (TSM) are essential strategies for improving our mobility, both on a Corridor and regional level.
- F. The region’s growth management plans share a common vision for compact urban growth to preserve farm land, forest land and open space.
- G. The region’s transportation and land use systems are integrally related, each impacting and influencing the other, with different approaches and implementation regulations.

- H. Coordination among region's jurisdictions and agencies in pursuing economic development and the preservation and increase of available industrial lands are important parts of growth management and maintaining a strong economy.
- I. The region would benefit from a multi-faceted, integrated plan of personal and business actions/incentives, transportation policies, and capital expenditures.
- J. Plans to manage the I-5 Corridor interchanges, adjacent areas, and adjacent industrial lands are needed now to efficiently manage and protect the existing and future investments in the transportation system.
- K. The recommended improvements in the I-5 Corridor between Portland and Vancouver will be an expensive undertaking. Capital projects of the magnitude recommended by the Task Force typically require a variety of funding and financing mechanisms. The region will not be able to rely on any single revenue source. There are several promising federal, state and local revenue sources that could be available for financing the proposed projects.

II. Mechanisms for protecting the I-5 Corridor

The "I-5 Corridor" or "Corridor" for purposes of this Accord has as its northern terminus the northern boundary of Clark County. Its southern terminus is the I-5/I-405 loop.

- A. **Manage land uses.** Accord signatories with land use authority, in consultation with those signatories with transportation authority, agree to protect the I-5 Corridor by creating their own plans and agreements to (1) manage traffic from land uses surrounding interchanges not to exceed the mobility standard for the interchange (2) manage induced traffic growth in the Corridor beyond that already planned, (3) establish "centers" for intense development and identify those areas preserved for industrial, residential and other uses, and (4) manage the employment or industrial areas that are outside of designated "centers" where traffic from potential development could negatively impact the levels of service on I-5 or the roads leading to it. These plans and agreements will include TDM/TSM strategies, consistent with and designed to achieve, the I-5 Corridor and regional TDM/TSM targets.
- B. **Protect existing, modified and new interchanges.** Accord signatories with I-5 Corridor interchanges physically located in their jurisdiction agree to manage the development and resulting traffic around the interchange areas to protect the mobility standard of the interchange and enter into agreements with the relevant DOT. The plans and agreements for the interchanges will specify land uses that are consistent with this Accord.
- C. **Transit station areas.** Accord signatories with new light rail and transit stations will adopt plans for the areas around transit station that are consistent with this Accord.

- D. **TDM/TSM actions.** Accord signatories will do their part in implementing TDM/TSM strategies that are consistent with Corridor and regional targets.
- E. **Selection of strategies and regional consistency.** Each Accord signatory will determine its specific strategies to protect the I-5 Corridor. The strategies should be consistent with the applicable Clark County Comprehensive Plan or the Metro 2040 Growth Concept, as modified. After consultation with the Bi-State Coordination Committee, each Accord signatory with land use authority shall adopt the relevant elements of the Section II plans and agreements into their Comprehensive Plan or Growth Concept Plan.

III. Create “Bi-State Coordination Committee”

The existing “Bi-State Transportation Committee” advises the JPACT/Metro Council and the RTC Board on transportation issues of bi-state significance. It is the only existing forum for discussion of bi-state issues where members represent a balance of regional interests. A new level of bi-state coordination is needed to advise the JPACT/Metro Council, the RTC Board and Clark County on (1) increasing travel demands across the Columbia River and (2) accommodating the 20-year regional projections for population and employment, and jobs and housing. Jurisdictions and agencies in the I-5 Corridor and those that impact its function should supplement their current transportation coordination efforts with coordinated land use planning, TDM/TSM measures, and economic development activities designed to, among other things, effectively manage the existing and new I-5 Corridor transportation investments.

A. Role of the new Bi-State Coordinating Committee

- (1) **Review, comment and recommend.** Review, comment and provide recommendations, consistent with this Accord, on actions and major transportation, land use, TDM/TSM, and economic development issues of Bi-State Significance to the responsible signatory. Additionally, the Committee can request any Accord signatory to refer an issue or action of major bi-state significance to it for consultation.
- (2) **Rail.** Establish a public/private Bi-State Rail Forum to serve as an advisory group. Through the Rail Forum, initiate an aggressive program to:
 - (a) facilitate the efficient rail movement of freight
 - (b) coordinate multi-modal transportation services to increase port access and streamline freight movement
 - (c) develop strategies to implement the specific findings of the I-5 Partnership Rail Capacity Study, including prioritizing and scheduling the “incremental improvements”

- (d) pursue the rail infrastructure improvements required to accommodate the anticipated 20-year freight rail growth in the Corridor and frequent, efficient inter-city passenger rail service between Seattle, Portland and Eugene
 - (e) advocate at federal, state, regional and local levels for the funding and implementation of rail projects, including the need for additional inter-city passenger and high speed rail
 - (f) negotiate the cost allocation responsibilities between public and private stakeholders.
- (3) **TDM/TSM.** Establish a Bi-State TDM Forum to serve as an advisory group. Work with the regional transportation partners to prepare an “I-5 TDM/TSM Corridor Plan” to identify the TDM/TSM targets, implementation details, funding sources, priorities, and costs. Upon its completion, review the plan, finalize both Corridor and regional targets, and lead the effort to secure additional funding.
- (4) **Funding.** Identify opportunities to fund the widening of I-5 to 3 lanes between Delta Park and Lombard. Other capital elements of the recommendations will take longer to fund. As a first step towards the development of a financing plan, work to explore long-term funding opportunities. Coordinate and discuss efforts to increase transit operating revenue for TriMet and C-TRAN.
- (5) **Community enhancement fund.** Establish a community enhancement fund for use in the impacted areas in the I-5 Corridor in Oregon and Washington. Such a fund would be in addition to any impact mitigation costs identified through an environmental impact statement and would be modeled conceptually after the “1% for Arts” program, the I-405 Mitigation Fund and the St. John’s Landfill Mitigation Fund. The Bi-State Coordination Committee will recommend the specific details in conjunction with the Environmental Justice Work Group.

B. Rights and responsibilities of Accord signatories. Each signatory:

- (1) Retains the right and responsibility to control its own transportation system, planning, economic development, funding priorities and enforcement.
- (2) Agrees, prior to adopting management plans, interchange plans and agreements, and transit station plans, to bring them and other actions and issues of major bi-state significance to the Bi-State Coordinating Committee for its comments and recommendations, which the signatories will meaningfully consider.

C. Membership and coordination. Currently, the Bi-State Transportation Committee members are elected representatives or directors from: the Cities of Portland and Vancouver, Clark and Multnomah Counties, a smaller city in Clark (now Battle Ground) and one in Multnomah County (now Gresham); ODOT, WSDOT, the Ports of Vancouver and Portland, TriMet, C-TRAN and Metro. Membership in the Bi-State Coordination Committee should be expanded to include

members of the public, and others as needed, to meet the Accord responsibilities while maintaining the existing balance of bi-state representation of interests.

- D. **Revise existing Bi-State Transportation Committee.** JPACT/Metro Council, the RTC Board and Clark County should revise the existing “Bi-State Transportation Committee” to be consistent with this Accord. Simultaneously, the Accord signatories need to create the new “Bi-State Coordination Committee,” provide for citizen participation in its work, adopt this Accord, and agree to act consistently with it.

IV. Actions and issues with major bi-state significance

The Accord signatories find and adopt the following as issues of major bi-state significance:

- A. Plans and agreements for the I-5 Corridor noted in Section II above and the actions noted in Section V below.
- B. Four county regional coordination of UGB/UGA expansions to accommodate 20-year projections for population and employment, along with jobs and housing.
- C. Coordination of economic development strategies and the preservation of industrial lands.
- D. Highway, transit and rail projects in the Corridor, along with TDM/TSM targets and strategies for the Corridor and bi-state region.
- E. Other related major issues of bi-state concern.

V. Actions needed before new capacity in the I-5 Corridor

- A. As to **new river-crossing capacity, new or modified interchanges, or transit stations**, the Accord signatories agree to adopt drafts of the plans, agreements and actions noted in Section II above, include them for review in the relevant environmental process, and finalize them if not already finalized, as part of the environmental process conclusion.
- B. As to the **Delta Park to Lombard project specifically**, it is subject only to (1) formation of the Bi-State Coordinating Committee and (2) the Bi-State Coordination Committee’s review of the relevant environmental documents. The Accord signatories will, however, consult with each other and the Bi-State Coordination Committee before taking any official action that changes existing land use designations in the areas adjacent to the Delta Park Lombard project if those changes could adversely affect the mobility standard of the interchange. Additionally, the Accord signatories agree to have the plans, agreements and actions noted in Section II above in place or included for review in the relevant environmental process for any new river-crossing capacity, and finalize them if not already finalized, as part of the environmental process conclu-

sion. This includes the City of Portland's agreement to develop a plan to manage the area around the interchanges in the vicinity of Delta Park consistent with this Accord.

- C. As to the **WSDOT 99th to I-205 widening project specifically**, the environmental work has been completed. As a result, its construction is conditioned only upon the Accord signatories agreement to consult with each other and the Bi-State Coordination Committee before taking any official action that changes existing land use designations in the areas adjacent to that project. However, the Accord signatories agree to have the plans, agreements and actions noted in Section II above, in place or included for review in the relevant environmental process for any new river-crossing capacity, and finalize them if not already finalized, as part of the environmental process.
- D. As to **existing interchanges**, the Accord signatories agree to have the plans, agreements and actions noted in Section II above adopted with all deliberate speed.
- E. As to **any other transportation improvements** in the I-5 Corridor, the Accord signatories agree to have the plans, agreements and actions noted in Section II above adopted before construction begins on them.
- F. As to **TDM/TSM**, the proposed Bi-State Coordination Committee needs to agree on the "I-5 TDM/TSM Corridor Plan," the TDM/TSM targets for the I-5 Corridor and region, and the appropriate levels of financial commitment and implementation that must be in place before construction begins on any new river-crossing capacity.

VI. Implementation

- A. **Timing.** Signatory parties should establish the new Bi-State Coordination Committee as soon as possible, but in any event, it should be established contemporaneously with the adoption of the I-5 Task Force Recommendations into the regional transportation plans.
- B. **Staffing and funding.** Metro and RTC should continue to staff the Bi-State Coordination Committee and explore whether additional funding is necessary until the Accord's organizational details are finalized.

Attachment E

TDM/TSM Action Items and Rough Costs Matrix

I. Alternative mode services

Action item	Current / budgeted spending	Target / additional spending	Who pays
A. Fund transit services to the level assumed in the Task Force Baseline, upon which other Option Packages were compared. Today the region provides 1.9 million hours of transit service annually. The recommendation scenarios by the Task Force assumed 4.3 million service hours by 2020.	<ul style="list-style-type: none"> • C-TRAN (Year 2002) 282, 400-fixed-route service hours at \$23.5 m/year for transit operations • TriMet (Year 2002) 1.6 million fixed-route service hours at \$139 m/yr 	<ul style="list-style-type: none"> • The operating and maintenance cost needed for the baseline service in 2020 is estimated at \$317 M/yr. To meet this service level TriMet would need an additional \$132 M/yr and C-TRAN would need an additional \$23 M/yr. 	<ul style="list-style-type: none"> • Users • Private sector • Public sector
B. Increase the subsidy for the existing C-TRAN Vanpool program to add to fleet and increase service over next five years.	<ul style="list-style-type: none"> • C-TRAN: \$200K/yr operating costs • TriMet: \$100K/yr 	<ul style="list-style-type: none"> • C-TRAN: \$600K/yr to triple fleet 	<ul style="list-style-type: none"> • Users • Private sector
C. Study the use of casual carpool and pick-up locations to cross the river.	<ul style="list-style-type: none"> • \$0 	<ul style="list-style-type: none"> • \$40K 	<ul style="list-style-type: none"> • Public sector
D. Support the planned expansion of the existing Real Time Information for users.	<ul style="list-style-type: none"> • TriMet: \$2 M/yr 	<ul style="list-style-type: none"> • TriMet: \$1 M/yr 	<ul style="list-style-type: none"> • Users • Private sector • Public sector
E. Create and expand use of flexible shuttle systems to supplement fixed route services between the employment areas and the LRT stations in Vancouver and Portland.	<ul style="list-style-type: none"> • C-TRAN: \$0 • TriMet: \$200K shuttle/worksites 	<ul style="list-style-type: none"> • C-TRAN and TriMet: \$1 M combined budget 	<ul style="list-style-type: none"> • Private sector

II. Alternative mode support

Action item	Current / budgeted spending	Target / additional spending	Who pays
A. Make available new park and ride facilities in Clark County in conjunction with recommended and new transit services in the I-5 and I-205 corridors. Begin Park and Ride expansion with those facilities forecasted to be at capacity in the next five years.	<ul style="list-style-type: none"> 1,700 spaces currently exist in Clark County. Another 700 will be added with construction of the I-5/99th Park-n-Ride. 	<ul style="list-style-type: none"> Overall need: 6,600 spaces in Clark County. The additional 4,200 spaces cost \$84 M (\$20K/space x 4,200 spaces). 1,000 spaces (\$20 M) are currently assumed in projected LRT costs. 	<ul style="list-style-type: none"> Users Private sector Public sector
B. Increase funding at the jurisdiction level to ensure that existing pedestrian-oriented street designs in neighborhoods within the I-5 Corridor may be implemented to support connectivity to the corridor.	<ul style="list-style-type: none"> Retrofit at \$1 M for 1/4-mile section. New construction at \$1.25 M for 1/4-mile section. 	<ul style="list-style-type: none"> \$16 M for 4 miles of boulevard retrofits 	<ul style="list-style-type: none"> Private sector Public sector
C. Support a sustained marketing program to increase awareness of rideshare programs, for example www.CarpoolMatchNW.org . Target the I-5 Corridor.	<ul style="list-style-type: none"> \$116K (\$80K for staff, \$36K for ads) for two years 	<ul style="list-style-type: none"> Continue and increase budget to \$150K to target I-5 	<ul style="list-style-type: none"> Public sector
D. Establish and fund an ongoing HOV enforcement program.	<ul style="list-style-type: none"> ODOT: \$50K – \$60K/yr WA State Patrol in charge of enforcement 	<ul style="list-style-type: none"> ODOT: increase to \$100K WA: increase to \$100K 	<ul style="list-style-type: none"> Users Public sector
E. Improve connectivity and quality of bike/ped facilities in Portland and Vancouver at both ends of any new river crossing.	<ul style="list-style-type: none"> \$25K. Lloyd District TMA received \$7,500 regional money for bike racks in 2001. 	<ul style="list-style-type: none"> City of Vancouver: \$2.5 M 	<ul style="list-style-type: none"> Public sector
F. Support existing plans for end of trip facilities (e.g., showers, lockers, bike racks) by committing the funding for these in the corridor.	<ul style="list-style-type: none"> Portland spent \$9,500 on bike racks and \$5,477 on lockers in 2001* WA: \$0 	<ul style="list-style-type: none"> Portland increases budget to \$35K/yr WA budget: \$75K 	<ul style="list-style-type: none"> Users Private sector Public sector
G. Develop TDM programs for special event centers that draw large number of attendees, e.g., Delta Park, Expo Center, PIR, Downtown Vancouver. This will be similar to the shuttle bus and traffic signal coordination implemented for Rose Quarter events.	<ul style="list-style-type: none"> TriMet: \$5K – \$10K/yr 	<ul style="list-style-type: none"> Increase budgets in both WA and Portland to \$300K 	<ul style="list-style-type: none"> Users Private sector Public sector

* Lloyd District TMA revenue: City of Portland \$75K; Passport Commissions \$31,500; CMAQ grant \$15K; BID funding \$50K; contributions \$2,600

II. Alternative mode support (cont.)

Action item	Current / budgeted spending	Target / additional spending	Who pays
<p>H. Expand the TDM Education program for the region and target special programs for the I-5 Corridor. Examples of education programs are:</p> <p>(1) School programs on Alternative Travel Modes.</p> <p>(2) Identify people who are open to making changes to the way they travel and link them with the resources they need to do it (e.g., Travel Smart program, Perth).</p> <p>(3) Encourage families to live without a second car (Way to Go Seattle).</p>	<ul style="list-style-type: none"> City of Portland spent \$15K for bikes and helmets plus \$80K for staff for elementary school bike & ped training in 2001. 	<ul style="list-style-type: none"> \$1.2 M 	<ul style="list-style-type: none"> Private sector Public sector
<p>I. Develop Guaranteed Ride Home Program for employees who have gotten to work by alternatives to SOV. Employees are offered a ride home (e.g., taxi, company vehicles) at no cost if needed for an emergency.</p>	<ul style="list-style-type: none"> Minimal cost (+/- \$200/yr) 	<ul style="list-style-type: none"> \$30K/yr 	<ul style="list-style-type: none"> Public sector

III. Worksite-based strategies

Action item	Current / budgeted spending	Target / additional spending	Who pays
<p>A. Expand region-wide incentive strategy to encourage employers to offer commute options. This will include promoting education programs tailored to the work sites in the corridor. Add marketing FTE for bus pass marketing.</p>	<ul style="list-style-type: none"> TriMet: \$400K WA: \$0 	<ul style="list-style-type: none"> TriMet: \$500K C-TRAN: \$100K/yr 	<ul style="list-style-type: none"> Private sector Public sector
<p>B. Subsidize transit pass program (like the TriMet Passport) to increase transit use at employment sites.</p>	<ul style="list-style-type: none"> City of Portland's TRIP (transit subsidy) and carpool check program cost \$340K in 2001 WA: \$0 	<ul style="list-style-type: none"> \$5 M WA Budget: \$450K 	<ul style="list-style-type: none"> Private sector
<p>C. Increase participation in bike-walk use at more worksite locations, e.g., Bike & Walk Bucks.</p>	<ul style="list-style-type: none"> Bike & Walk Bucks pays participant \$30/month Average 500 participants = \$180K/yr 	<ul style="list-style-type: none"> Increase use to 1,000 participants = \$360K/yr 	<ul style="list-style-type: none"> Private sector

IV. Public policy and regulatory strategies

Action item	Current / budgeted spending	Target / additional spending	Who pays
A. Expand the funding for the two existing TMAs in the corridor, Swan Island and Lloyd Center, and use public funds to seed new TMAs where business support exists.	<ul style="list-style-type: none"> Lloyd District TMA budget: \$174K* Swan Island TMA** budget: \$75K 	<ul style="list-style-type: none"> Create and maintain 4 TMAs total. Increase budget to \$175K = \$700K 	<ul style="list-style-type: none"> Private sector Public sector
B. Review enforcement or incentive mechanism to achieve the goals in Washington State's CTR and Oregon's ECO programs to reduce commuter SOV trips.	<ul style="list-style-type: none"> \$0 	<ul style="list-style-type: none"> \$300K 	<ul style="list-style-type: none"> Private sector Public sector
C. Expand CTR to include businesses with 50 or more employees. CTR currently impacts businesses with 100 or more employees. ECO and CTR to move toward common criteria to include businesses with 50 employees or more.	<ul style="list-style-type: none"> \$0 	<ul style="list-style-type: none"> \$40K 	<ul style="list-style-type: none"> Private sector Public sector
D. Expand transit free fare areas including downtown Vancouver.	<ul style="list-style-type: none"> City portion of Fareless Extension to Lloyd District was \$300K. Total cost \$900K. WA: \$0 	<ul style="list-style-type: none"> Future costs based on TriMet's estimate of lost revenue. WA: \$300K 	<ul style="list-style-type: none"> Private sector Public sector
E. Study expansion of free fare zones for I-5 transit users.	<ul style="list-style-type: none"> \$0 	<ul style="list-style-type: none"> \$150K 	<ul style="list-style-type: none"> User Private sector Public sector

* Lloyd District TMA revenue: City of Portland \$75K; Passport Commissions \$31,500; CMAQ grant \$15K; BID funding \$50K; contributions \$2,600

** Swan Island TMA revenue: CMAQ grant \$25,500; access to work (carpool and shuttle) \$10,500; membership dues \$25,750

V. Pricing strategies

Action item	Current / budgeted spending	Target / additional spending	Who pays
<p>A. Develop a region-wide parking strategy to encourage fewer parking spaces and to support parking charges. Consider including elements of the strategy such as:</p> <p>(1) Establish trip reduction ordinances to help reduce SOV trips.</p> <p>(2) Support jurisdictions in adopting parking requirements in codes with parking minimums and maximums in place.</p> <p>(3) Provide preferential parking at places of employment and at parking garages for rideshare vehicles as an incentive.</p> <p>(4) Increase the effectiveness of existing pricing strategies by increasing the cost of metered parking and parking garages.</p>	<ul style="list-style-type: none"> • Portland discounts carpool parking on streets and garages: total \$377,472/yr • On-street spaces: 618 • City-owned garage spaces: 217 • City of Vancouver's parking program costs: \$2 M/yr 	<ul style="list-style-type: none"> • \$500K 	<ul style="list-style-type: none"> • User • Public sector
<p>B. Study opportunities to implement road-pricing strategies as plans for a new river crossing continue. Pricing strategies for consideration to be looked into through EIS.</p>	<ul style="list-style-type: none"> • \$0 	<ul style="list-style-type: none"> • \$500K 	<ul style="list-style-type: none"> • User • Private sector • Public sector

VI. TSM strategies

Action item	Current / budgeted spending	Target / additional spending	Who pays
A. Add service patrols to manage incidents in Washington and add to the number of incident response teams in Oregon and Washington.	<ul style="list-style-type: none"> • COMET operating costs: \$85K/truck, \$7,550 maintenance and gas, 5K miles/month/per truck 		<ul style="list-style-type: none"> • Public sector
B. Improve freight traffic flow by moving more drivers from SOV to alternative modes, thereby reducing traffic congestion. As designs for the new river crossing and interchanges in the corridor are developed, truck bypass lanes at ramps and other techniques to facilitate truck movement should be considered.			<ul style="list-style-type: none"> • Public sector
C. Accelerate funding for planned ramp metering at all WSDOT freeway interchanges in the I-5 and I-205 corridors.	<ul style="list-style-type: none"> • Ramp meters cost \$90K–\$100K/unit (includes meter, signage and striping) 	<ul style="list-style-type: none"> • \$700K for 7 meters 	<ul style="list-style-type: none"> • Public sector
D. Increase coordination between Oregon and Washington Transportation Management Centers to improve freeway management and operations, including incident management. The aim is to decrease the time to clear incidents, maintain traffic flow and increase travel reliability.	<ul style="list-style-type: none"> • OR: • WA: 30 minutes response and 120 minutes clearance time for major incidents 	<ul style="list-style-type: none"> • \$600K for first year and \$100K annually for following years 	<ul style="list-style-type: none"> • Public sector
E. Implement Vancouver Area Smart Trek (VAST) System. VAST is a package of Intelligent Transportation System (ITS) elements to better manage the transportation system. ITS uses advanced technology and information to improve mobility and productivity and enhance safety on the transportation system. http://comsvr/vastrek/	<ul style="list-style-type: none"> • \$5.4 M (3-yr budget) 	<ul style="list-style-type: none"> • \$45 M over 20 years 	<ul style="list-style-type: none"> • Public sector

Potential Impacts of Recommendations to be Assessed in an EIS

I. Traffic/transportation

A. Clark County

- (1) **Increase/decrease in access to jobs and services for low income, minority groups, disabled and elderly.** Need to assess:
 - (a) Ability to access jobs/employment centers. How will each alternative reduce or increase job opportunities or require dislocating families in order to maintain access?
 - (b) Choice in transportation within each community and in crossing the river. Large segments of the EJ communities do not drive (particularly women of ethnic groups), do not have reliable cars, or are from cultures that are more comfortable using public transportation.
 - (c) Availability of public transportation to reach community services. Services in Clark County are not currently always accessible by transit. Low income and minority groups are located throughout the community.
 - (d) Impact on pedestrian and bicycle access.
 - (e) Affordability of transportation to jobs and services.
 - (f) Efficiency of transportation to jobs and services.
- (2) **Construction impacts.** Need to assess ability to maintain access to jobs and services during construction.
- (3) **Reduced safety in neighborhoods.** Need to assess:
 - (a) Impact on pedestrian safety. Walkability of neighborhoods is especially important for children and elderly.
 - (b) Increase in cut-through traffic.
 - (c) Impact on speeds through neighborhoods, for instance potential impacts of new bridge over 29th in Vancouver.
- (4) **Reduced access to homes.** Need to assess impact on residents of changing how homes are accessed (rear access to homes between 35th–37th Street).

B. Portland

- (1) **Increase in traffic on local streets and other freeway systems.** Need to assess:
 - (a) The local traffic impact of removing the bottleneck at Delta Park.

- (b) The local traffic impact of making improvements in the Bridge Influence Area.
 - (c) Impact of freeway ramp meter rates on local streets and on pedestrian safety issues.
 - (d) The impact of improvements on the Portland freeway loop, SR 500 and SR 14.
 - (e) Traffic impacts of HOV system.
 - (f) West Arterial Road as an alternative to improvements on I-5.
- (2) **Increase in sprawl in Clark County.** Need to assess the impact of transportation improvements on growth in Clark County.
 - (3) **Unsustainable transportation system.** Need to assess transit and demand management-only transportation system.
 - (4) **Unsafe pedestrian conditions during construction.** Need to assess to the extent that construction of improvements impact pedestrian safety and access, it needs to be mitigated. This can be a problem on local streets and also at freeway ramps when traffic backs up. Senior populations are particularly a concern.

II. Environment and health

A. Clark County

- (1) **Increase in air and other pollution and subsequent health impacts.** Need to assess:
 - (a) Health impacts on residents next to or near the facilities due to increases in air pollution and the potentially subsequent increases in contamination of soils and other resources with which residents interact. The assessment should recognize that:
 - Children are most vulnerable because they play outside.
 - Low income populations have less access to health care and thus may have poorer overall health.
 - Health issues of concern include allergies, asthma, lead poisoning, and low birth weights.
- (2) **Increased noise.** Need to assess health impacts of increased noise.
- (3) **Impacts to other environmental resources.** Need to assess:
 - (a) Impact on trees — reduction and health of trees.
 - (b) Reduction in wildlife.
 - (c) Stormwater drainage.
 - (d) Water quality.
 - (e) Sustainable development.
 - (f) Other natural resources.

B. Portland

(1) Increase in air pollution and subsequent health impacts. Need to assess:

(a) Local air quality impacts of highway and transit projects, including an assessment of air toxics. The assessment should also take into account idling traffic at ramp meters.

(b) Health impacts associated with increased air pollution due to highway and transit projects.

- Note: There is concern in the community about the cumulative impacts of automobile and industrial pollution on the health of residents in north and northeast Portland. Advocates on this issue have requested a study of the cumulative air quality impacts. Such a study will require the participation of several state and federal agencies including the Department of Environmental Quality, the Oregon Health Department, and the Environmental Protection Agency. Additional discussion among these agencies and with the community advocates is needed before action on such a study can be taken.

(2) Increase in pollution to streams and fish. Need to assess:

(a) Increase in run-off into streams due to the increase impervious surface (more roadway).

(b) Increase in PCBs and toxic organics in streams. Need to pay attention to detection limits.

III. Historic and cultural issues

A. Clark County

(1) **Impacts on historic homes.** Need to assess older Vancouver neighborhoods that have historic homes.

(2) **Impacts on culture of minority and ethnic groups.** Need to assess impacts on the ability of minority and ethnic groups to maintain the cohesiveness and culture of their communities.

(3) **Impacts on Native American tribal resources.** Need to assess impacts that a river crossing or other elements of the alternatives may have on Native American fisheries.

B. Portland

(1) **Impacts to Pioneer Cemetery.** Need to assess whether impacts will occur to this resource.

IV. Property impacts

A. Clark County

(1) **Residential and commercial displacements.** Need to assess:

(a) Displacements and encroachments—low-income households in this corridor are difficult

to relocate because of a lack of decent, affordable housing.

(b) Impact on availability of affordable housing.

B. Portland

(1) **Residential and commercial displacements.** Need to assess:

(a) Displacements and encroachments to residential, business and commercial property.

(b) Impact on property values.

(c) If there is a loss of housing, need to consider the cumulative impacts of all projects in the area.

V. Quality of life

A. Clark County

(1) **Impacts to community life.** Need to assess:

(a) Impacts to community cohesiveness—connections within neighborhoods. This includes pedestrian, bike and vehicle connections within the community and to schools, recreation, community and commercial services.

(b) Connection impacts to other communities.

(c) Impacts to adopted Neighborhood Plans.

(d) Diminishment of community identity, such as of historic character of older Vancouver neighborhoods.

(e) Impacts to community life of minority groups.

(f) Increase in brownfields or rundown and/or vacant properties.

(g) Changes, such as access, within neighborhoods that develop housing pockets that could attract criminal activities into neighborhoods

(2) **Increase in noise.** Need to assess noise impacts of potential improvements.

(3) **Impacts to open space and parks.** Need to assess:

(a) Loss of green space, wetlands and parks.

(b) Access to open space and parks.

(4) **Decrease in overall livability.** Need to assess:

(a) Increase in odors.

(b) Visual impacts

B. Portland

- (1) **Increase in noise.** Need to assess:
 - (a) Noise impacts of potential improvements including widening I-5 to three lanes between Delta Park and Lombard.
 - (b) Noise impacts due to construction.
- (2) **Decrease in overall livability.** Need to assess:
 - (a) Loss of green space.
 - (b) Shadow effect of freeways and loss of natural light.
 - (c) Visual impact of new bridges.
 - (d) Loss of access to the Columbia Slough.
 - (e) Increase in litter due to light rail and increased traffic.
 - (f) Increased grit and grim on homes and vehicles near the corridor.

VI. Employment and economic opportunity

A. Clark County

- (1) **Impacts on job opportunities due to access.** Need to assess increase or decrease in reliable transportation access to jobs for low income and minority communities.
- (2) **Economic development in Clark County.** Need to assess:
 - (a) Effects of alternatives on creation of jobs in Clark County.
 - (b) Impacts on tax revenues for Clark County.

B. Portland

- (1) **Decrease in revenue for corridor businesses due to construction.** Need to assess construction impacts to businesses affected by construction of improvements.
- (2) **Lack of economic benefit to local community from EIS, construction and maintenance contracts.** Need to ensure that the Departments of Transportation make a special efforts in the following areas: attracting Disadvantaged Business Enterprise (DBE)-eligible firms for all contracts; attracting Emerging Small Businesses for all contracts, and enforcing external equal employment opportunities laws.

VII. Affected environmental justice and Title IV communities

A. Clark County

- (1) **Balance of impacts.** Need to assess the demographics of those impacted by the study— who, how many, and of what racial, ethnic and economic groups—in order to determine whether impacts are balanced and what mitigation could be appropriate.

Potential Benefits of Recommendations to be Considered in an EIS

The following information may be used as a basis for exploring benefits in the EIS. The EIS will assess whether environmental justice communities carry an unfair share of the negative impacts of the project, and whether the impacts are or can be balanced by benefits to those communities.

It is important to understand that although impacts would be a natural outcome of transportation improvements, not all benefits would be. The working groups discussed two types of benefits: (1) those that could be a direct outcome of transportation improvements, and (2) those that could be added either to address specific impacts (as mitigation) or to provide overall balance of benefits and impacts to affected communities. The second type would not be ensured until they were included in the final EIS and financing package.

I. Employment/economic opportunity

A. Clark County

- (1) **Maintain and improve access to employment centers and high quality jobs.**
 - (a) Provide reliable, efficient access to key employment areas (such as Ridgefield, Prune Hill, Portland, Port of Vancouver). Need transportation choices: car and transit.
 - (b) Encourage the creation of jobs in Clark County/Southwest Washington.
 - (a) Support job training opportunities.
- (2) **Support job opportunities during construction.**
 - (a) Use local contractors and suppliers.
 - (b) Maintain access to employment centers during construction.
- (3) **Encourage the development of local businesses in the corridor.**
 - (a) Encourage business development for minority groups along the corridor.
 - (b) Support economic development plans in local Neighborhood Action Plans.

B. Portland

- (1) **Provide jobs from the project.**
 - (a) Improvements should serve as an economic engine by providing jobs and business opportunity to the adjacent communities.
 - (b) Employment and training and percentage people of color used on project—contracts/workers.

- (c) Also percentage of small businesses, women in business.
 - (d) ODOT should participate in Community Benefits Agency Task Force. Though not yet formally established, ODOT and all other agencies undertaking major public works projects in the area should participate when it is set up. The Task Force will serve as a forum where public agencies and potentially other institutions can share information regarding how their capital improvement projects can best benefit the community. Community benefit objectives can be served by aggressive local hiring/contracting efforts, and there are many other “best practices.”
- (2) **Help businesses that may be impacted during construction.**
- (a) Develop a plan to save jobs during construction. Use lessons learned during Interstate LRT. Look for federal grants now. Don’t wait.
 - (b) Look at how to compensate small business people who lose business.
 - (c) To help businesses that may be impacted during construction, it is important to get profit and loss statements before construction so that there is a way to determine loss of business during construction.
 - (d) EPA may have a small business loss income fund that will reimburse any loss that businesses can prove during construction.
- (3) **Encourage the development of local businesses in the corridor.**
- (a) Set aside space at light rail stations for small, community-oriented, local businesses and connect these businesses with job training center efforts.
 - (b) Incentives along corridor to help businesses.

II. Traffic/transportation

A. Clark County

- (1) **Provide for diverse mobility and access needs of environmental justice communities:**
- (a) Jobs. See “Employment/Economic Opportunity.”
 - (b) See “Health and Community Services” and “Environment.”
 - (c) Community access. See “Community Building and Livability.”
 - (d) Maintain access across the river as a plus for both sides of the river—Portland and Vancouver are culturally and economically linked communities.
- (2) **Improve bike and pedestrian safety and increase connectivity.**
- (a) Improve or provide more connections crossing the freeway for pedestrian and bike access.
- (3) **Reduce single-occupancy vehicles to reduce related impacts on neighborhoods and the environment.**

- (a) Consider employer-to-employee incentives, such as transit vouchers. This can be a tax incentive for employer and could help meet community trip reduction goals.
 - (b) Consider Downtown Vancouver free zone on buses.
 - (c) Consider using project to facilitate better ride sharing.
 - (d) The more public transportation that is available, the more people will ride.
- (4) **Improve transit availability and connections.**
- (a) Need efficient east-west transit in Clark County to create better access to jobs and services.
 - (b) More available transit can benefit certain ethnic groups. For some groups who are new to the country, driving is a major obstacle; they have used public transportation—trains and buses—in home country and are more comfortable with transit due to familiarity. Light rail or rail type system would be more inviting.
 - (c) Consider transit passes for special populations.
 - (d) Public transit needs to be done well (go where people want to go).
 - (e) More information on public transportation is needed for EJ communities.
- (5) **Calm traffic through neighborhoods.**
- (a) Build on Vancouver neighborhoods program of student-designed traffic signs.

B. Portland

- (1) **Improve bike and pedestrian safety and increase connectivity.**
- (a) Freeway over-crossings are dangerous for bicyclists and pedestrians. Need safe ways to get across freeway, particularly for seniors. There is also a problem crossing at freeway ramps when traffic backs up.
 - (b) Safer and better bike and pedestrian access to transportation. Emphasize bike and pedestrian facilities in design and mitigation. Need pedestrian and bike friendly overpasses to tie communities back together.
 - (c) Safer bike/pedestrian access should be emphasized in design for neighborhood.
 - (d) A new pedestrian/bicycle trail/path connecting Bridgeton to the Expo Center MAX station.
 - (e) Improve the pedestrian condition of Killingsworth, per the planning work currently underway and led by the Portland Office of Transportation.
 - (f) Consider integrating I-5 improvements identified in the recently completed *Station Area Revitalization Strategy* into the long-range I-5 Partnership Plan. The strategy identifies the following improvements:
 - A new Buffalo Street pedestrian/bicycle freeway crossing.
 - Enhanced Killingsworth and Skidmore freeway crossings to make them more pedestrian

friendly (widened sidewalks, landscaping, benches, etc.).

- A possible freeway capping at the Killingsworth crossing.
- A new street crossing to connect Mississippi District (south of Skidmore).

(2) Improve transit connections.

- (a) Develop better inter-neighborhood transportation in N/NE, for example, streetcars and other alternative modes.
- (b) Need improved east-west transit through N/NE Portland to create better access to jobs, shopping, recreation, etc.
- (c) Free bus passes to students up to age 22.

(3) Manage traffic through better land use planning.

- (a) Coordinate land use and transportation to limit sprawl in Clark County and thereby reduce commuters through north Portland.

(4) Improve congestion.

- (a) Eliminate bridge lifts.

III. Health and community services

A. Clark County

(1) Improve access to health care and human services.

- (a) Reliable transportation is needed to medical / healthcare resources.
- (b) Residents of low-income communities have less health insurance and access to health care.
- (c) Consider supporting childcare and facilities in neighborhoods.
- (d) Community resource centers could be built in neighborhoods.
- (e) Provide easy access to senior community centers in the neighborhoods.

(2) Improve education on health risks.

- (a) Education is needed on freeway-related health impacts for families within two miles of the corridor.

B. Portland

(1) Improve access to health care for pulmonary problems.

- (a) Residents of low-income communities have less health insurance and access to health care.
- (b) There needs to be consideration of air quality impacts so insurance community will pay for asthma as a long-term health issue.

- (2) **Improve lead testing and education.**
 - (a) Test children and homes and educate to prevent lead poisoning.

IV. Environment

A. Clark County

- (1) **Promote natural resource improvement.**
 - (a) Implement as community projects.
 - (b) Partner with organizations such as WSU on environmental stewardship.
- (2) **Increase green spaces.**
 - (a) Plant more trees.
 - (b) Acquire green space.

B. Portland

- (1) **Improve knowledge of air quality impacts.**
 - (a) Establish additional air quality monitoring stations along the freeway corridor.
 - (b) Study the cumulative effects of automobile and industrial emissions, including an assessment of how the emissions impact different age groups and pregnant and nursing women.
 - (c) Improved information on air quality will help people make informed choices and can be used to get DEQ to “dial down” impacts from industry; communicate and educate people.
- (2) **Improve air quality now and during construction.**
 - (a) Make sure construction vehicles are up to air quality standards while they are building in the area.
 - (b) Have DOTs work with environmental agencies/transit to create incentives for reduction of air pollutants, e.g., clean buses.
- (3) **Treat runoff from impervious services.**
 - (a) Runoff control measures such as berms and swales to capture pollution before it goes into streams.

V. Property benefits

A. Clark County

- (1) **Housing**
 - (a) Preserve low-income housing.
 - (b) Provide home enhancements, such as added insulation, to offset noise, air pollution, etc.

- (c) For displaced families with attachments to home and neighborhood, consider moving houses to a vacant property in close location

B. Portland

(1) Housing

- (a) Preserve low-income housing (incentive programs).

VI. Community building and livability

A. Clark County

(1) Foster the ability of the low-income and minority communities to become more engaged in the community.

- (a) Promote capacity of low-income and minority groups to become involved in public discourse. Develop their capacity to be effective citizens and self advocates so they can be empowered to affect their quality of life.
 - Possibly partner in outreach and education with Clark College and/or WSU Vancouver.
 - Promote knowledge of government services (police, etc.), programs and policies intended to support the community.
- (b) Promote and support community-action, community-betterment projects that improve the quality of the community, bring the community together, and educate. Examples cited include:
 - Tree planting programs (such as the programs for disadvantaged youth sponsored by the Forest Service).
 - Community art programs to represent the character of the community—with art by the community. This could be done in conjunction with sound wall design or light rail stations, and would promote pride and discourage graffiti
 - Traffic calming signs made by kids.
- (c) Public transportation fosters more interaction between diverse cultures and segments of the community.

(2) Improve community connectivity and amenities.

- (a) Provide more connections across freeway for pedestrians, bikes, etc.
- (b) Consider capping I-5 for connectivity and open space and to addresses noise/ pollution.
- (c) Need more parks, gardens and greenspace.
- (d) Improve aesthetics, such as with artwork on sound walls. Express the diversity and the unique feel of each neighborhood.

(3) Strengthen schools and public education.

- (a) Mitigation could include support for schools along freeway, which are the most diverse and have some of the highest rates of poverty.
- (b) Community-action projects described in the previous section could be organized through the schools and build on educational goals.

(4) Create a mitigation fund.

- (a) Consider creation of a mitigation fund that could be used for community-led projects.
- (b) Focus of any environmental justice mitigation should be on the EJ communities and households affected by any negative impacts.

B. Portland

(1) Improve/add community amenities.

- (a) Plan for adding green space with project and improving the green and community spaces we have.
- (b) Add libraries, lighting, drinking fountains, Saturday market, and micro-economic space.
- (c) Public improvements along the Columbia Slough. The community has identified several priority projects in this area, including the 40-mile loop trail, canoe launch, etc.

(2) Improve existing community resources.

- (a) Funding for Jefferson and Roosevelt school cluster (elementary-high school). These have the most diverse population, and values clash. Cultural center, day care, immigrant services.

(3) Create a mitigation fund.

- (a) Consider creation of a mitigation fund, similar to the fund that ODOT established as mitigation for the west-side I-405, or the North Portland Trust Fund that Portland International Raceway (PIR) set up to mitigate for noise impacts.

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Outreach to Environmental Justice Communities during the EIS

A. Clark County

- (1) **Improve community capacity to participate in process.**
 - (a) Many EJ communities do not understand their opportunities to be involved and affect the process.
 - (b) Potential of negative impacts could help mobilize and unite community to address the problem.
- (2) **Apply environmental justice in its fullest sense.**
 - (a) Environmental Justice Executive Order refers only to low-income and minority, but Title 6 covers more. We need to consider elderly, disabled and non-English speaking.
- (3) **No one approach will work for all. General tools could include:**
 - (a) Schools can be a source of disseminating information, but children may not, or in some cases should not (see #6 below), communicate back to parents.
 - (b) Local newspapers and newsletters specifically for targeted groups; media for non-English speaking community members cover the Portland/Vancouver area.
 - (c) Posters at local businesses catering to low-income and minority communities—grocers, restaurants, etc. (many located on 4th Plain Blvd.).
 - (d) Neighborhoods have been established for a long time and can assist in outreach (as a supplemental effort). Rosemere neighborhood translates newsletter in Spanish and Russian.
 - (e) C-TRAN has changed advertising policy and will now accept public service ads.
- (4) **De-centralized methods of outreach are needed to reach low-income communities.**
 - (a) Poverty located all over Clark County, not centrally located. They are a significant part of most of the neighborhoods along the corridor.
 - (b) Large pockets in Hazel Dell and Mill Plain, 136th Avenue to 18th Street. Poor section of town is.
 - (c) Transients/homeless are mostly found in the area close to rail, transportation hub, and move around a great deal.
 - (d) Free/reduced lunches indicate the rate of poverty—55% of students in Vancouver schools can qualify for this program. Battle Ground and Evergreen have 30%.
 - (e) Head Start has 1,000 families. This number is only the ones they serve; know that there is a waiting list.

- (f) May be able to contact through the schools.
 - (g) C-TRAN has changed advertising policy and will now accept public service ads.
- (5) Recognize diversity of non-English speaking groups.**
- (a) Primary non-English speaking groups are:
 - Eastern European— many languages but usually speak Russian.
 - Hispanic.
 - Vietnamese, Korean, Cambodian.
 - (b) Most of these are located around the I-5 corridor, because it is the cheapest area to live in.
 - (c) Schools along corridor have much diversity.
 - (d) Headstart students in Clark County: 16% is non-English speaking, 10% is Russian.
 - (e) Washington Elementary Schools: 23% Hispanic, 7% African American, 3% Asian American.
- (6) Establish culturally sensitive, community-based outreach programs.**
- (a) Find out what methods are most effective for each cultural group.
 - (b) Materials should be culturally relevant.
 - (c) Some cultures (Hispanic and Eastern European) are leery of government, so approach needs to be non-threatening.
 - (d) Liaisons from the affected groups that speak their language are good resource.
 - (e) Programs for refugee placement may be a good way to communicate.
 - (f) Schools can be a way of disseminating information. Consider consulting students about the project, and recognize that for several ethnic groups, children should not be used as tools to translate to or reach parents, either because it is degrading to parent or it is an inappropriate role for the children.
 - (g) Minority and ethnic groups generally identify themselves as a Portland/Vancouver community. They do not draw a line at the river.
- (7) Reach Russian/Eastern European communities.**
- (a) Schools are “the authority” —the best source of information about and to the community.
 - (b) Collaborate with the schools and existing community leaders.
 - (c) Do not go through the churches; they are sacred.
 - (d) Door-to-door approach works as long as you have an interpreter.
 - (e) Do not use children as interpreters.
 - (f) Post information at other agencies that serve these populations.
 - (g) Large Russian population goes to Clark College. Acceptable outreach there.
 - (h) Russians won’t use celebrations to get information.

(8) Reach Spanish-speaking communities.

- (a) More than 90% of the Hispanic community Spanish-speaking along I-5, near corridor for commuting to and from Oregon.
- (b) 85% of Hispanic community is 1st generation with little to no English skills.
- (c) 99% are below federal guidelines for poverty.
- (d) Over 90% mono-language (Spanish only).
- (e) Over 90% are intergenerational, so there are school-age children in most families.
- (f) Focus is survival for today for family.
- (g) Literature is not effective because most are not literate in English or Spanish.
- (h) Radio is effective way to reach.
- (i) Community meetings: won't share information, but will take information. Not considered public involvement.
- (j) Don't use children as tools to reach them.
- (k) Celebration of food / dancing good way to get large gathering.
- (l) Transportation is issue to Hispanic. Majority of women and mothers do not drive.
- (m) Hispanic newspaper, Portland resource.
- (n) Use Cinco de Mayo celebration for outreach Hispanic

(9) Reach the African-American community.

- (a) Use churches.
- (b) Contact church leaders first.
- (c) Use newsletters, such as NAACP newsletter.
- (d) Portland / Vancouver economic status for African Americans about the same.
- (e) Roosevelt Elementary greater population of African American immigration from Portland coming.

(10) Reach the Asian American community.

- (a) Asian population low.
- (b) Vietnam celebrations good.
- (c) Korean church community.
- (d) They keep a low profile, but are here.

(11) Elderly and disabled access to the process.

- (a) Disabled/elderly depend on public transportation.
- (b) Mentally ill population also ride buses and homeless in downtown and around servicing programs.

(12) Partner with existing community groups that have established relationships with the EJ communities.

(a) Consult/partner to determine best ways of reaching different groups. For example:

- SEA MAR
- Lutheran Family Services
- Catholic Family Services
- Eastern European Council
- Refugee Referral Program
- INR booklet – get this as a resource!
- Independent Living Resources (people with disabilities)
- Elderly: Talk to Vancouver housing authority. Also have data.
- Ombudsman
- Vancouver Office of Mediation (for data on neighborhoods conflict resolution process)
- YWCA Diversity Task Force
- Southwest Washington Medical Center, Marcia Maynard
- New American Social & Cultural Assistance (NASCA), Kim Le
- City of Vancouver Office of Neighborhoods
- Community Outreach Panel, Kim Kapp, City of Vancouver Police
- Minority Youth Leadership Program, Jessica Mata, Children’s Home Society
- Clark County Cultural Competency Committee, Renata Rhodes
- Human Services Council in Vancouver, Community Information and Referral service
- SW Washington Health District, for data on the health of our community
- Bureau of Indian Affairs
- VHA—serves many disabled persons

B. Portland

(1) Improve community capacity to participate in project.

(a) Many EJ communities are aware but not confident enough to get involved.

(b) Build leadership in communities. Provide opportunities to learn about and develop skills in urban planning, transportation, social justice, environmental justice, and cross-cultural political involvement. Build leadership by experiencing projects—internships, etc. [People exhibited considerable enthusiasm for this suggestion in particular and gave it three stars even though no stars were given as a part of the process.]

- (c) The project is too lengthy to keep neighborhood together. Get a community center meeting place open and start training before construction. It could provide technical training and a place for community togetherness. Have it follow through the process and open for people with information on the project.
 - (d) Help neighborhood associations with technical assistance and training improve ability to participate and to build leadership.
- (2) **Establish culturally sensitive, community-based outreach program.**
- (a) Hire community outreach workers who are bilingual, bicultural, etc.
 - (b) Partner with existing community groups (Schools Uniting Neighborhoods, EJAG, IRCO, Community Alliance of Tenants, etc.) to do outreach and get word out about the project.
- (3) **Build community and one-on-one relationships.**
- (a) More extensive outreach through building relationships. TV shows on public cable access as an example to get the dialogue started.
 - (b) Go to the places where people naturally gather to talk about the project rather than making them come to you, e.g., churches, grocery stores, community centers, laundromats.
 - (c) Partner with the Oregon Food Bank to put information in food baskets, or be there when people come to get baskets.
 - (d) Use door-to-door canvassing to reach residents. This could include community surveys to assess attitudes.
 - (e) Individual invitation to participate. Establish small but consistent relationships one-on-one.
 - (f) Participate in community fairs, e.g., Good in the Hood.
- (4) **Have tangible, accessible displays.**
- (a) Put models of the project in libraries so people can see what it would look like.
 - (b) Portable geographic information system (GIS) so information on designs, impacts and benefits can be presented at kiosks, community events, or door-to-door. Coordinate information with other projects to show full community impacts.
 - (c) Commission local artist to create a big, interactive, 3 dimensional, traveling display that could also get feedback and collect data.
 - (d) Take out interesting and interactive displays with a live person to discuss the issues.
 - (e) Have school kids participate in bridge design process. Get architects from the community to volunteer time to work with the kids. Involve kids from alternative schools too.
- (5) **Make information and bureaucracy understandable.**
- (a) Create glossary of terms.

- (b) Need a matrix of all of the agencies/partners/community organizations/people that need to collaborate on this project.
- (6) **Use community media to reach people.**
 - (a) Community media—Portland Cable access reader boards, KBOO, KMHD.
 - (b) Put together a program for cable access where they come to the community.
 - (c) Use the alternative and mainstream media to run stories, e.g., television, radio, newspapers.
- (7) **Involve the community in decision-making.**
 - (a) Want to see people of color, small businesses, and the disadvantaged—people representative of people in the community on board from beginning to end.
 - (b) Continue to have the public involved in the project’s organizational structure. For example there should be an overall public involvement group and an EJ public involvement group, and analysis group composed of residents should be considered.
 - (c) Task Force needs to hear from the community to present EJ issues to the community.
- (8) **Ensure culturally sensitive communication with immigrant groups. Reach low income more regardless of their ethnic background, find creative ways.**
 - (a) The following are immigrant groups in N/NE Portland that may have language barriers: Russians, Hmong, Latino, and French-speaking West Africans. The City of Portland has a good model for outreach with these groups. Contact Bureau of Environmental Services.
 - (b) Experience indicates that many immigrant groups have a high distrust of government and that the most effective way to communicate with these residents is through one-on-one conversations. It is important also to have community leaders involved.

Promising Financing Sources

A summary of the promising financing sources for highway and transit improvements is presented below. More information about the sources follows, on pages I-2 through I-6.

Source	What can it be used for?
I. Federal revenue	
A. Federal High Priority Project Authorization	Highway capital
B. Federal Discretionary Earmark	Highway capital
C. New Starts Discretionary (Sec. 5307)	Transit capital
D. New Program Authorization	Highway and transit capital
II. State revenue	
A. State allocation of federal funds	Highway and transit capital
B. Gas tax, weight mile tax, and/or diesel tax	Highway capital
C. Vehicle Registration Fee	Highway capital
D. Tolls	Highway capital
E. Lottery funds, Oregon only	Transit capital
F. Transportation Reinvestment Account	Highway and transit capital
III. Regional / local revenue	
A. Regional allocation of federal funds	Highway and transit capital
B. Regional Vehicle Registration Fee, Oregon only	Highway capital
C. Regional Finance Authority, Washington only	Highway capital
D. Property tax	Highway and transit capital
E. Basic transit sales tax, Washington only	Transit operations and capital
F. High capacity transit sales tax, Washington only	Transit operations and capital
G. Motor vehicle excise, Washington only	Transit operations and capital
H. Payroll tax, Oregon only	Transit operations
I. Fare box revenues	Transit operations

I. Federal revenue sources

Source	What can it be used for?	Revenue potential	Notes	Currently authorized?	Popular vote needed?	Legislation needed?
A. Federal High Priority Project Authorization	Highway capital	Varies. See notes.	Projects are identified and authorized once every six years in the federal transportation bill. Most allocations are small. In the current bill, Oregon and Washington's largest project amounts were \$19 M and \$27 M, respectively.	Yes	No	Yes (federal)
B. Federal Discretionary Earmark	Highway capital	Varies. See notes.	Congress identifies projects every year. Amounts can vary. In Oregon, discretionary grants have ranged from \$2 M/yr to \$5 M/yr year over the last 4 years. Washington has received about \$13 M per year over the last 4 years. Programs that have been earmarked in recent years include Borders and Corridors program, Intelligent Transportation Systems program, and the Bridge program.	Yes	No	Yes (federal)
C. New Starts Discretionary (Sec. 5307)	Transit capital	Varies. See notes.	Federal "new starts" funds available to build fixed guideway projects such as light rail and busway. Must be approved by FTA and by Congress. TriMet expects to receive about \$70 M/yr in appropriations to fund light rail projects in the region. This is the maximum amount that the region can expect to receive today. The match ratio is about 60% federal to 40% local.	Yes	No	Yes (federal)
D. New Program Authorization	Highway and transit capital	Unknown	Establish new federal program targeted at major interstate facilities with multiple transportation issues: auto, freight, river navigation, railroad and aviation. Seek special authorities to establish public/private ventures.	No	No	Yes (federal, possibly state)

II. State revenue sources

Source	What can it be used for?	Revenue potential	Notes	Currently authorized?	Popular vote needed?	Legislation needed?
A. State allocation of federal funds	Highway and transit capital	Varies. See notes.	Each state receives a yearly allocation of federal funds for transportation projects. Oregon receives about \$277 M/yr; Washington receives approximately \$500 M/yr. There are a number of restrictions on the use of these funds, but in both states it would be possible to dedicate a portion of these funds over a period of years to improvements proposed for the I-5 Corridor. Special federal programs also allow for bonding of this revenue source.	Yes	No	No
B. Gas tax, weight mile tax, and/or diesel tax	Highway capital	Washington: 1-cent = \$32 M/yr Oregon: 1-cent = \$22 M/yr	Both Washington and Oregon support their freeway system through gas taxes and diesel or weight-mile taxes. The states share these revenues with cities and counties. In Washington, they are also used for ferries and special grant programs. A new 1-cent gas tax, with its equivalent diesel or weight mile tax, dedicated to projects statewide, could be bonded to raise \$350 M in Washington and \$250 M in Oregon. If Portland and Vancouver regions received a share based on population, this would result in approximately \$21 M for Vancouver and \$87 M for Portland.	Yes	No	Yes (state)
C. Vehicle registration fee	Highway capital	Washington: \$5 = \$27 M/yr Oregon: \$5 = \$20 M/yr	Oregon and Washington also support their freeway system through a vehicle registration fee. The states typically share these revenues with cities and counties. In Washington, they are also used for ferries and the Washington State Patrol. A new \$5 vehicle registration fee, dedicated to projects statewide, could be bonded to raise \$300 M in Washington and \$230 M in Oregon. If Portland and Vancouver received a share of this revenue based on population, this would result in approximately \$18 M for Vancouver and \$80 M for Portland.	Yes	No	Yes (state)

II. State revenue sources (cont.)

Source	What can it be used for?	Revenue potential	Notes	Currently authorized?	Popular vote needed?	Legislation needed?
D. Tolls	Highway capital	\$2/vehicle = \$48 M/yr on I-5	The 1997 Oregon Legislature authorized a toll project on the interstate system in Portland. In Washington, the Washington Transportation Commission is already authorized to toll new bridges. Federal law allows tolls on bridges, provided that funds are used first for replacement/rehabilitation of the tolled bridge. Inflating the 1956 toll of \$0.40 to today's dollars results in a \$2.20/vehicle round-trip toll. Such a toll would raise about \$48 M/yr in gross revenues. Net revenues would be somewhat lower. If bonded, this source could raise approximately \$500 M.	Yes	Likely	Likely state and federal
E. Lottery funds (Oregon only)	Transit capital	Varies. See notes	The Oregon Legislature authorized \$125 M in state match for Westside MAX. State will pay \$10 M/yr between 2000 and 2010 in lottery funds to pay back bonds. Oregon Legislature also committed \$35 M to Washington County commuter rail. Concept could be continued beyond 2010.	Yes	No	Yes (state)
F. Transportation reinvestment account	Highway and transit capital	\$23 M/yr on transportation investment activity of \$450 M/yr	Concept is to identify income tax revenue derived from transportation investment activity. It should only be applied to new revenue/expenditures. The "identified revenue" would then be included in the state budget as a General Fund allocation to transportation spending.	No	Unlikely	Yes (state)

III. Regional/local revenue sources

Source	What can it be used for?	Revenue potential	Notes	Currently authorized?	Popular vote needed?	Legislation needed?
A. Regional allocation of federal funds	Highway and transit capital	Varies. See notes.	Both Portland and Vancouver receive an annual allocation of federal funds for transportation projects. Vancouver receives approximately \$6 M/yr, and Portland about \$26 M/yr. In both states it would be possible to dedicate a portion of these funds over a period of years to improvements proposed for the I-5 Corridor. Special federal programs also allow for bonding of this revenue source.	Yes	No	No
B. Regional vehicle registration fee (Oregon only)	Highway capital	\$15/yr = \$20 M/yr	State law authorizes the Portland region to charge a vehicle registration fee for road projects in Multnomah, Washington and Clackamas counties. No such authority exists in Vancouver.	Yes	Yes	No
C. Regional Finance Authority (Washington only)	Highway capital	\$15/yr = \$20 M/yr	Authority for regional financing tools currently does not exist in Washington. The Legislature has been receptive to the concept for the Puget Sound area.	No	Yes	Yes (state)
D. Property tax	Highway and transit capital	Varies. See notes.	In both states with voter approval, a local property tax can be used to pay back bonds for capital debt.	Yes	Yes	No
E. Basic transit sales tax (Washington only)	Transit operations and capital	0.1% = \$4 M/yr	C-TRAN has authority to issue a sales tax of up to 0.9% to fund basic transit operations and capital needs including bus service, park and ride lots, bus acquisitions, etc. C-TRAN is currently using 0.3% of this authority. An increase in this taxing authority requires voter approval.	Yes	Yes	No
F. High capacity transit sales tax (Washington only)	Transit operations and capital	0.1% = \$4 M/yr	C-TRAN has the authority to issue a sales tax of up to 1% to fund the capital and operations of a high-capacity transit system. Voter approval is required. This taxing authority has not been used to date. Note: the law authorizing this taxing authority also provided that the county may use 0.1% of the 1% for law and justice.	Yes	Yes	No
G. Motor vehicle excise (Washington only)	Transit operations and capital	0.1% = \$2 M/yr	C-TRAN has authority to issue a local motor vehicle excise tax of up to 0.8%. They are currently not using this authority. A popular vote would be required.	Yes	Yes	No

III. Regional/local revenue sources (cont.)

Source	What can it be used for?	Revenue potential	Notes	Currently authorized?	Popular vote needed?	Legislation needed?
H. Payroll tax (Oregon only)	Transit operations	0.1% = \$22 M/yr	TriMet is using all of its legislature-approved authority. Would need additional authority from Oregon Legislature to increase the payroll tax.	Yes	No	Yes (state)
I. Fare box revenues	Transit operations	C-TRAN: 5-cent increase = \$180K TriMet: 5-cent increase = \$1.5 M	Voter approval is not needed to raise fares. This is done by action of the C-TRAN or TriMet board.	Yes	No	No

Glossary

Baseline 2020. Includes the funded projects in No Build 2020 and the projects listed in the Region's 20-year plans: widening I-5 to 3 lanes in each direction between Delta Park and Lombard in Portland, widening I-5 to 3 lanes in each direction between 99th and I-205 in Vancouver, the West Hayden Island Bridge, increased basic transit service throughout the Region, increased TDM/TSM throughout the Region, and other transit and highway capital projects outside the I-5 Corridor that are planned but unfunded.

BIA. Bridge Influence Area.

Bridge Influence Area. The I-5 Corridor between Columbia Boulevard in Portland and SR 500 in Vancouver. Includes light rail between the Expo Center in Portland and Downtown Vancouver. See Attachment B.

BSNF. Burlington Northern and Santa Fe Railway Company.

CO. Carbon monoxide. A colorless, odorless, poisonous gas. Vehicular emissions are a major source.

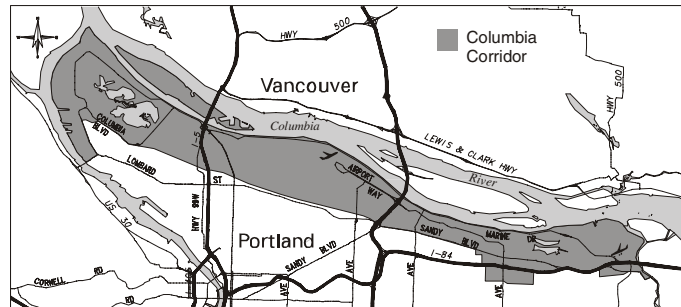
Columbia Corridor. See map.

EA. Environmental Assessment.

EIS. Environmental Impact Statement.

Express Bus / 3 Lanes Option

Package. Includes the connection of the express bus service in Clark County with the Portland metropolitan LRT system. Also includes a new supplemental I-5 bridge for express bus, HOV, and vehicular traffic.



Express Bus / 4 Lanes Option Package. Includes widening I-5 to add a fourth lane in each direction between 134th in Clark County and the Fremont Bridge in Portland that would operate as an HOV lane during peak periods. Also includes connecting express bus service in Clark County with the Portland metropolitan LRT system.

HOV. High occupancy vehicle.

I-5 Trade Corridor. See map, page 1.

JPACT. Joint Policy Advisory Committee on Transportation. Makes recommendations to Metro.

Light Rail / 3 Lanes Option Package. Development of an LRT system in Clark County connecting to the Portland metropolitan LRT system along I-5 and I-205. Also includes a new supplemental Columbia River bridge. Two variations of the bridge have been studied: (1) a joint-use bridge for LRT and motor vehicle traffic and (2) an LRT-only bridge.

Light Rail / 4 Lanes Option Package. Development of an LRT system in Clark County connecting to the Portland metropolitan LRT system along I-5 and I-205. Also includes adding a fourth lane in each direction along I-5 from 134th Street in Clark County to the Fremont Bridge in Portland for HOV, express lanes, or freight use.

LRT. Light rail transit.

MAX. Metropolitan Area Express is TriMet's light rail system and serves the greater Portland metropolitan area.

NEPA. National Environmental Policy Act.

New West Arterial Road Option Package. Includes a new arterial road along the existing railroad corridor and N. Portland Road between Mill Plain Boulevard in Vancouver and US 30 in Portland.

No Build 2020. Includes these currently funded projects: construction of Interstate MAX light rail from the Rose Garden to the Expo Center in Portland, widening I-5 to three lanes in each direction between 99th and Main in Vancouver, and other transit and highway projects outside the I-5 Corridor that have funding for construction over the next four to six years.

NOx. Nitrogen oxides. Vehicular emissions are a major source. Can cause respiratory problems.

ODOT. Oregon Department of Transportation.

Option Packages. The sets of improvements evaluated by the Task Force: Express Bus/3 Lanes, Light Rail /3 Lanes, Express Bus/3 Lanes, Light Rail /4 Lanes, and West Arterial.

RTC. Regional Transportation Council.

SR. State Route.

SOV. Single occupancy vehicle.

TDM. Transportation demand management. Purpose is to reduce, shorten or eliminate auto trips. Includes increasing number of persons per vehicle, influencing the time of or need to travel, the use of transit, carpooling, vanpooling, telecommuting, compressed work weeks, and flexible work schedules.

Transit. Public transportation system for moving passengers, for example, bus, light rail, streetcar.

TSM. Transportation system management. The purpose is to increase efficiency.

UP. Union Pacific Railway Company.

VMT. Vehicle miles traveled.

VOC. Volatile organic compound. Vehicular emissions are a major source. Can cause respiratory problems.

WSDOT. Washington State Department of Transportation.