Final Report

Washington Commerce Corridor Feasibility Study

Washington State Department of Transportation

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Olympia, WA 98504-7322

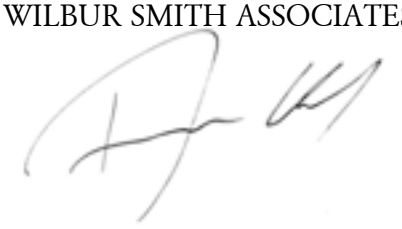
RE: Y8740 - Washington Commerce Corridor Feasibility Study – Final Report

Dear Ms. Ivanov:

Wilbur Smith Associates is pleased to present the Final Report for the State of Washington Commerce Corridor Feasibility Study. The report was completed on time and under budget and the findings will be very useful to WSDOT and the State of Washington's Legislature in helping provide a safe and efficient transportation system. We are especially thankful for the oversight and guidance provided by the Steering Committee and for the support of the staff in your office, as well as numerous other staff within WSDOT at the headquarters office and at the district offices.

Respectfully submitted,

WILBUR SMITH ASSOCIATES



Arnoldus Hart
Project Manager

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EXECUTIVE SUMMARY

INTRODUCTION

This report summarizes the results of a study to determine the feasibility of the Washington Commerce Corridor (WCC), conceived as a North-South (N-S) alternative to Interstate-5 that facilitates the movement of freight, goods, people, and utilities. The Washington State Legislature directed the study, and required that the evaluation of the WCC's feasibility be based on the willingness and ability of the private sector to build and operate this proposed corridor. The study area begins in the vicinity of Lewis County, extends north to the Canadian border, and contains Interstate 5, the mainline railroads, and major intercity pipeline facilities, which each operate on separate rights-of-way but roughly in the vicinity of Interstate 5 (I-5).

In order to determine feasibility, the WCC Study answered two fundamental questions:

- Is there sufficient demand for the corridor? And;
- Can it be built?

IS THERE SUFFICIENT DEMAND?

The question of demand in the context of this study cuts two ways. The first is the level of interest shown by owners and operators within the transportation and energy sectors. The second is the level of user demand that could generate sufficient revenues to attract a third party developer. The former are most applicable to the modes that have traditionally been within the private realm (utilities, freight rail, etc). The latter is applicable to modes that have traditionally been in the public realm (highways, passenger rail, etc).

Will the Energy Industry Participate in the Development of the Corridor?

The approach used in answering this question was wholly based on interviewing and surveying the major players in this industry. Despite projected growth in energy demand and a declining capacity to accommodate that growth, we found little evidence to support involvement of the energy sector in the development of the WCC, at this time. This conclusion is based upon four fundamental factors:

1. **Distribution Patterns** – Uncertainty in the long-term direction and pattern of distribution and transportation of energy in the region and the nation;
2. **Differing Planning Horizons** - The long term planning horizon for the energy industry is around five years (up to 10 years at most), which is not consistent with the long term outlook for this WCC project;
3. **Location of the Corridor** - The location of this corridor is not consistent with the location of future major corridors that the industry anticipates will occur. The consensus is that future N-S energy distribution, particularly of an interstate and international nature, will likely occur to the east of the current WCC alignment, if at all in Washington State;

4. **Risk for the Public Sector** - 60-80 percent of the costs associated with the development of the energy component consist of right-of-way acquisition. Assembling the right-of-way could be a legitimate role for government if the corridor were to be developed. However, the risk associated with government paying such a large share of the total cost is great, and there is a low probability of the public ever being fully reimbursed for the ROW.

Finding - Despite continued growth in energy demand and a declining capacity to accommodate the growth, there is no significant desire on the part of the energy sector to get involved in the development of the WCC. However, the Foothills Energy Corridor Study[1] makes several policy level recommendations for planning the development of future energy corridors in the State of Washington that should be taken into consideration by policy makers. The most important recommendation is to create a single entity responsible for both the development of a statewide energy infrastructure strategy and its implementation.

Will the Private Sector Participate in the Development of the Transportation Components of the Corridor?

The study evaluated whether evidence exists that users of the transportation corridor would generate sufficient revenue to fund construction of the WCC.

Passenger Rail Service - The development of passenger rail service is a priority in Washington State and the Puget Sound Region. The greatest demand for passenger rail service is N-S, as is the WCC. However, passenger rail service does not contribute to the financial feasibility of the WCC. This is primarily based on the fact that passenger rail service relies heavily on public subsidy. Average fare box recovery for passenger rail service in the U.S. ranges between 30 and 60 percent of operational costs; the rest is subsidized. As a result, the private sector does not typically contribute significant financial resources towards the development of passenger rail service, nor does the private sector typically receive user fees or toll revenue from passenger rail service. The exception is where the private sector makes ROW contributions, provides in-kind services, or receives revenues for trackage rights. And while there are private sector entities that operate rail services on behalf of public agencies, or control the routing of trains according to schedules, private sector involvement is not as the leading investor and financial sponsor. This is almost exclusively a government role. Therefore, despite evidence that N-S passenger rail service will be developed in the region, passenger rail would not contribute to the financial feasibility of the WCC.

Freight Rail Service - Freight rail service is almost exclusively a private sector business in the United States. Significant portions of the WCC study area follow existing freight rail infrastructure, so we evaluated the feasibility of the private sector playing a role in developing the freight rail component of the WCC. The investment plans of the two major railroads (BNSF and UP) are focused on East-West mainlines that serve their largest business lines and customer base. Barring any major change, these customers will continue to be the priority for the freight lines. Improvement in North-South capacity is a low priority for the railroads, with the exception of the segments through the congested urban centers between Tacoma and Everett. Mainline capacity issues in these urban segments are mostly related to balancing freight capacity with intercity

[1] Van Ness Feldman, August 2004

passenger services, the latter being largely a public priority. Given these facts, it is clear that private railroad investment is not a feasible option to drive the development of the WCC.

Car Tolls - Tolls have been used to fund major road construction projects from the onset of the growth in popularity of the automobile, and have been used when public agencies do not have the resources to finance the facilities. Toll roads are typically developed as public-private ventures where the private sector is asked to play a variety of roles.

Three major factors present obstacles to car tolls financing the development of the WCC. First, the densest traffic levels along the entire I-5 corridor are between Tacoma and Seattle, as well as south toward Olympia and north toward Everett. However, the trips along these congested segments are short and are not consistent with the long haul nature of the WCC. Second, the WCC bypasses the major urban and suburban centers with the densest traffic patterns (that would be the primary target for diversion to the WCC), minimizing the amount of potential traffic that can be diverted. Third, jurisdictions along the I-5 corridor all have published plans to improve transportation service along the I-5 corridor. The prospect of improved transportation service on I-5, particularly in the urban core where the bulk of the auto traffic exists, may have a negative impact on the financial feasibility of car tolls along the WCC.

Truck Tolls - Our analysis indicates that the trucking component of the WCC has a basis for further exploration. A preliminary evaluation of truck trips on I-5 corridor indicates sufficient volume in some sections to fit the characteristics of the WCC. The trip characteristics are long haul in nature. In comparison to auto trips that cluster around urban centers, a larger share of truck trips are long haul through the Puget Sound region and would benefit from a by-pass around the region. The trucking sector, as a whole, would support improvements in N-S mainline capacity. As compared to the energy sector, the trucking industry supports immediate and significant N-S improvements in capacity, but only for efforts that lower their transport costs along the I-5 corridor, increase productivity (the number of deliveries per day) and improve service to their customers.

Although preliminary revenue estimates produced by this study indicate that truck tolls alone could not fully fund the WCC, a sizeable share of the cost of the southern segments of the corridor may be supported by tolls in combination with a public subsidy. The truck segment of the WCC with the greatest potential for feasibility is the segment between Chehalis and I-90. Financial feasibility is highly dependent on limiting costs by constructing a two-lane alternative (with a third passing lane) as opposed to a traditional four-lane alternative. It would require a diversion rate of greater than 50 percent of all through truck trips, and a high-end toll rate under current market conditions. A parallel route for trucks could have the added benefit of reducing traffic and congestion on I-5.

Finding – The passenger rail component is largely a public role and does not fit the private funding feasibility hurdle for the WCC. Traffic patterns associated with both the auto and freight rail components do not fit the long haul, N-S orientation of the WCC and do not present a feasible option for the WCC. Truck tolls may present sufficient revenue generation opportunities that in combination with public subsidies would support the feasibility of a public-private funded truck corridor between I-90 and Chehalis.

CAN THE CORRIDOR BE BUILT?

In determining whether the corridor can be built, three aspects were evaluated. First, an evaluation of the environmental and community impacts of the corridor was conducted. Second, an estimate of the cost to engineer, design and construct the corridor was developed. Third, legal, financial and legislative issues surrounding the use of private sector resources were evaluated.

What are the Environmental and Community Impacts?

The potential corridor area identified for testing the project's feasibility for the study is five miles wide; this represents a footprint over 35 times the width of the actual maximum alignment width of 710 feet. The larger study area allowed the consultant team to identify most resources and communities that could be affected, and to provide options and flexibility in locating an alignment within the corridor that would decrease the impact to a given resource or area. Beneath this corridor footprint lie abundant natural resources that will influence the overall feasibility of the corridor.

Natural Constraints – To determine the influence of natural resources on the overall feasibility of the WCC, specific natural constraints were evaluated: streams, wetlands, priority habitat, landslide hazards, seismic hazards, and wildlife refuges. If the WCC was constructed, the magnitude of natural constraints in and around the corridor could be significant, depending on the type of resource. Environmental impacts on species habitat and migration corridors could be substantial, and for some resources could significantly degrade or threaten the resource. Direct impacts to environmental resources would likely exist in the short-term, but some resources could be affected following post-construction, over the long term, and some could be considered permanent. It is likely that some segments of the WCC alignment, as currently defined, would require major environmental mitigation efforts, and some segments may even be considered as infeasible following more detailed analysis.

Fatal Flaw - The alignment option through the Cedar River Watershed, which supplies the drinking water to approximately 1.3 million people in the Seattle area, is not feasible. Any mitigation efforts and costs would outweigh any potential benefits the WCC may offer. The selection of an alternate route, such as the one located to the west of the watershed, would be necessary.

Potential Community Issues - The WCC would have both positive and negative impacts on the socioeconomic fabric of nearby communities in western Washington. Potential community issues that the project may encounter include: loss of a sense of place, loss of community fabric, dislocation and other quality of life concerns. The WCC could create opportunities for economic development. Industry will be attracted to the project study area over other locations elsewhere in Washington and the Pacific Northwest. The study-area could gain a greater share of national industry with development of the commerce corridor, creating a significant level of new jobs and new businesses.

Regulatory and Land Use Issues – While much of the study area is classified as land where significant growth could occur, there would need to be extensive changes to the current zoning regulations in these areas. Additionally, significant modifications to current county and local comprehensive plans and specific land use patterns would need to occur at multiple locations

throughout the corridor, resulting in long-term and likely permanent impacts on zoning classifications and land uses. With respect to the 13 planning goals under the Growth Management Act (GMA), the impact of the WCC is mixed. The WCC will not meet those GMA planning goals that address the need to locate urban growth in areas served by existing facilities without significant changes to regional and local comprehensive plans. On the other hand, the WCC would certainly be consistent with the GMA goal to develop multi-modal transportations systems for the state of Washington.

Environmental Review and Permitting - The current environmental review framework in Washington is based on the State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA) for projects that receive federal funds, and many projects require approval from both state and federal agencies. There are numerous agencies responsible for environmental permitting in Washington, and the permit process is unique to each agency and permit. At a minimum, permitting the entire WCC under the existing framework would include over 30 types of state and federal permits normally required for a transportation project, highlighting the complex nature of permitting major projects. As a result of the WCC's multiple components such as rail, highway, pipeline, transmission lines, current review methods would create a fragmented approach, increasing project delays and costs for those involved.

Finding – The current alignment of the WCC has significant natural constraints, will impact several small rural and agriculture based communities, and has potential fatal flaws, specifically for segments of the corridor that impact small and rural agricultural communities, and those segments that have long term impacts on species habitats and watershed areas. Regulatory and land use issues also present a key obstacle in that communities may need to modify their comprehensive plans. Moreover, existing environmental review processes in Washington, although functional, are currently not equipped to handle a project of this scope, and pose significant pre-construction risk for the private sector. These factors combine to significantly undermine the feasibility of the WCC at this time.

What Will The Corridor Cost?

Based on our evaluation of probable project costs, the Washington Commerce Corridor could be implemented for between $42 billion and $50 billion. The most cost effective approach is to use as much of the existing rail infrastructure as is available, saving approximately $1 billion over the baseline option of $42.8 billion. The most expensive option is to by-pass part of the Mt. Baker Snoqualmie National Forest, requiring approximately 16 miles of tunneling and causing the cost to jump by $6.7 billion. The ROW costs represent approximately 40 percent of total costs, with a higher disproportionate share required for utilities.

The roadway components contribute 70 percent of the total costs of the corridor (35 percent each for the truck and general purpose components). Rail contributes between 11 and 17 percent of the total cost, depending on the alternative. The alternative using existing rail infrastructure is the most favorable, while the alternative requiring considerable tunneling is the least favorable. The energy (power and pipeline) component contributes between 10 and 14 percent. Trails contribute the lowest share of the total cost, approximately three percent.

When comparing the various modal contributions toward ROW and construction costs, there are some important differences.

- While the roadway components contribute a 35 percent share each (truck and general purpose) towards overall costs, their relative contribution toward construction costs are greater (40 percent) than towards ROW (30 percent).
- The same effect exists for rail – a 12-20 percent relative share toward construction and 8-10 percent relative share toward ROW.
- The energy components have an opposite effect – while they only contribute 2-4 percent toward construction costs, they contribute 25 percent toward ROW costs.
- The trail component contributes less than 1 percent towards construction costs but 7 percent towards ROW costs.

These distinctions have an impact on the various roles of the private sector versus the public sector. For example, if government assumed the cost of the right of way and recouped the facilities costs through a user fee, the transportation components would present the greatest share return due to their relatively higher contribution toward construction costs. On the other hand, the energy components present the least opportunity of recouping the public's costs.

Finding – The costs associated with developing the WCC are significant and undermine the feasibility of a wholly private sector approach to the WCC. Moreover, the sheer cost of the corridor greatly undermines the feasibility of a private sector entity "bundling" all of the modes into a single corridor, even if the funding is to be generated from a limited share of the users of the corridor. The best way to improve feasibility, from a cost standpoint, is to reduce the scale and size of the corridor and target only the components most likely to generate revenues.

What are the Legal and Institutional Issues?

The use of public-private partnerships is recommended for, if not essential to the success of, the WCC. Public-private partnerships are innovative collaborations between the public and private sectors that expand on traditional private sector participation in project design, financing, operation, and maintenance. Precedent for developing the WCC under a public-private scenario does exist; in the State of Washington, the Secretary of Transportation has general public-private partnership authorization under the provisions of current legislation. However, recent adverse experiences with Washington's six demonstration projects in the 1990's have dampened the appetite of the private sector for risk-taking during the early development stages, under the current legal environment. The risks caused by legislative changes, an advisory vote and adverse court decisions were sobering to developers and the private sector transportation industry in general.

The institutional framework is key to the success of a public-private initiative of this scale. A project of this scope requires a team that is exclusively devoted to achieving its goals. A single purpose government entity would have the opportunity to create a structure and assemble a team that would be tailored to meeting the goal of creating an environmentally sensitive, efficient, safe and secure system that encompasses utilities and different modes of transportation. A single purpose entity also has greater potential to foster an entrepreneurial culture with an emphasis on quality and accountability.

One of the threshold issues facing any public-private partnership is the role the private partner may play in environmental review and assessment of the project under NEPA and SEPA. Even though a private entity may have a great deal of useful information that can contribute to the review and permitting process, a private sector partner cannot complete the NEPA document on its own. Actions that accelerate the review and permitting process can significantly increase private sector interest in financially viable projects.

Another legal issue relates to co-locating utilities and transportation infrastructure. FHWA and WSDOT utility accommodation policies restrict the type of proposed longitudinal installation in which utilities run directly underneath highway right of way. Longitudinal installations raise issues of access for maintenance of oil and gas pipelines, concerns over traffic disruption, and safety.

Finding – There are several legal and institutional issues that stand in the way of the feasibility of actually developing and operating the WCC. These include the need for more robust state legislation allowing public-private initiatives, and the need for a single purpose entity vested with the powers and authority necessary to oversee project planning, development, and administration while responding to environmental and social concerns. Other factors include limitations on the degree of involvement the private entity can have in the environmental process, and current restrictions on co-locating utilities and transportation infrastructure in the same corridor.

RECOMMENDATIONS

The entire WCC as envisioned and defined under current legislation is not feasible at this time. However, two sets of recommendations grew out of the study. The first set are actionable next steps directly related to the more feasible elements of the WCC:

Recommendation #1 – Reduce the Complexity, Scale and Length of the Corridor Strategy

The corridor as it is defined currently is too long, has too many components and is too complex. It is recommended that the length be reduced to the sections from I-90 south to the Chehalis area. The focus of the corridor should be on freight alone and should not include utilities, other than those associated with a conventional highway project.

Recommendation #2 – Pursue a Multimodal Freight Based Corridor Strategy

A comprehensive freight corridor strategy should be developed for Western Washington, and should be tied into the overall statewide freight strategy, as well as coordinated with the N-S freight strategies for Western Oregon, California and British Columbia.

Recommendation #3 – Conduct a Detailed Feasibility Analysis of a Public/Private Truck Freight Corridor

Conduct a detailed study focused on the feasibility of a public/private truck freight corridor between Seattle and Chehalis and possibly to Oregon. The study should be limited to a N-S corridor west of the Cascades where sufficient demand exists.

The other set of recommendations are broader and relate to the overall context of the WCC.

Recommendation #4 – Create More Robust Public-Private Legislation in Washington

Washington has a limited public-private authorization statute. The legislature should consider legislation that cures the shortcomings of the existing statute.

Recommendation #5 – Create a Single Entity to Coordinate Creation of State Significant Energy Corridors

While the concept of an energy corridor under the current WCC concept is not feasible, there is a need for a single entity responsible for both the development of a statewide energy infrastructure strategy and its implementation.

Recommendation #6 – Develop a Streamlined Environmental Review and Permitting Process

Create a new streamlined process that would serve to both expedite the review process, and to protect and enhance Washington State's natural environment. The improved review process should create an efficient and responsible review framework, offer practical solutions for facilitating project review, and incorporate existing streamlining processes that are under demonstration at the state level, in Washington and elsewhere, and at the federal level.

CHAPTER ONE
Definition of Feasibility and Evaluation Approach

INTRODUCTION

The purpose of this chapter is to provide an overall framework for the process of evaluating the feasibility of the Washington Commerce Corridor. As such, this chapter outlines the basic parameters for determining feasibility as well as the overall process to determine feasibility.

The Washington Commerce Corridor

The Washington Commerce Corridor (WCC) conceived as a North-South corridor, that might be an alternative route to Interstate-5 that facilitates the movement of freight, goods, people, and utilities. Over the years, there has been talk of the need for additional through capacity, perhaps in a separate corridor, as well as redundancy, safety and security. The corridor starts in the vicinity of Lewis County and extends northerly to the vicinity of the Canadian border and contains Interstate 5, the mainline railroads, and major intercity pipeline facilities, all of which operate on separate rights-of-way but roughly in the vicinity of Interstate 5. It runs east of the Seattle/Everett/Tacoma metropolitan area, and serves intercity, metropolitan, and local transportation demands. As congestion on these facilities has grown due to metropolitan traffic, the ability to efficiently move passengers and freight through the metropolitan areas has eroded.

The new corridor studied was situated east of Interstate-405 and west of the Cascade Mountains. The corridor could include the ability to carry long-haul freight and passenger auto travel as well as provide for freight rail, passenger rail, public utilities and other facilities which can be incorporated to maximize use of the corridor.

This Feasibility Study

This study sought to address the issue of congestion along Western Washington's major transportation corridor for the movement of intercity freight and passenger travel, as well as utilities distribution. It was conducted under the direction of the Washington State Department of Transportation (WSDOT). A consultant team, led by Wilbur Smith Associates (WSA), provided the specialty skills concerning transportation planning, engineering, trade, commerce, freight logistics, economic analysis, financial feasibility, revenue enhancement opportunities, environmental issues, community impacts, public/private initiatives and corridor issues and realities required for this study. In addition, the WSA Team worked closely with a Project Steering Committee and Project Advisory Board composed of WSDOT staff, legislators, local jurisdiction representatives and participants representing pipeline, truck, rail and other utility interests. These committees provided project overview, input on evaluation criteria, needed data and information, oversight of the screening process and coordination of document review and approval. The study was completed in January 2005.

TWO TYPES OF FEASIBILITY

In pursuing this effort at determining feasibility, this study looked at two overall types of feasibility underscored by two fundamental questions;

- Is there sufficient demand for the corridor? And;
- Can it be built?

This Chapter outlines the definition of feasibility under these two categories. Within each of these two broad questions, a variety of aspects were evaluated that relate to the core questions, and provided a framework for determining feasibility.

IS THERE SUFFICIENT DEMAND?

In evaluating the demand for the corridor, focus was on the demand for traffic along this corridor for transportation as well as for utilities. In terms of transportation demand, focus was on passenger and freight transportation, specifically traffic components that have a commercial value. In terms of utilities the main focus was on petroleum (pipeline) including natural gas, and mainline power and telecoms distribution. The purpose of evaluating the demand for transportation and utilities along this corridor was to determine whether there is sufficient value that can be captured as revenue towards funding the development of the corridor.

Categories of Traffic

Traffic is defined as goods and services that move along a dedicated right-of-way along the general I-5 corridor. These include:

- Transportation
  - Freight
  - Passengers

- Utilities
  - Petroleum/natural gas
  - Power
  - Telecommunications

These forms of traffic typically move along/within a facility constructed, operated and maintained within a dedicated right-of-way. These rights-of-way are typically compatible and often run along common alignments, or along adjacent easements or even share easements. Transportation rights-of-way and facilities are commonly publicly owned while the rights-of-way for utilities are more often privately owned.

Focus on Through Traffic Demand

The overall purpose of the WCC is to serve as a bypass and alternate to I-5, including existing pipeline, power rail and utility corridors along the overall I-5 corridor, and therefore its function would be as a through or systems corridor. The analysis of demand focused specifically on

identifying through traffic. The study identified the major centers/regions that serve as attractors and generators of through traffic, and estimated the level of traffic to/from these regions with a propensity to use this corridor.

Definition of Regions

This corridor will serve as a connection between Canada and Oregon as well as a connection to the major population and employment centers along the corridor. In evaluating demand for the corridor, the consultants focused on interregional traffic - traffic moving between major centers at either end as well as major centers along the corridor. The study did not account for intraregional traffic.

The following general regional definitions were proposed:

- Canada/Alaska (CN/AK);
- Oregon/California/Mexico (OR/CA/MX);
- Northern Puget Sound (NPS);
- Central Puget Sound (CPS);
- SW Washington, and (SWW);
- Rest of Washington (ROW).

Determination of a Feasible Level of Demand

In order to make a decision on the feasibility of the corridor from a demand standpoint, a threshold for the feasible level of demand was defined for each of the modal components. The determination of a feasible level of demand was based upon three fundamental factors which must exist:

1. Future demand exceeds capacity along the existing corridor.
2. High share of through traffic (greater than 30%).
3. Volume of through traffic is greater than minimum design volume for a new major corridor.

The study used industry accepted measures within each modal component, where they exist. Where these did not exist, the study used feedback from industry leaders to define the threshold for the feasible level of demand. The determination of feasibility will be based on the degree to which the estimated demand meet the three criteria listed above.

How will the Results Help?

The results of the demand analysis provided a great deal of valuable information to support the feasibility decision process.

Modal Components – The demand analysis provided insight into which modal components should be considered as part of the study. This is important especially in helping define the

characteristics of the corridor. Defining the characteristics helps define the design standards, costs, etc. of the corridor.

Timing and Phasing - The timing for when each of the respective modal components would reach feasibility (if feasible) provided a basis for defining the development stages for each of the respective modal components.

Potential for Value/Commerce – The overall drive for this corridor is that it be largely a private or commercial corridor. In other words, the owners of the corridor, regardless of mode (rail, pipeline, utilities, highway, etc.), will likely fund it's development and operation with revenue generated from its users. The revenue potential from the corridor is largely a function of the commerce application or value of goods and services shipped along the corridor. The greater the value the greater the likely revenue potential. The results from the demand analysis will provide insight into the revenue potential from the corridor.

These factors taken as a whole provided valuable feedback into determining the feasibility of the corridor. This information provided feedback into what the corridor should look like, how it should be developed and how it should be phased.

Strategic Demand Considerations

Demand feasibility hinges on whether there is/would be a sufficient quantity of demand. However, "need" may be due to factors that could determine feasibility other than quantity demanded. For example, the "demand" for pipelines may be due to safety considerations related to the current location of pipelines within urban areas; the "demand" for transmission lines may be due to reliability and redundancy considerations in light of the recent East Coast and Midwest blackout. Determination of this type of demand was based in part on direct feedback from the respective industries.

CAN THE CORRIDOR BE BUILT?

In addition to determining whether there is sufficient demand for a through corridor it is important to ask whether or not the corridor can actually be built. In terms of defining whether it can be built, several issues must be taken into consideration including the cost, the impact on the community, environmental constraints, the permitting process, legal and institutional barriers, constructability, the Growth Management Act (GMA) and other issues. Therefore the consultants constructed the evaluation of feasibility from this perspective (can it be built?) around six key criteria;

- Will the private sector participate?
- Will it cost too much to develop?
- Is the corridor constructible?
- Are the community impacts/GMA too significant?
- Are the environmental constraints/permitting too significant?
- What are the legal/legislative barriers?

Will the private sector participate?

The genesis of this study was legislation put forth by the Washington State Legislature requiring the evaluation of the WCC in determining its feasibility based on an evaluation of the willingness and ability of the private sector to build and operate this proposed corridor. In the true spirit of this legislation, definition of feasibility hinges almost entirely on the question of whether or not the private sector is willing to participate and assume 100% of the risk of this proposed corridor. This is literally a "yes or no" question, with very little latitude in between.

However, based on early evaluation as well as feedback from the steering committee there exist today several barriers that stand in the way of feasibility based on this strictest definition of feasibility. Examples of these barriers include environmental permitting as well as environmental constraints, growth management restrictions along the corridor as well as legal and legislative barriers. The uncertainty surrounding these barriers, even if they were to be overcome in their current form, is enough to quell any significant demand from the private sector.

Therefore, the definition of feasibility under these criteria (will the private sector participate) was broadened for the purpose of this study. The study determined the level to which the private sector will participate and feasibility will depend upon the degree to which the private sector will participate. If the private sector is anticipated to participate in a dominant role then feasibility is likely to be considered as high. If the private sector's anticipated role is minor then feasibility will likely be deemed as low or minimal.

In evaluating whether or not the private sector will participate in a potential corridor like the WCC it was important to look at specific components of the corridor development process to determine levels of interest. For example, what is the willingness of the private sector to invest in a corridor permitting process, or right-of-way acquisition process. Is the private sector more likely to participate in the design engineering and construction of the corridor, or instead in the operation and maintenance of the corridor. Therefore in an effort to adequately answer this question (will

the private sector participate?), the consultants looked at several aspects of the project development process.

Environmental Permitting/Legal Constraints – As part of our evaluation of this aspect we will determine the level of interest by the private sector from two perspectives. First, is there the likelihood of significant private sector involvement with the current level of permitting and legal obstacles. In others words, if all other things are not of concern (cost, etc), will the private sector risk moving forward and spending millions on the initial phases of the corridor project in the context of the currently mandated sets of local, state and Federal environmental and community permitting procedures. Second, we will determine the level of private sector interest in funding this aspect of the project development process.

Experience to date suggests that the uncertainty surrounding the current permitting process (cost, duration, multiple levels of decision makers with varying interpretations, and the active environmental community in the Northwest) presents a major obstacle for private sector investment. Private money tends to flow toward a financially viable project only once the risk surrounding the environmental process is eliminated. The end result of this evaluation process was a determination of whether the current environmental process is conducive to the private sector risking their capital, as well as potential approaches that may encourage private interest in this type of corridor in advance of the permitting process.

Right-of-Way - The right-of-way acquisition process for this corridor is likely to be complex given the interest of involving a multiple range of modes (rail, pipeline, utilities, highway, etc.) into a single corridor. The complexity stems from a variety of factors including the development time frame for these different modes. Some modes may have a shorter development time frame (10-20 years) while others may have a longer term development time frame (30 to 50 years). However, in order to preserve the overall right-of-way for the corridor it would require an entity to purchase or invest in the corridor in its entirety, preserving all aspects of the corridor regardless of differing time frames. One approach was to stage the development of the corridor on a segment by segment basis, consistent with demand.

Another complexity stems from the ownership of rights-of-way; Transportation rights-of-way are commonly publicly owned while the rights-of-way for utilities are more often privately owned. Therefore, the question was whether a private sector entity or group of private sector entities would preserve a broad corridor which includes the rights-of-way for a variety of modes, including modes traditionally owned by the public sector, or rights-of-way to be used by other entities.

Engineering & Design – The design/engineering for each of the modes will likely be conducted as each segment of the respective modal component (rail, pipeline, utilities, highway, etc.) is determined to be needed and is subsequently developed. The Consultants evaluated the level of interest in the private sector to assume the design and engineering costs associated with each modal component. We found that owners/operators of some modal components historically pay for the design and engineering of their respective facilities, such as utility lines and pipelines. Therefore, the study took into consideration historical precedence in determining the level of interest of the private sector to participate in the engineering/design of their respective mode.

Cost of Construction – As part of the analysis the work evaluated the private sectors interest in participating in the cost of constructing the respective facilities. The interest in each of the modal categories was evaluated. The final determination was consistent with previous history.

Operate and Maintain – The last factor investigated was whether there was a private sector interest in operating and maintaining the corridor. The consultants focused on each modal element given the historical differences in the private sectors tendency in operating and maintaining utility corridors and transportation facilities.

Determination of Feasibility - In evaluating and judging the level of private sector interest the consultants used a rating system to quantify private sector interest in each of the development stages of the corridor. They rated private sector investment interest as high or low for each development stage and within each modal component. Moreover, given the relative cost difference for each development stage (permitting and legal costs are likely to be considerably lower than the cost to build and operate the various modal components) they weighted each based on their relative cost. In other words, determination of a high level of interest in permitting may not rate as high as a determination of high interest in building a modal component simply because of the cost difference. Various development stages were weighted by their relative costs. This method of evaluation and rating obviously placed heavier emphasis on the higher cost components of the project development process. Given that part of the drive for this particular corridor was based upon the state's fiscal constraints (therefore minimizing state's financial exposure) we think using cost as a weighting factor was a reasonable approach.

In addition, as part of determining feasibility under this overall question (Will the private sector participate?) it was determined to what degree the corridor could pay for itself. For each modal component a determination was made as to whether a level of revenue can be generated to support public/private investment approaches. What was the extent of potential revenue? Will these revenues be realized in the short-term or long-term? To what degree to the potential revenues cover development costs? To what degree to the potential revenues cover operating costs?

Will it Cost too Much to Develop?

This component of the feasibility process focused on the cost of building and operating the corridor. In other words, are the costs associated with this corridor prohibitive to its feasibility. The corridor costs were evaluated based on five basic components:

- Environmental permitting
- Right-of-way acquisition
- Engineering/design
- Cost of construction
- Cost to operate and maintain

Order of Magnitude Costs – The consultants determined the order-of-magnitude costs for each of these cost categories relative to each use. The cost estimates were based upon general order of magnitude estimates typically associated with this type of planning study. For example, for the cost of right-of-way estimates were based on a per mile basis depending on the cross-sectional design characteristic, as well as the type of terrain and the land uses (urban vs. rural). For the cost of construction, per mile estimates depending on the facility type, design standards, terrain, land

use, etc. were used. These cost factors were applied to the length and modal mix of the various corridor scenarios to determine total cost.

Determination of Feasibility - Feasibility was based upon a comparison of the costs of developing a new corridor relative to development costs along the existing corridor. For example, to what degree was the cost associated with the development of a north/south rail corridor higher or lower if it were developed in the current urban corridor versus a future rural corridor. If the costs associated with the new corridor are in an order-of-magnitude significantly greater than development along an urban corridor then the new corridor would be deemed infeasible.

Using the cost of construction as one of the measures of feasibility is important not only in terms of determining reasonableness but also in terms of factoring in the "users willingness to pay". The greater the cost of the new alignment versus the cost of developing along an existing alignment, the lower the buyer's willingness to pay. The lower the cost of the new alignment versus the cost of developing along an existing alignment, the higher the buyer's willingness to pay.

Is the Corridor Constructible?

This component of the feasibility analysis specifically looked at the design and engineering aspects of the corridor. This is an important distinction from looking at the cost of construction. It is important when looking at this factor to set aside the cost questions and to focus purely on design and function. The consultants looked at two major aspects of constructability, specifically grade and terrain.

Grade – Grade has an impact on the operations of the various modal components. For example, rail can only function below a certain grade – grades of over 2-3 degrees limit the operations for rail. Some of the mitigating measures of circumvent grade are to build tunnels and/or cut major channels to level off the grade. A fatal flaw may be the need for a very long tunnel that exceeds current design convention.

Terrain (Rivers/Wetlands) – Another factor that will impact constructability of the corridor is the terrain, specifically the degree to which rivers and wetlands exist along the corridor. Again in this context the consultants were not looking at the environmental impact specifically, but rather at the design limitation in order to mitigate obstacles from terrain. They evaluated and determined any fatal flaws in terms of rivers and wetland that could not be crossed by constructing bridges, for example. In this specific category the focus was not be on cost (for example the wider a river the longer the bridge the more expensive the bridge) but rather on the constructability of the bridge and any limitations undermining the constructability of bridges.

Determination of Feasibility – This particular aspect of the feasibility process was not focused on determining the feasibility of the commerce corridor concept at its core, but rather to influence the feasibility decision across a variety of aspects including the determination of the broad alignment alternatives, design approaches, as well as the respective modal components.

Are the Community Impacts/GMA too Significant?

In determining the feasibility of the commerce corridor the consultants evaluated its impact on communities, as well as determined the impact of the GMA on the development of this type of corridor.

The impact on communities was evaluated within the following areas:

- Community benefits/cost
- Economic benefits
- Environmental justice
- Community acceptability
- Consistency with GMA
- Consistency with the regional/local plans
- Land-use compatibility

Once the overall alignment was defined, the process of evaluating community impacts focused on impacts associated with the communities represented along the overall alignment.

Community Benefits/Cost – Members of the WSA Team evaluated the benefits of such a corridor to communities along the corridor. What were the benefits/costs of increased access to the broader transportation network? Would the communities benefit from additional access to utilities services or is there a cost? What are the benefits/costs from access to interregional freight transportation services? Would the corridor contribute towards sprawl? These are the types of benefits and costs that were determined.

Economic Benefits – Economists estimated the economic benefits to the communities along the corridor, including jobs, value added and income.

Environmental Justice – An evaluation of the impact on various sectors of the population was determined. Where available, information wascollected to determine whether there would be a disproportionate impact across income, age and race. This assessment was based on published materials on the impact of similar projects in other areas.

Community Acceptability – Communities as a whole typically convey their attitude towards certain types of development through their policies, plans, and media communications/public relations. Some communities are known as wanting to be livable; others posture as growth communities, etc. The consultants interpreted general community attitude towards this type of corridor and determined whether the level of community acceptability would have an impact on the feasibility of the corridor.

Consistency with GMA – The development of the commerce corridor would likely be impacted by the GMA. The study evaluated to what degree the GMA would impact its feasibility.

Consistency with the Regional/Local Plans – Jurisdictions situated along the corridor are likely to have varying degrees of development plans that specify the development of their respective communities. Again, once the overall corridor alignment was defined, the analysis was able to

make a determination as to which communities have development plans that may impact the feasibility of the corridor.

Land-use Compatibility – As in the previous case, land uses are likely to vary along the corridor alignment, and some may have an impact on the feasibility of the corridor. The impact of land uses on the feasibility of the corridor (e.g., compatibility with farming, timber production, etc.) was determined.

Determination of Feasibility – In determining feasibility the study evaluated the impact from the aforementioned categories from two perspectives; first from a fatal flaw perspective and second from a qualitative perspective.

1. Fatal Flaw - Using a fatal flaw perspective the consultants determined if any of these categories presented an insurmountable challenge toward developing the corridor. Again, this particular aspect of the feasibility process was not focused on determining the feasibility of the commerce corridor concept at its core, but rather to influence the feasibility decision across a variety of aspects including the determination of the broad alignment alternatives, design approaches, as well as the respective modal components.

2. A qualitative approach was then used to determine the:

    a. **Extent** to which these issues impact the corridor;
    b. **Magnitude** of the impact;
    c. **Duration** of the impact; and,
    d. **Probability** that any of these issues may exist.

Using this qualitative approach the analysis was able to make an assessment of the degree to which community impacts and the GMA have an impact on feasibility, beyond fatal flaw. A finding that the extent was low, the magnitude was not significant, the duration was short and the probability was low it is likely that the respective community impact will not have a significant impact on feasibility. On the other hand, if a particular impact was manifest at a great extent, with significant magnitude, over a long duration, and was likely (highly probable) to occur, the development of the corridor presents a significant challenge from a community and GMA standpoint.

Are the Environmental Constraints/Permitting too Significant?

In evaluating the environmental constraints toward the development of the corridor, the consultants rated the feasibility based on five overall categories;

- Critical Areas
- Streams and Water Resources
- Threatened and Endangered Species
- Wildlife Migration Routes
- Permitting

The first four impact areas listed above focus on the impact of the corridor on the environment. The fifth impact area, permitting, focuses on the impact of the permitting process (NEPA) on the development of the corridor.

Determination of Feasibility – As in the community impacts the study evaluated feasibility from two perspectives, from a fatal flaw perspective and from a qualitative perspective. As in the community impact analysis the qualitative assessment the consultants rated the environmental constraints based on the **extent**, the **magnitude**, the **duration** and the **probability** of these five areas of environmental concern.

What are the Legal/Legislative Barriers?

This portion of the feasibility study focused on determining whether there were currently any major barriers in the laws governing the State of Washington, relevant to this project, that stood in the way of private sector involvement. This included:

- A discussion of the terms and conditions of agreements necessary to implement the proposal with a private company; and
- Agreement provisions that may be required in order for the private companies to finance, construct, and operate the corridor.

Some of the critical issues and challenges in the legal area included; adoption of new procurement methods, involvement of private partners early in the process, early cost and schedule certainty, encouraging flexibility and innovation, promoting competition, leveraging public participation and financing, compliant but streamlined environmental processes, and the eligibility of innovative financing techniques.

Determination of Feasibility – This particular aspect of the feasibility process was not focused on determining the feasibility of the commerce corridor concept at its core, but rather to determine ways in which the current legislative/legal environment can be improved to enhance the feasibility of the development of a commerce corridor.

CONCLUSION

This chapter outlined the overall framework for determining the feasibility of the commerce corridor.

At the end of the feasibility process the consultants determined:

1. Whether there existed sufficient demand for the corridor, particularly through demand.
2. Whether the corridor could be built.
3. If it is deemed feasible:
    a. What components are feasible.
    b. How the corridor would look.
    c. Its general overall alignment.
    d. What it's overall costs were.
    e. The likely participants in the development of the corridor.
    f. The degree to which public sector participation is needed.
    g. The development time frame of the corridor.

CHAPTER TWO
Definition of Project Features

INTRODUCTION

The purpose of this chapter is to provide a definition of the overall project features of multi-modal and multi-use corridors, as a basis for understanding the evaluation criteria for determining the feasibility of the WCC. As such, this chapter outlines the basic geometric components, operational requirements, typical uses, and the potential alignment alternatives of the WCC.

POTENTIAL COMPONENTS OF THE CORRIDOR

One of the key elements of the WCC project is the identification of required right-of-way (ROW) width in order to accommodate the vehicles, trucks, rail, non-motorized, and utility portions of the corridor. Using existing design standards and "best practices" the WSA team developed conceptual cross sections for each of the corridor components. Each of the following corridor components is discussed, and a corresponding cross section is presented:

Transportation

- Truck Freight - Exclusive commercial vehicle four-lane roadway.
- Rail Freight - Double track, shared with passenger rail.
- Passenger Car - Four lane roadway with weight limits.
- Passenger Rail - Double track, shared with freight rail.
- Non-motorized - Shared use path and separate equestrian trail.

Utilities

- Power - 500 kilovolt transmission line.
- Natural Gas - High pressure transmission line.
- Petroleum - Refined petroleum products.
- Telecommunication - Analog and digital communications.

Following the discussion of each corridor component, the maximum conceptual cross-section for the WCC is presented. This cross-section represents independent ROWs for each corridor component. A second conceptual cross section is also presented, representing a reasonable estimate of potential overlaps in ROW requirements.

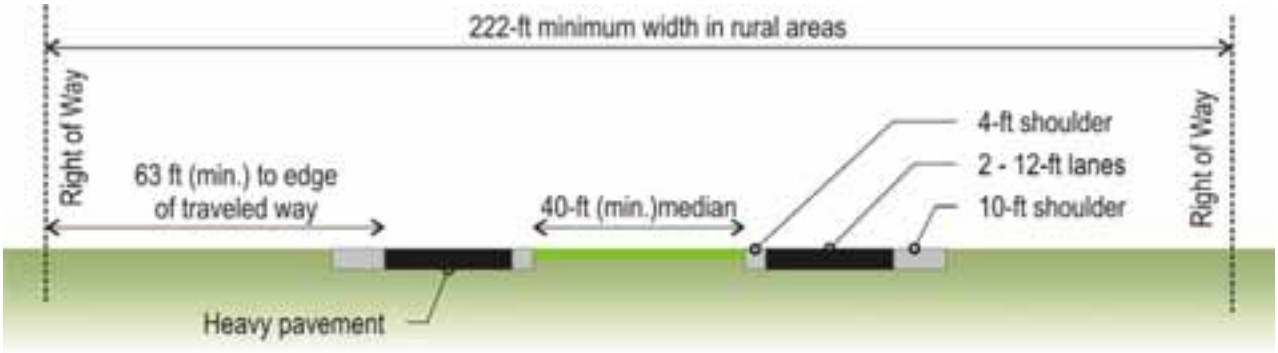
Preliminary Concept

This study is the evaluation of the feasibility of a concept that is likely to be long-term in its implementation. In order to accurately assess the feasibility of the concept, it is critical to first define the concept; that is the purpose of this section of the paper. It defines the concept physically and operationally; its width, its grade, its major components, etc. The concept shown herein is not considered final, but rather a beginning.

Truck Freight

The truck freight roadway would accommodate long-haul, commercial vehicles. Two lanes would be provided in each direction with median separation (see Exhibit 2-1). The roadway would be designed to WSDOT standards for Interstate highways with 12-foot traffic lanes, 10-foot right and four-foot left shoulders (WSDOT Design Manual, Figure 440-4). The minimum median width would be 40 feet. Minimum ROW width for an Interstate is 63 feet outside of the traveled way, requiring an overall minimum ROW of 222 feet. The pavement would be designed for the high volume of truck traffic and could accommodate legal load limits from Oregon and British Columbia.

Exhibit 2-1: Commercial Vehicle Roadway Cross Section



The criteria for grades in rural areas are shown in Exhibit 2-2. Grades one percent steeper may be used in urban areas if necessary, and on one-way down grades except in mountainous terrain. Independent alignments and grades for the two, two-lane roadways would be used where feasible.

Exhibit 2-3 shows the minimum curve radius, in feet, for several design speeds and superelevation rates. WSDOT allows a maximum 10 percent superelevation rate except in mountainous area or locations that regularly experience accumulation of snow or ice.

Exhibit 2-2: Maximum Grades for Commercial Vehicles

Type of Terrain	Design Speed (miles per hour)			
	50	60	70	80
Level	4 %	3 %	3 %	3 %
Rolling	5 %	4 %	4 %	4 %
Mountainous	6 %	6 %	5 %	5 %

Source: WSDOT Design Manual Supplement, Figure 440-4, July 22, 2003.

Exhibit 2-3: Minimum Curve Radii for Commercial Vehicles

Superelevation	Design Speed (miles per hour)			
	50	60	70	80
6%	840 ft	1,340 ft	2,050 ft	3,060 ft
8%	770 ft	1,210 ft	1,830 ft	2,680 ft
10%	700 ft	1,100 ft	1,640 ft	2,380 ft

Source: WSDOT Design, Figures 640-11a, 640-11b, and 640-11c, February 2002.

Passenger Car

The passenger car roadway cross-section would consist of two, 12-foot lanes in both directions separated by a 40-foot median. The minimum ROW width would be the same as the commercial vehicle roadway, at 222 feet as shown in Exhibit 2-4. The passenger car roadway would have a maximum gross vehicle weight limits allowing a substantially lighter and lower cost pavement than the truck roadway. This roadway would be constructed to WSDOT design criteria for Interstate highways including an 80 miles per hour design speed. The design speed can be reduced to 70 miles per hour in rolling terrain and 60 miles per hour in mountainous terrain. The 40-foot median is the minimum for rural areas. WSDOT states independent alignment and grade is desirable in all rural areas and where terrain and development permit in urban areas. The criteria for grades in rural areas are shown in Exhibit 2-5. Grades one percent steeper may be used in urban areas if necessary, and on one-way down grades except in mountainous area or locations that regularly experience accumulation of snow or ice.

Exhibit 2-4: General Purpose Roadway Cross Section

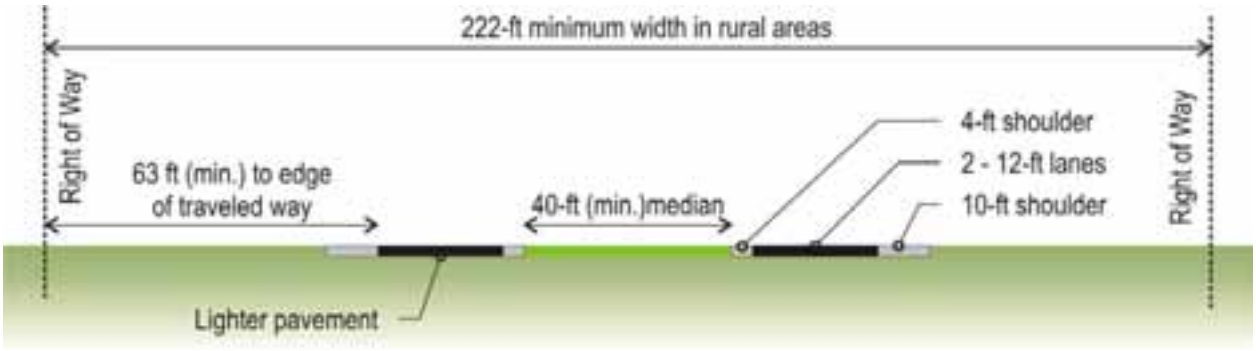


Exhibit 2-5: Maximum Grades for Passenger Vehicles

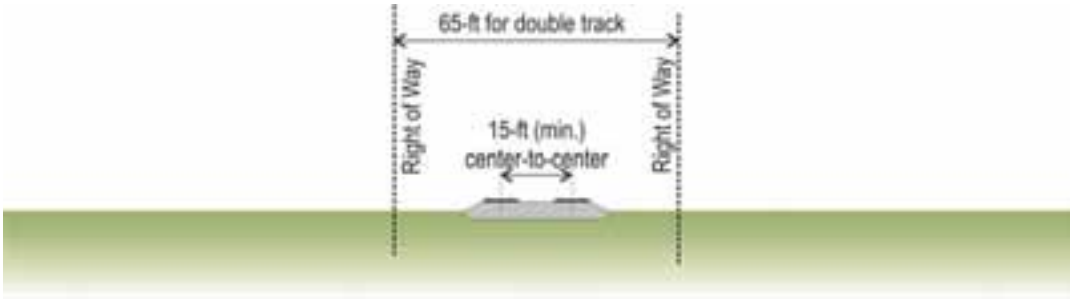
Type of Terrain	Design Speed (miles per hour)			
	50	60	70	80
Level	4 %	3 %	3 %	3 %
Rolling	5 %	4 %	4 %	4 %
Mountainous	6 %	6 %	5 %	5 %

Source: WSDOT Design Manual Supplement, Figure 440-4, July 22, 2003.

Rail Freight

The WCC would include a double track railroad line with Class 5 (Federal Railroad Administration designation) track where feasible. Class 5 track has a maximum allowable speed of 80 miles per hour for freight trains and 90 miles per hour for passenger trains. Minimum ROW requirements are based on two tracks spaced 15 feet apart, center to center, and a ROW extending 25 feet from the track centers for a width of 65 feet. The track grade should not exceed 1.5 percent. The conceptual cross section for the double track railroad is shown in Exhibit 2-6.

Exhibit 2-6: Double Track Railroad Cross Section



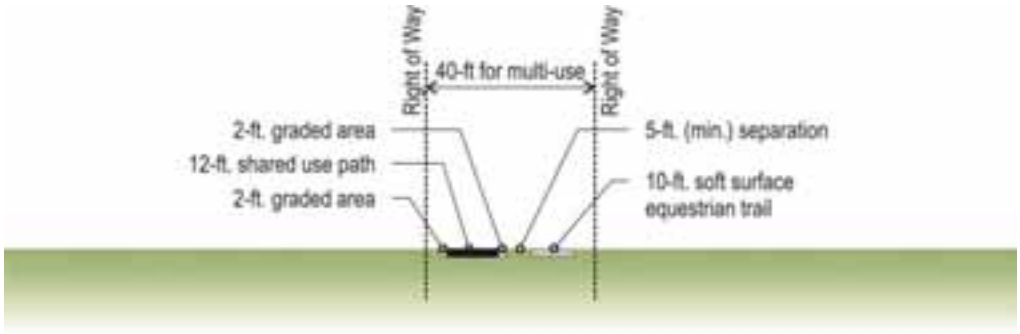
Passenger Rail

Passenger rail would share the two-track ROW with freight rail. Class 5 track standards would allow passenger train speeds of up to 90 miles per hour.

Non-Motorized Modes

Both a paved shared use path and soft-surfaced equestrian trail could be provided within a 40-foot ROW as shown in Exhibit 2-7. The shared use path would follow WSDOT Design Manual guidelines (DM 1020, May 2001). The 12-foot paved width would allow two-way travel for pedestrians and bicyclists. The pathway would be set back from the ROW edge to allow signage with adequate clearance from the traveled way. There would be a minimum five-foot separation between the shared pathway graded area and the equestrian trail.

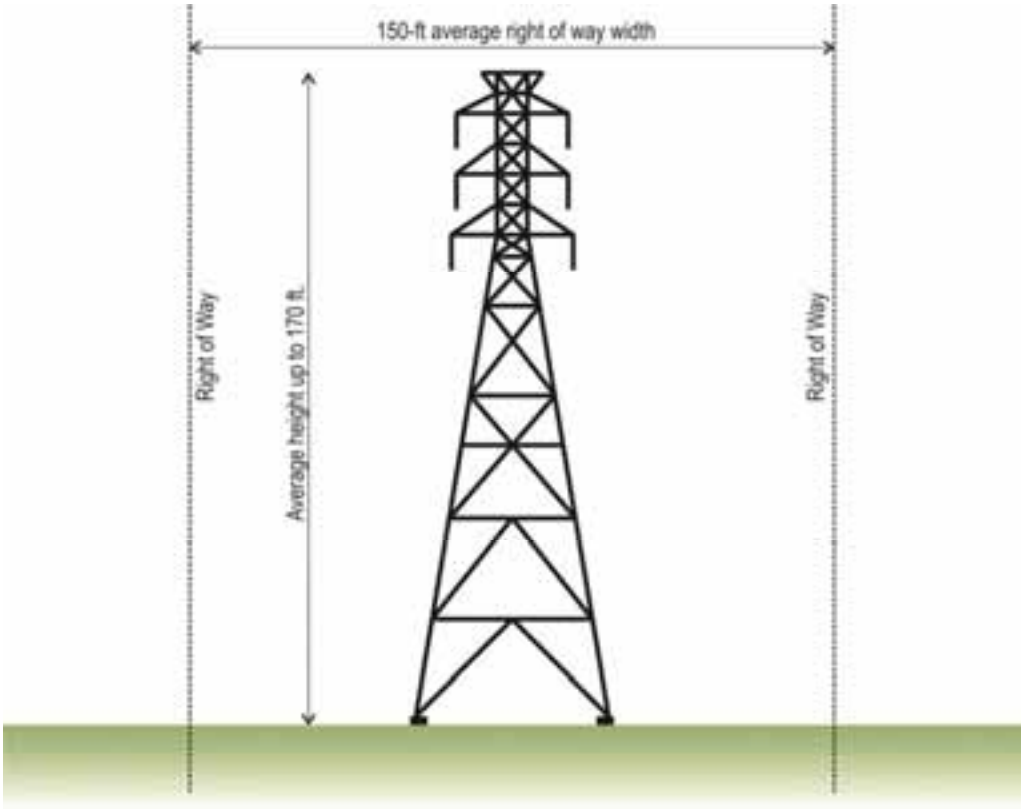
Exhibit 2-7: Non-Motorized Corridor Cross Section



Power

Exhibit 2-8 shows the configuration of a 500 kilovolt (kV), single-circuit, electric power transmission line. A lattice steel type tower is shown, but steel poles may also be used and would have similar ROW requirements. There would be about five towers per mile. Construction and maintenance access would typically be provided by a maintenance road within the ROW except where access is available from an adjacent road outside of the ROW. A single-circuit 500-kV line would require 150 feet if ROW width. Tower height would average about 135 feet. A double-circuit tower, with an average height of 170 feet, would require about 125 feet of ROW.

Exhibit 2-8: 500-kV Power Transmission Line



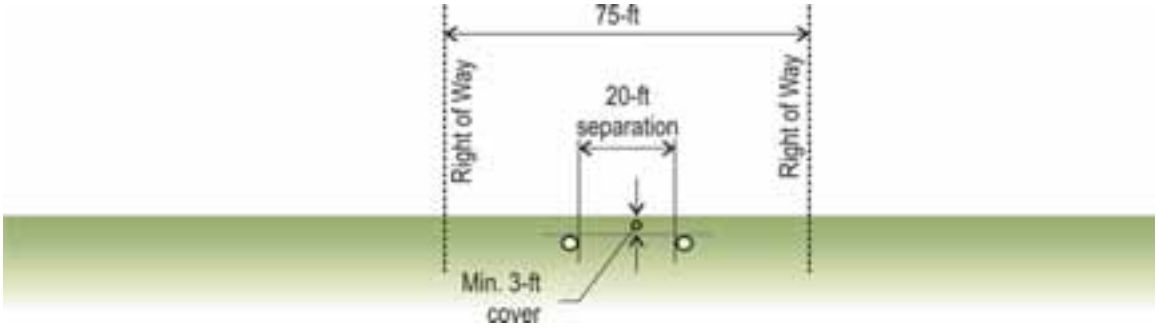
Natural Gas and Petroleum Pipelines

The WCC could provide a ROW for one or more high pressure gas and petroleum product transmission lines. A ROW width of 70 feet is shown in Exhibit 2-9. This is based on information provided by industries operating similar systems in the region. The pipelines would have 20 feet of separation between them. Pipeline ROW through Federal land are limited to 25 feet on both sides of the pipeline by law (30 USC Section 185).

The Federal government sets minimum safety standards for the design, operation, and maintenance of gas pipelines (49 CFR Part 192). In Washington State, pipelines are regulated by the Utilities and Transportation Commission. Transmission pipeline safety regulations are contained in the Washington Administrative Code (WAC) Title 480 Chapter 75, Hazardous Liquid, Gas, Oil and

Petroleum Pipeline Companies–Safety. The regulation adopts by reference, 49 CFR 192, American Society of Mechanical Engineers (ASME) Standard B31.4, and American Petroleum Institute (API) Standard 1104.

Exhibit 2-9: Natural Gas/Petroleum Pipeline ROW



Telecommunications

No separate ROW has been provided in the WCC corridor for telecommunications. The commercial vehicle and general purpose ROW would carry data lines for operation of intelligent transportation systems (ITS) features including advanced transportation management systems (ATMS), fiber optic cables, and advanced travel information systems (ATIS). The power transmission line and railroad ROW would also be potential locations for communications lines.

Overall Corridor Features

Exhibit 2-10 shows the maximum ROW requirement for a section of the corridor where conditions would allow all corridor elements to run side by side. All transportation and utility elements would require more than 700 feet. Exhibit 2-11 shows a minimum corridor with of width of about 500 feet that would be possible by the use of traffic barriers in the medians of the commercial vehicle and general purpose roadway, and between the two roadway pairs. Pipelines are shown located in an easement within the roadway ROW, but this would be possible only where there was no conflict with roadway drainage or other roadway elements and the pipeline had adequate access for maintenance. The double track railroad ROW has been reduced to 50 feet. The shared use (pedestrian and bicycle) path and equestrian trails may be compatible as allowed uses within the power transmission line easement. The shared use path could be designed to allow power line maintenance vehicle use.

Exhibit 2-10: Maximum Corridor ROW Width

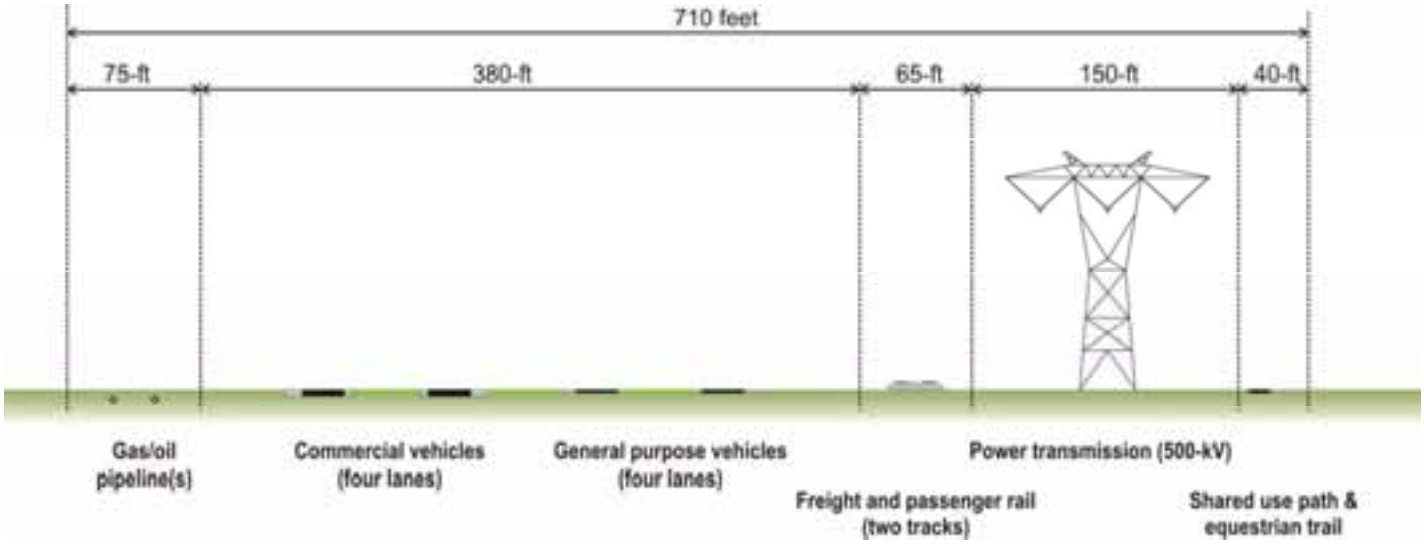
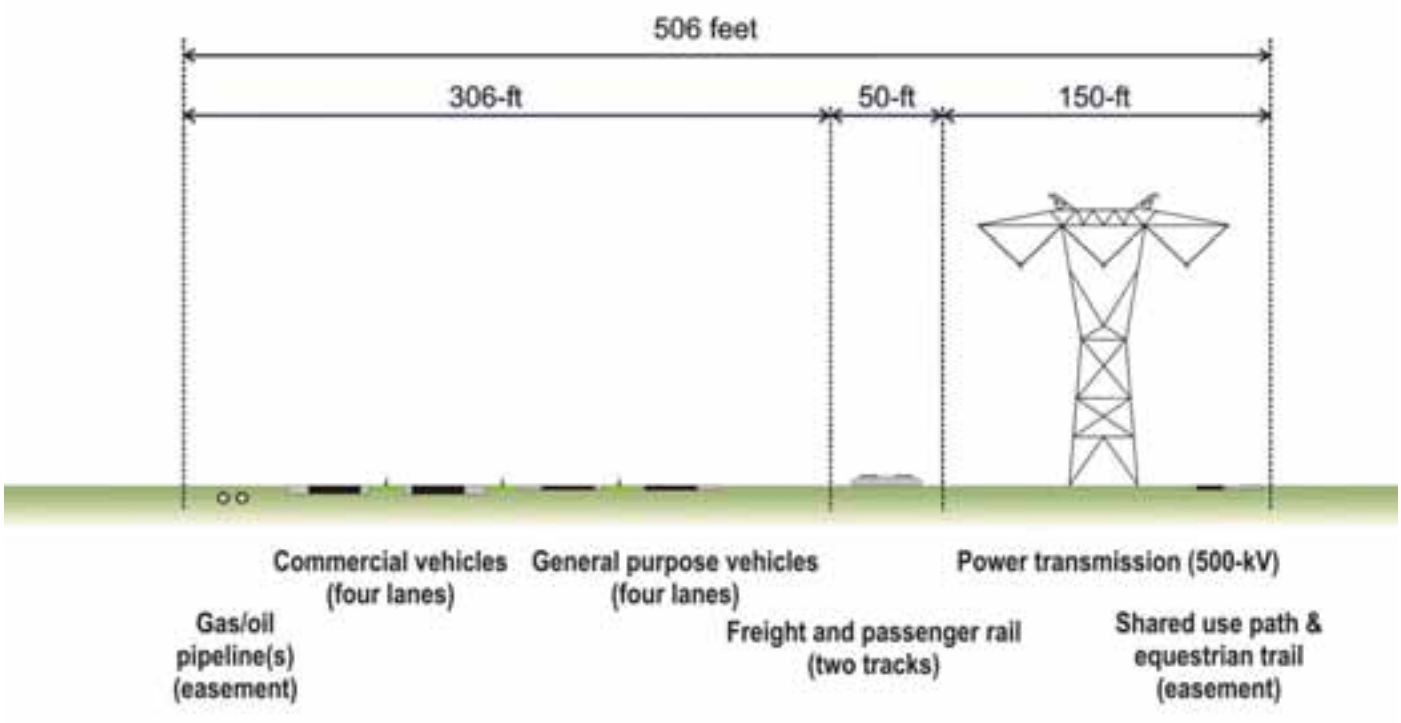


Exhibit 2-11: Minimum Corridor ROW Width



Probable Corridor Alignment Opportunities

As stated previously, this study is the evaluation of the feasibility of a concept that is likely to be long-term in its implementation (if it were to be implemented). In order to accurately assess the feasibility of the concept, it is critical to first define the concept. Therefore, this section defines the conceptual alignment alternative opportunities. The alignment opportunities discussed in this section are contingent upon broad concerns relating to environmental, topographic, geometric design, and socio-economic constraints that are detailed throughout the rest of this report. The alignment opportunities shown herein are not considered final, but rather a beginning. Throughout the course of the study, the physical components may be altered based on determination of feasibility.

The WSA Team has identified opportunities for alignments for the corridor on a broad scale. Due to the conceptual nature of the WCC feasibility study, the alignment opportunities presented in this chapter do not represent an actual location or alignment for the WCC project. The alignment opportunities were developed and identified using the following criteria:

Environmental Constraints

- Sensitive park lands and public lands were avoided wherever possible.

Topographic Constraints

- The rugged terrain in many parts of the study area limited potential alignment alternatives.
- The Cascade Mountains constrained the probable corridor alignment to the east.

Socio-Economic Constraints

- The probable corridor alignment avoids high-density populated areas wherever possible.
- Potential locations for east-west corridor connections were maximized.

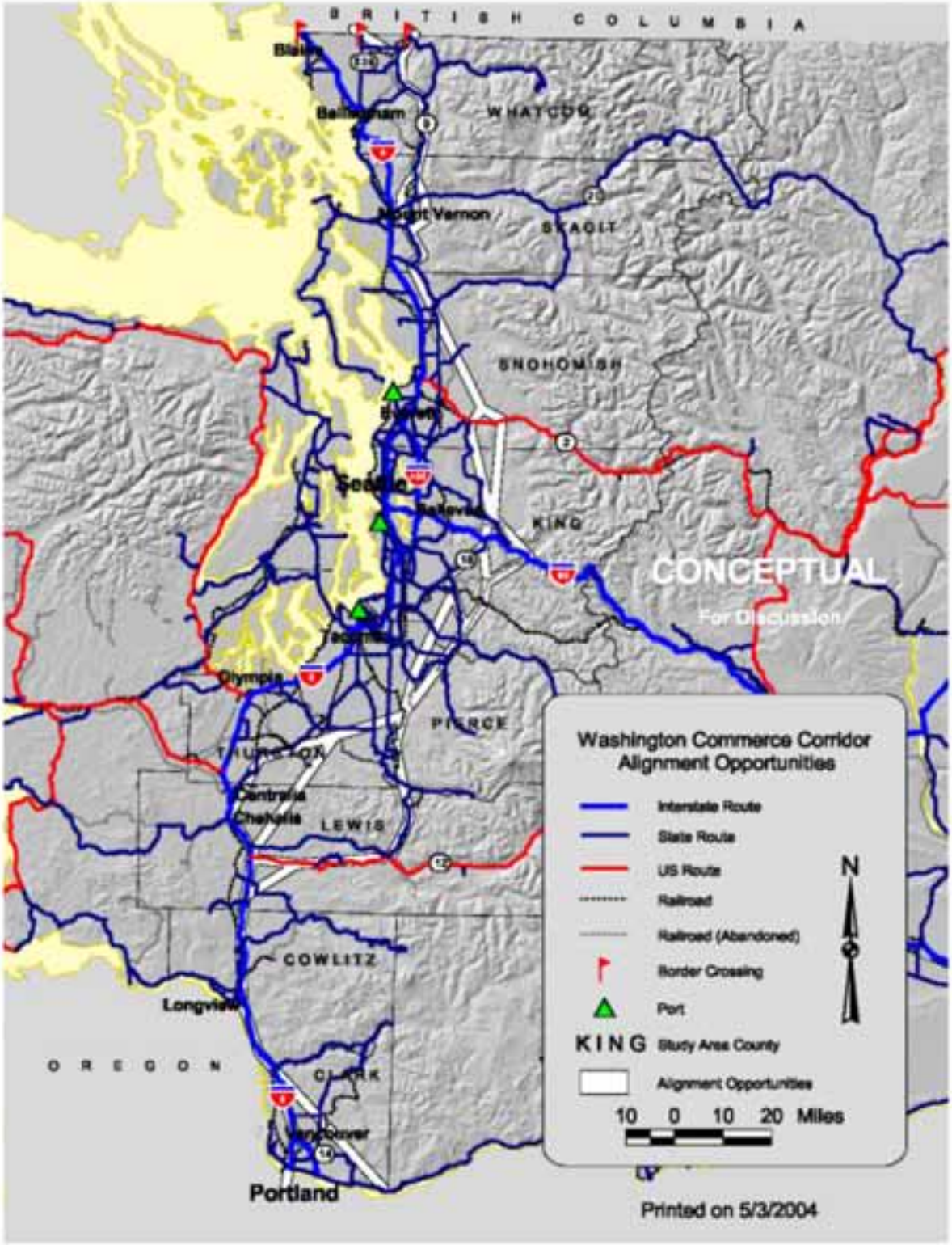
Coordination with Existing Rights-of-Way

- When possible, the probable corridor alignment follows existing rail lines or state highways, in order to minimize grade and topographic constraints.
- In some locations, the corridor alignment follows existing utility lines.

Based on the constraints and coordination opportunities presented above, the WSA Team identified the corridor alignment alternative opportunities shown in Exhibit 2-12. The probable WCC alignment opportunities include a number of alternate routes; however, the overall goals of the WCC would be achieved through any combination of these alignment alternatives.

Note that the alignment alternatives shown in Exhibit 2-12 do not represent the final location of the WCC. These alignment alternatives were developed based on a large-scale review of the entire study area.

Exhibit 2-12: Commerce Corridor Alignment Opportunities



EXAMPLES OF OTHER SIMILAR INITIAVES

The following section documents similar corridor initiatives developed and implemented in the United States. Three similar initiatives are discussed:

1. The Trans Texas Corridor Plan
2. The Interstate 81 Corridor Plan
3. The Alameda Corridor Project

Each of these initiatives provides important information that will help plan, design, construct, and finance the final WCC project. The WCC project will incorporate the appropriate elements of these similar initiatives in order to provide the most state-of-the-art solution.

Trans Texas Corridor Plan

Background and Description

Texas serves geographically as the funnel for a majority of the commodity flows to and from Mexico and other Latin American and global destinations. The state is a gateway for Latin American trade that flows throughout the rest of the Southeastern Transportation Alliance region and the U.S as a whole. Pursuant to the goals of the Southeastern Transportation Alliance region, improved mobility across the U.S.-Mexico border will help capitalize on international trade with Latin America.

Seventy-nine percent of all U.S.-Mexico trade passes through the Texas ports of entry. Under the North American Free Trade Agreement (NAFTA) this trade dynamic will expand even more. In addition, Texas' population has increased a staggering 65 percent since 1988 and population growth is projected to continue at a rate of 30,000 new residents a month.[1]

The movement of goods from the U.S.-Mexico border has origins and destinations throughout the U.S. that includes major markets on the West Coast, Midwest, Upper Midwest and the East Coast. In addition, the many shopping malls, grocery stores, and discount super-centers throughout the Border region attest to the numbers of Mexican nationals crossing the border to buy U.S. goods. The costs of building and maintaining infrastructure to service international trade, however, remains a challenge.

"On a typical day, about 205,000 vehicles and 97,000 pedestrians cross the Texas-Mexico Border. The 15,000 commercial trucks and 1,220 railcars that traverse the border daily highlight the importance of international trade to the region and the nation.[2]"

[1] Website: http://www.dot.state.tx.us/ttc/ttc_report_summary.pdf.
[2] Keith Phillips and Carlos Manzanares, Transportation Infrastructure and the Border Economy, Federal Reserve Bank of Dallas, June 2001.

Goods movement between the U.S. and Mexico has increased steadily and dramatically over the past decades. The growth rate (in volume) accelerated during the 1990's to nearly double the growth rate of the 1980's.[3] International trade moving through Texas is expected to grow at a faster pace than domestic trade over the next 20 years. U.S.-Mexico trade crossing the state's numerous border facilities will be one of the fastest growing segments. Exhibit 2-13 shows the average annual percent change in volume of goods traded between the U.S. and Mexico.[4]

Exhibit 2-13: Change in Volume of Goods Traded Between the United States and Mexico

Value per Decade (billions)			Average Annual % Change	
1980	**1990**	**2000**	**1980-1990**	**1990-2000**
$28	$58	$207	7.6%	13.6%

Source: FHWA, Office of Freight Management and Operations.

Exhibit 2-14 presents information on freight shipments that have either an origin or a destination in Texas. As shown, trucks moved a large percentage of the tonnage and value of shipments, followed by rail. Truck traffic is expected to grow throughout the state over the next 20 years. Much of the growth will occur in urban areas and on the Interstate highway system.

Exhibit 2-14: Freight Shipments To, From, and Within Texas Year 1998, 2010, and 2020

	Tons (millions)			Value (billions $)		
	1998	**2010**	**2020**	**1998**	**2010**	**2020**
State Total	1,764	1,376	2,625	2,347	1,428	3,676
By Mode						
Air	2	4	5	113	265	472
Highway	1,008	1,483	1,872	841	1,681	2,756
Other[a]	358	424	485	46	65	92
Rail	282	388	473	102	191	295
Water	113	145	155	23	42	12
Grand Total	1,763	2,444	2,990	1,125	2,244	3,627
By Destination/Market						
Domestic	1,258	682	1,749	2,114	892	2,720
International	506	694	876	233	536	953

Source: FHWA, Office of Freight Management and Operations.
Notes: [a]Includes international shipments that moved via pipeline or by an unspecified mode.

Exhibit 2-15 shows freight flows to and from Texas. On average, truck traffic moving to and from Texas accounted for 20 percent of the Average Annual Daily Truck Traffic (AADTT) on the Freight Analysis Framework (FAF) road network. Approximately 27 percent of truck traffic involved in-state shipments, and 13 percent involved trucks traveling across the state to other markets. The top

[3] Laredo Development Foundation, "Laredo Texas Bordering the Future", using data from Texas A&M International University.
[4] Laredo Development Foundation.

commodities by weight are products related to natural resources and minerals. By value, the top commodities are chemical products and transportation equipment. [5]

Exhibit 2-15: Total Combined Truck Flows to and From Texas

Corridor Development

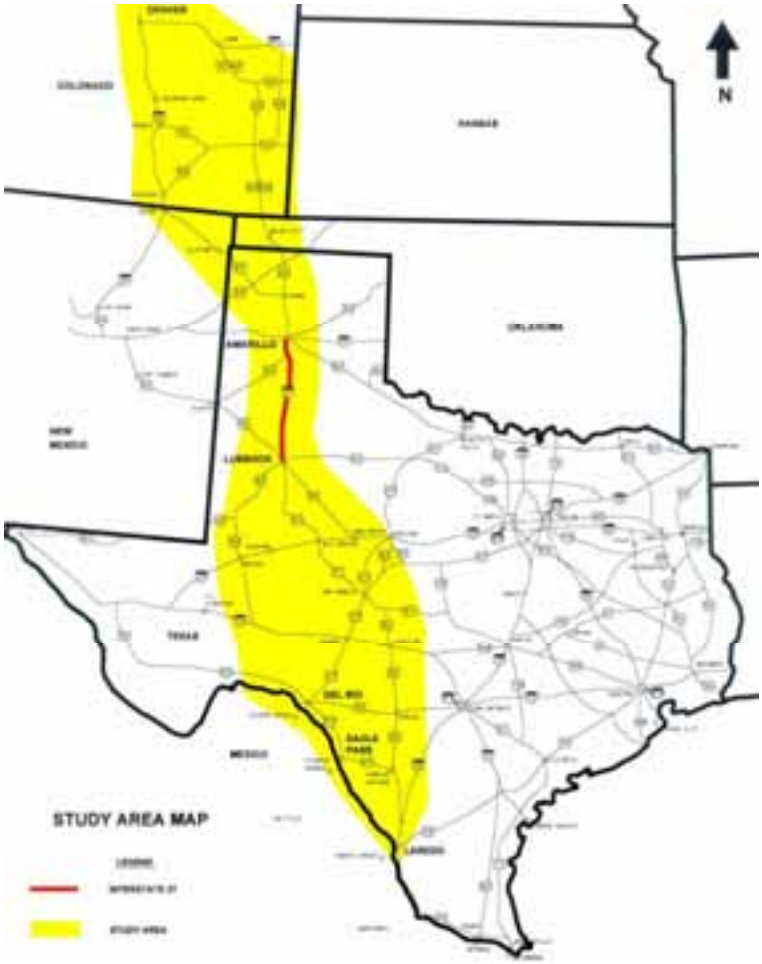
One of the corridors identified in the Trans Texas Corridor Plan follows the Ports to Plains Corridor alignment. Because of its direct connection to the Mexican border, the Ports to Plains Corridor was designated by TEA-21 as one of the 43 U.S. high priority corridors. A feasibility study was conducted in 2001. The study area traversed the states of Texas, New Mexico, Oklahoma, and Colorado. The Ports to Plains Corridor is approximately 800 miles long, with widths varying between approximately eight miles along the IH-27 alignment, and up to 200 miles south along the remainder of the corridor.

Elements of the study included a detailed and comprehensive analysis of various alternative highway alignments throughout the entire corridor. The methodology and procedures were consistent with recent feasibility studies conducted in other high priority corridors. It included: travel demand modeling and forecasting; consideration of NAFTA/international trade flow; economic feasibility analysis, including travel efficiency, economic development, and the benefits for national, state, and

[5] FHWA. Office of Freight Management and Operations.

corridor perspectives; evaluation of traffic operations; engineering cost estimates; potential environmental land use impacts; and a public involvement program. Exhibit 2-16 shows the Ports to Plains Corridor study area.

Exhibit 2-16: Ports to Plains Corridor Study Area



In addition, special consideration was given to impact evaluation of infrastructure and Intelligent Transportation System (ITS) improvements planned at the U.S.-Mexico border. The study considered other highway improvements planned throughout the corridor states, as well as proposed transportation improvements and highway connections in Mexico.

In the fall of 2003, a contract was awarded by the Texas Department of Transportation (TxDOT) for the preliminary design and costs of developing a specific alignment within the Ports to Plains Corridor.

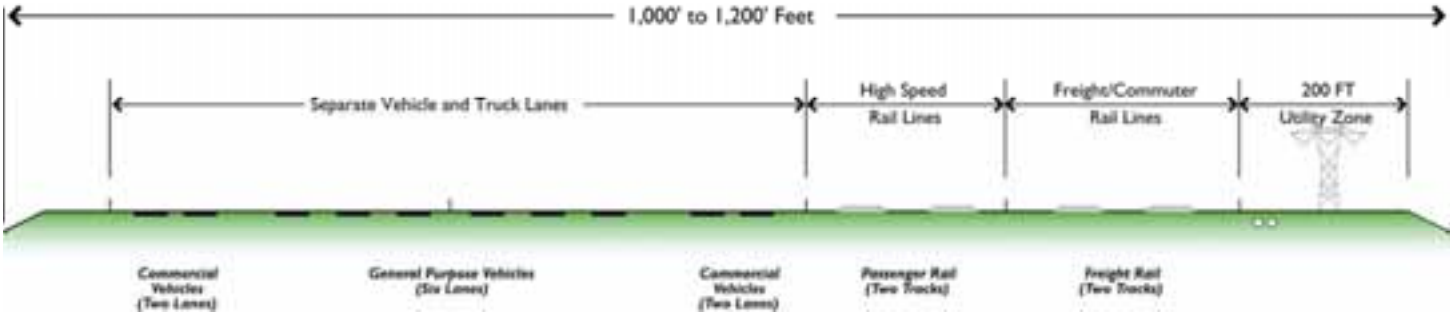
TxDOT issued in July 2003 a call for proposals to acquire, develop, design, construct, finance, maintain, and operate a combination of facilities which together constitute the I-35 High Priority Trans Texas Corridor. The I-35 Project includes facilities which parallel the I-35 corridor and includes portions of the I-37 and I-69 high priority Trans Texas Corridors where necessary for connectivity and financing purposes. The proposed Project includes tolled truck and vehicle lanes, high speed passenger rail, commuter rail, freight rail and utility infrastructure and may also include intermodal facilities. TxDOT is currently developing the specific contractual relationship for development of the Project that will be set forth in a Comprehensive Development Agreement. TxDOT's current vision is that the successful Proposer will become a long-term strategic development partner with TxDOT, helping the agency analyze, identify, plan and finance Project facilities and develop the Project on a multi-modal, multi-facility basis over the short-term, mid-term and long-term.[6]

Corridor Plan

The Trans Texas Corridor Plan outlines a very aggressive "new vision" for a new multi-use, statewide transportation corridor that moves people and goods safely, efficiently, and more reliably, while improving quality of life. The Trans Texas Corridor Plan provides a design concept, identifies four priority corridor segments, details the financial tools necessary for implementation, and addresses the importance of public private partnerships. The concept would be connected by a 4,000 mile network of corridors up to 1,200 feet wide with separate lanes for passenger vehicles (three in each direction) and trucks (two in each direction). The corridor would also include six rail lines (three in each direction), one for high-speed passenger rail between cities, one for high speed freight, and one for conventional commuter and freight. The third component of the corridor would be a 200-foot-wide dedicated utility zone for the transmission of electricity, natural gas, petroleum, data, and most importantly water. Exhibit 2-17 shows a typical cross section of the Trans Texas corridor[7]

Separating passenger vehicle and truck lanes to benefit the public is fundamental to the corridor's overall design. To avoid contributing to urban congestion, the corridor would link major cities but not flow directly through them. The corridor would also be designed to take advantage of intelligent transportation systems.

Exhibit 2-17: Conceptual Trans Texas Corridor Cross Section



[6] Website: http://www.dot.state.tx.us/tta/profserv/i35/default.htm.
[7] Website: http://www.dot.state.tx.us/ttc/ttc_report_summary.pdf.

Based on an estimated cost of $31.4 million per centerline mile, the 4,000-mile corridor would cost $125.5 billion, not including right-of-way and miscellaneous costs. Factoring in right-of-way at $11.7 billion to $38 billion and miscellaneous costs at $8 billion to $20 billion, the estimated total cost for the Trans Texas Corridor would range from $145.2 billion to $183.5 billion.[8]

The objectives of the Trans Texas Corridor Plan include the ability to move/transport people and freight faster and safer; relieve congested roadways; keep hazardous materials out of populated areas; improve air quality by reducing emissions; and support local and regional economic development and international trade.

Four corridors have been identified as priority segments of the Trans Texas Corridor in Exhibit 2-18. These corridors parallel I-35, I-37 and I-69 (proposed) from Denison to the Rio Grande Valley, I-69 (proposed) from Texarkana to Houston to Laredo, I-45 from Dallas-Fort Worth to Houston, and I-10 from El Paso to Orange.[9]

Exhibit 2-18: Conceptual Trans Texas Corridor Priority Segments

The proposed I-69 extension would connect three different border crossings in Texas (Laredo, McAllen, and Brownsville) to I-465 in Indianapolis; from there, traffic would continue over the existing I-69 and other freeways to border crossings in Detroit, Port Huron or Sault Ste. Marie, Michigan. Approximately 1,600 miles of freeway (including the three Texas branches) would be

[8] Ibid.
[9] Ibid.

added to existing I-69 when it is complete. In some areas, particularly in Kentucky, Mississippi, and Texas, much of I-69 would probably be built as upgrades of existing four-lane highways to current freeway standards, while in other areas new construction on new alignment is likely. In Texas, I-69 was initially expected to follow existing U.S. 59, 77 and 281; however, the Trans Texas Corridor Proposal has subsequently surfaced with a plan for a new facility roughly along the same corridors.[10]

Today I-69 connects Indianapolis with the Canadian border at Port Huron, Michigan and Sarnia, Ontario and provides an important link between the lower Midwest and Canada. The dynamic trade corridor that I-69 provides has served as the catalyst for the current plans to extend I-69.

Implementation Schedule

TxDOT and the Federal Highway Administration (FHWA) are funding and managing the necessary corridor studies. Together, eighteen federal, state and other agencies are working to find mutually acceptable transportation solutions along/in the I-69 corridor. Environmental studies in all 14 Texas "Sections of Independent Utility" (SIUs), or sections of the corridor that serve a purpose and need independent of the other sections, should be underway by the end of August 2003.[11]

Financing

Texas voters provided the framework for funding such an aggressive plan in November 2001 when they approved Proposition 15. Proposition 15, a constitutional amendment, allows Texas more flexibility than it has ever had to pay for transportation projects. Proposition 15 includes public-private partnerships called "exclusive development agreements", and funding options like toll equity, the Texas Mobility Fund, and Regional Mobility Authorities (RMAs). Financing options for this aggressive plan would include a combination of these tools.[12]

Exclusive Development Agreement – This is a contract between the state and a consortium to perform any or all of the following tasks: design, construction, operation, maintenance or financing of a transportation project. The state determines the overall need for a project and then considers proposals from competing consortiums on how the final project can be accomplished. The state then can select the consortium that proposes the method offering the best value for the project.

Toll Equity – This is a financing option that makes potential toll projects more viable and can speed up relief from congestion while stretching limited state transportation funds. Toll equity allows state highway funds to be combined with other funding sources to help pay for toll roads, and makes projects more attractive for additional private sector investment.

[10] Website: http://www.i69info.com/.
[11] Website: http://www.i69corridorstudy.com/central/poverview/.
[12] Website: http://www.dot.state.tx.us/ttc/ttc_report_summary.pdf.

Regional Mobility Authority – These are new mobility authorities that operate much like existing toll authorities, but with additional benefits. These authorities will be initiated on the local level and will have the ability to build, operate and maintain newly-created local toll projects.

Texas Mobility Fund – This fund supplements the traditional pay-as-you-go method of financing highway transportation. It allows the Texas Transportation Commission (TTC) to issue bonds to accelerate construction of major highway projects. Funds can be used to finance road construction on the state-maintained highway system, publicly-owned toll roads or other public transportation projects. The state Legislature will be required to appropriate funds for the Texas Mobility Fund.

New Proposed Rules for RMA and toll roads were presented in 2003. The TTC was seeking public comment on proposed rules allowing TxDOT to convert non-tolled highways to toll facilities. Through an RMA, counties can establish an authority to develop, construct and maintain local turnpike projects as part of the state highway system.

In 2002 the commission approved the state's first RMA to serve Travis and Williamson counties. In August 2003, $63.2 million was provided for construction contracts putting nearly half of the SH-45 north toll road under construction serving these two counties. The TTC is seeking a public/private partnership to expedite the SH-45 southeast project, a candidate toll road project connecting I-35 and SH-130/US-183.

In addition, House Bill 3588 signed into law in June 2003 provides new financial tools to expedite needed construction. The new law allows TxDOT to enter into comprehensive development agreements with a private entity for the design, construction, financing, maintenance and/or operation of a turnpike project.

Summary

TxDOT, with their new funding mechanisms, are moving forward with the development of the Trans Texas Corridor Plan on several fronts; one corridor segment at a time. Four corridors have been identified as priority segments of the Trans Texas Corridor. These corridors were prioritized based on previous analysis and studies. Now that the strategic corridors have been identified and the authorization for public-private partnerships in place, TxDOT has begun the process of soliciting for private sector partners.

The authorizing legislation also put more control in the hands of communities by delegating power to local authorities (RMAs) and providing those local authorities means to fund projects.

Drafting the Future, the financing plan produced by TxDOT that accompanies HB 3588, has provided a two pronged approach in meeting the investment needs of the State's transportation system; a top down approach by the State and a bottom up approach for local communities, where both can take on the necessary planning, development and public-private partnerships.

Interstate 81 Development Plan

Background and Description

Interstate 81 is a major trade/commercial truck route in the U.S., linking the population centers of the Northeastern U.S. and Canada with the Alliance states, Southern Gulf Ports and South America. It is one of the top eight routes in the U.S. for carrying commercial truck traffic.

In Virginia, it extends along the western portion of the state, from the Tennessee border in the south to the West Virginia border in the north, a total of 325 miles. It has 90 interchanges and connects with Interstates 66, 64, 581, 77 and 381 as it travels through 21 cities and towns and 12 counties. There are no High Occupancy Vehicle (HOV) lanes or truck/commercial lanes on the existing highway.
The majority of Virginia's portion of I-81 is a divided highway with two lanes in each direction as it traverses the Shenandoah Valley with rolling and mountainous terrain. I-81 in Virginia has been declared, by the American Automobile Association, as one of the ten most scenic highways in the U.S.

Virginia's portion of I-81 is between thirty and forty years old. Construction began in December 1957 and by the end of 1966 a total of 214 miles of SR 81 was opened to traffic. The last section of Virginia's portion was opened to traffic on December 21, 1971, thus completing the entire 325 miles of the interstate.

I-81 is widely recognized as one of the most dangerous transportation corridors in the nation, primarily because of the high rate of accidents. During a recent 18-month period, there were 2,681 total accidents on I-81 with 41 deaths and 1,528 total injuries. Of that total, 825 were accidents involving commercial trucks resulting in 15 deaths and 449 injuries.

Some of the safety issues along this route result from the design, which was completed 40 years ago when traffic volumes were less, especially those issues related to commercial trucks.

Exhibit 2-19 provides information on freight shipments that have either an origin or a destination in Virginia. As shown, trucks moved a large percentage of the tonnage and value of shipments, followed by rail (tonnage) and air (value). Exhibit 2-20 shows freight flows to and from Virginia. Truck traffic is expected to grow throughout the state over the next 20 years.

I-81 is significant to the area's transportation needs for several reasons. It provides mobility to commuters traveling and working in the New River and Roanoke Valleys, and to the students and supporters of the many colleges and universities throughout the corridor, such as Virginia Tech (25,420 students) and James Madison University (15,152 students). Additionally, there are many historic and natural resources along this route, which results in a large volume of tourist and recreational vehicles.

Exhibit 2-19: Freight Shipments To, From, and Within Virginia
Year 1998, 2010, and 2020

	Tons (millions)			Value (billions $)		
	1998	**2010**	**2020**	**1998**	**2010**	**2020**
State Total	530	753	904	346	680	1,115
By Mode						
Air	<1	1	1	30	73	129
Highway	339	495	612	290	560	914
Other[a]	9	13	16	1	2	3
Rail	158	209	234	19	33	52
Water	24	34	40	5	11	17
By Destination/Market						
Domestic	457	647	777	290	567	915
International	73	105	126	56	113	200

Source: FHWA, Office of Freight Management and Operations.
Notes: [a]Includes international shipments that moved via pipeline or by an unspecified mode.

Exhibit 2-20: Total Combined Truck Flows to and From Virginia

As a result of these varied uses, mixed use traffic congestion causes major safety concerns as well as lost economic dollars to the Alliance states and the U.S. Furthermore, the terrain complicates the congestion problem as the capacity of the right-most lane is almost fully occupied by heavy truck traffic that slowly creeps uphill along the long, steep upgrades. This combination creates inefficiency in the movement of people and the delivery of raw material and goods through the trade corridor.

Congestion is also a major issue during non-peak hours when speeds frequently slow to 30 mph or less. Additionally, traffic caused by the students, parents, faculty, alumni and supporters of the many colleges and universities throughout the corridor, especially during peak times in the school year (such as "move in", graduation and sporting events) exacerbate traffic problems on the interstate.

The traffic volume on I-81 is extremely heavy and currently ranges from an Average Daily Traffic (ADT) volume of 32,000 vehicles per day (vpd) to 64,000 vpd. Originally, the design anticipated only 15% truck traffic. However, since the completion, traffic has tripled and the commercial truck traffic is in the range of 20% to 37%. Overall traffic growth is expected to be 3.5% annually, with truck traffic increasing at 4.5% annually. The peak Level of Service (LOS) throughout the corridor is a C or better except for two locations. By the year 2010, however, approximately one-third of I-81 will be at LOS D or worse, along with many ramps, ramp junctions and intersections having stop and go traffic conditions. The result of decreasing service levels will be effectively reduced operating speeds through large segments of the corridor.

The overall state of the facility is fair to poor, based on many factors including: pavement conditions, bridge conditions and appraisal ratings, safety issues, level of service, and maintenance expenditures. The majority of the bridge structures along I-81 are in fair condition. Eighty-nine percent of the bridges were built before 1970 with 26% of the bridges being over 40 years old. Eighteen of the bridges are structurally deficient, while 64 of the 291 main-line bridges are functionally obsolete.

In 2000, the estimated cost per mile for all interstate maintenance in Virginia was $21,800 per lane mile. The Maintenance Division was projecting that the maintenance cost per interstate lane mile in 2001 would be $29,000. For I-81, the annual maintenance per mile was higher and amounts to approximately $32,500.

Corridor Development

The Virginia Department of Transportation (VDOT) completed a study of the entire corridor which in 1999. As a result of this study, VDOT planned to improve the facility to a six-lane divided highway at an estimated cost of $3.4 billion. The current amount of funding available from 2003 on would be approximately $35 million annually for the next six years.

Using normal funding methods, the widening and rehabilitation of Virginia's 325 miles would take 30 to 50 years. During this time the highway would become increasingly inefficient and extremely dangerous.

Improvements to I-81 could provide an economic stimulus for the entire I-81 corridor. One recent study by the American Road and Transportation Builders Association estimates that 34,437 jobs are generated by every $1 billion spent on transportation projects. In a number of communities along the route, unemployment far exceeds the state and national average, so new jobs would be welcome. In addition, spending in localities would also boost local and state tax revenues.

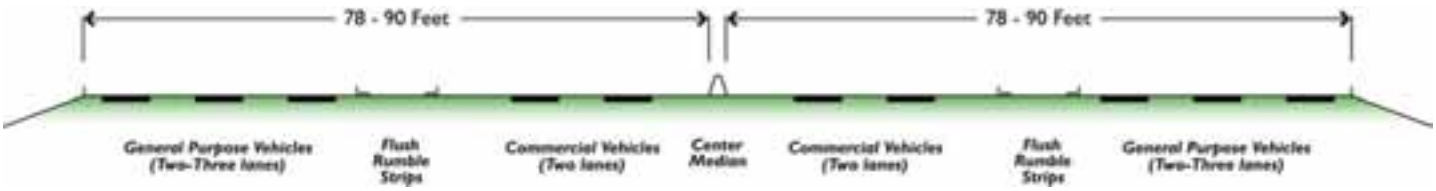
Just-in-time delivery is becoming more important to businesses, and delays caused by accidents and congestion impair efficiency and could make the region less attractive to business prospects. Improvement development plan for I-81 is timely.

Corridor Plan

A consortium of developers, contractors, and engineer's s, proposed to design, build, finance, operate, maintain, and transfer a rehabilitated and widened I-81 in Virginia.

A primary component of the plans was to separate the commercial truck traffic from the other traffic. The typical section would be a minimum of four lanes, with the two inside lanes dedicated to commercial trucks and the two outside lanes for the other vehicles. The I-81 corridor concept allows for a maximum of three general purpose vehicle lanes in each direction, at a maximum paved width of approximately 90 feet per direction. The conceptual cross section is shown in Exhibit 2-21. Exhibit 2-22 shows a photo-simulation of the corridor. A four foot rumble strip would separate the lanes. There would be dual interchanges separating commercial trucks and other vehicles at the five interstate connections and at other interchanges that have a high volume of trucks. Truck rest areas would be built in the median and weight-in-motion would be accomplished in the pavement area with violators addressed at nearby rest areas.

Exhibit 2-21: Conceptual Interstate 81 Cross Section



Other options within the plan include installing, maintaining and leasing fiber optic cable along the entire roadway and the operation and maintenance of an Intelligent Transportation System.

Asset Management of the existing and reconstructed facility and of the existing rest areas is included.

Additionally, the consortium would provide a fixed cost and schedule for this route. The fixed schedule would provide for completion of the entire 325 miles in 15 years from the date of the execution of a comprehensive agreement.

Exhibit 2-22: Photo Simulation of Interstate 81 Corridor

Implementation Schedule

Two proposals to enter into public-private partnerships with VDOT have been submitted by two large consortiums that include engineering, financial and construction professionals to improve Interstate 81 in Virginia. Both proposals, submitted by STAR (Safer Transport and Roadways) Solutions and Flour-Daniels, can be found on the VDOT website: http://www.virginiadot.org/.

Both proposals were submitted to affected jurisdictions along the I-81 corridor in Virginia for review and comment over a 60 day period as authorized by Virginia's Public Private Transportation Act (PPTA) of 1995. This action highlights the very important integration/involvement process of the community stakeholders along the I-81 corridor. The STAR proposal won the recommendation of VDOT.

Both proposals include plans for the multi-modal use of rail to divert freight. Improvements to the existing rail line would give the Norfolk Southern network the capacity it needs to divert 500,000 to 560,000 trailers per year from I-81. Additionally the improvements would provide Virginia Railway Express (VRE) with the rail capacity to implement a portion of its strategic plan and extend commuter service from northern Virginia to the Haymarket area. Under the Fluor team's proposal for example, rail improvements would be financed through a surcharge on freight cars traveling on the rail lines through Manassas. The new proposed surcharge would be significantly less than the toll proposed for commercial traffic on I-81. New revenues would help secure a

federal loan pursuant to the Railroad Rehabilitation and Improvement Finance program administered by the Federal Railroad Administration.

Virginia's PPTA allows private industry to propose innovative solutions to the state's transportation needs at a time when declining state revenues had brought severe transportation budget cuts. The PPTA of 1995 was amended in 2002 by the Virginia General Assembly to remove the restriction on tolls on existing interstates. This amendment allows for a toll on trucks to help finance the much needed improvements to I-81 and helped bring Virginia law in line with legislation adopted by Congress in 1998 that created a pilot program to permit tolls on existing interstates. Under the pilot program, tolls may be levied on an existing interstate if the funds would be used exclusively to support reconstruction and improvements to that road.

Financing

The finance plan would use several sources of funds. State and Federal funds would be supplemented with a toll on commercial trucks. This tolling would be accomplished using state of the art technology without booths. Toll readers would be placed at all truck entrances and exits and tolling would be only for the miles traveled.

These 325 miles cannot otherwise be functionally improved without the collection of tolls because current Federal and State funding is not adequate to improve the facility in the foreseeable future.

Federal earmarks for the entire improvement to I-81 are not realistic in light of current interstate reconstruction needs across the United States. The use of state bonds to improve the entire facility would greatly impact Virginia's bond capacity and could jeopardize its AAA bond rating. Due to the immediate need to increase capacity and improve safety for the entire corridor, the state cannot wait 30 to 50 years to improve I-81. Consequently, a combination of State and Federal funds, along with toll revenue bonds, offers the best case for funding an improved I-81. This approach, along with Virginia's ability to work with private companies through the PPTA, would deliver this project in 15 years as opposed to the 30 to 50 years under normal financing.

The tolling of vehicles on Interstate Roads in Virginia required enabling legislation which was enacted by the Virginia General Assembly in the 2002 session. This legislation specifically prohibits the tolling of passenger vehicles.

Summary

The Commonwealth of Virginia understands the significant role they have in maintaining a reliable, efficient and cost effective transportation system that supports an expanding multimodal freight system to enhance economic development and trade. By understanding their role, the state articulated a vision based on a study of the entire corridor. The Legislature demonstrated their support for this vision by amending the Virginia PPTA of 1995 in 2002 to remove the restriction on tolls on existing interstates.

VDOT; with the development plan, analysis and funding mechanisms in place, has solicited proposals from the private sector to include the design, construction, financing, maintenance and

operation of this project and has selected a consortium of engineering, financial and construction professionals to improve Interstate 81 in Virginia.

Alameda Corridor

Background and Description

The Alameda Corridor encompasses an approximately 20-mile corridor from the Ports of Long Beach and Los Angeles to downtown Los Angeles. This corridor provides heavy rail linkages between the freight facilities at the Ports and the rail hub near downtown Los Angeles' Transcontinental rail yards and railroad mainlines. Exhibit 2-23 shows the Alameda Corridor alignment.

The Alameda Corridor handles an average of 35 train movements per day. Usage is projected to steadily increase as the volume of international trade through the ports grows. The ports project the need for more than 100 train movements per day by the year 2020. Under its current configuration, the Alameda Corridor can accommodate approximately 150 train movements per day. The Alameda Corridor is intended primarily to transport cargo arriving at the ports and bound for destinations outside of the five-county Southern California region (imports) or originating outside the region and shipped overseas via the ports (exports). This accounts for approximately half of the cargo handled by the ports. The other half of the cargo handled by the ports is bound for or originates in the region, and that cargo is transported primarily by truck.[13] Currently, more than 10 million 20-foot containers pass through the Ports of Los Angeles and Long Beach each year, with a cargo value of over $200 billion, or one-quarter to one-third of the nation's waterborne commerce. According to the *Engineering News*-Record, annual trade activity is projected to increase from $157 billion to $253 billion for the Ports of Long Beach and Los Angeles. Imported freight into the Ports of Long Beach and Los Angeles consists primarily of retail goods, while exported freight consists of petroleum products, machine parts, and agricultural products. The top commodities by weight are crude petroleum or natural gas and petroleum or coal products. By value, the top commodities are transportation equipment and food or kindred products.[14]

[13] Alameda Corridor Transportation Authority, Newsroom Fact Sheet, Website: www.acta.org/newsroom_factsheet.htm.
[14] FHWA, Office of Freight Management and Operations.

Exhibit 2-23: The Alameda Corridor

Exhibit 2-24 provides information on freight shipments that have either origins or destinations in California. As shown, trucks on the highways carry the highest tonnage and value of freight shipments, with rail carrying the second highest tonnage and the third highest value.

Exhibit 2-24: Freight Shipments To, From, and Within California
Year 1998, 2010, and 2020

	Tons (millions)			Value (billions $)		
	1998	**2010**	**2020**	**1998**	**2010**	**2020**
State Total	1,360	1,980	2,435	1,218	2,564	4,315
By Mode						
Air	4	7	11	220	522	945
Highway	1,108	1,626	1,988	900	1,866	3,093
Other[a]	37	51	60	5	10	15
Rail	150	230	298	80	147	233
Water	62	65	78	13	19	29
By Destination/Market						
Domestic	1,231	1,750	2,105	956	1,940	3,130
International	130	230	329	262	624	1,184

Source: FHWA, Office of Freight Management and Operations.
Notes: [a]Includes international shipments that moved via pipeline or by an unspecified mode.

Exhibit 2-25 shows freight flows to and from Los Angeles and highlights the importance of the Ports of Long Beach and Los Angeles, as well as the Alameda Corridor, in distributing freight movements to the Western States and throughout the US. Truck traffic is expected to grow throughout the state over the next 20 years. Much of the growth will occur in urban areas and on the Interstate highway system. Truck traffic moving to and from California accounted for 12 percent of the AADTT on the FAF road network. Nearly 32 percent of truck traffic involved in-state shipments, and 2 percent involved trucks traveling across the state and to other markets. Approximately 54 percent of the AADTT were not identified with a route-specific origin or destination.[15]

Current average speeds on the Alameda Corridor are 30-40 mph, compared with 10-20 mph on the branch lines. The shift in rail traffic to grade-separated expressway has increased public safety by eliminating conflicts between rail traffic and street traffic, and between rail traffic and pedestrians.

[15] Ibid.

Exhibit 2-25: Total Combined Truck Flows to and From Los Angeles, CA

Corridor Plan

The Alameda Corridor Transportation Authority (ACTA) is a joint-powers authority created by the Cities of Long Beach and Los Angeles in 1989 to oversee the financing, design and construction of the Alameda Corridor. The Governing Board of ACTA is a seven-member board representing the cities of Los Angeles and Long Beach, the Ports of Los Angeles and Long Beach, and the Los Angeles County Metropolitan Transportation Authority (MTA).

The Alameda Corridor runs through eight different jurisdictions in urban Los Angeles County, and required multiple detailed partnerships between public and private entities.

The Alameda Corridor is a 20-mile freight rail expressway between the neighboring ports of Los Angeles and Long Beach and the Transcontinental rail yards and railroad mainlines near downtown Los Angeles. The centerpiece is the Mid-Corridor-Trench, a below-ground railway that is 10 miles long, 30 feet deep and 50 feet wide. Exhibit 2-26 shows a detail of the Mid-Corridor-Trench, and Exhibit 2-27 is an aerial photograph of the Mid-Corridor-Trench. Exhibit 2-28 shows a photograph of the cross section within the Mid-Corridor-Trench.

Exhibit 2-26: Mid-Corridor-Trench Detail

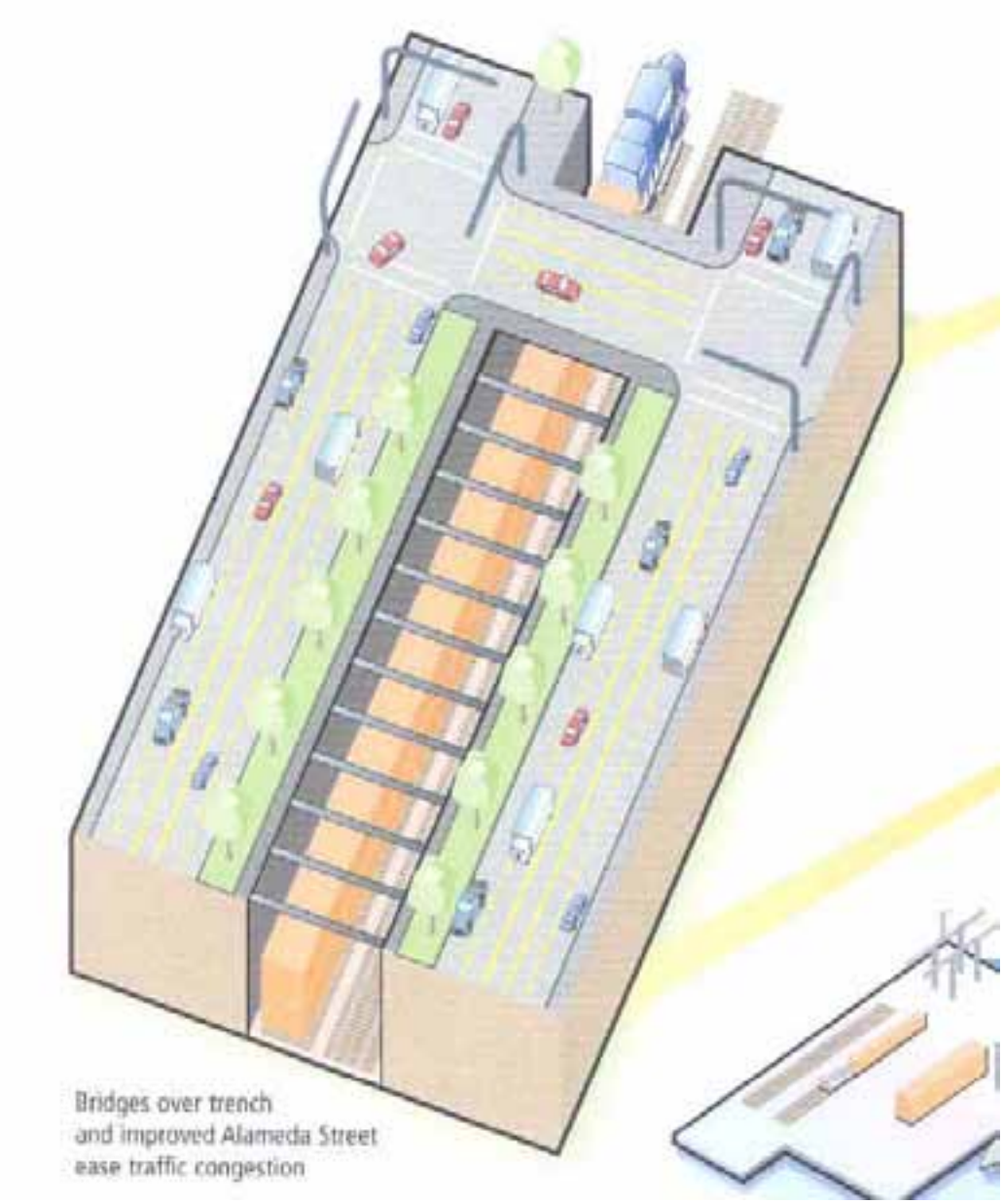
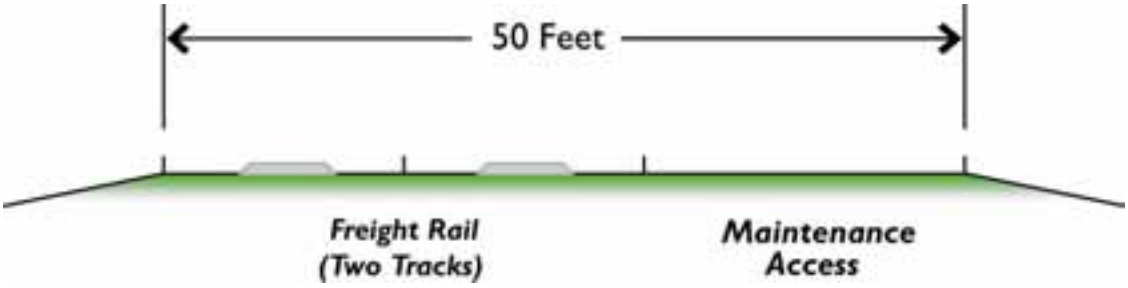


Exhibit 2-27: Aerial View of the Mid-Corridor-Trench

Exhibit 2-28: Mid-Corridor-Trench Cross Section

The Alameda Corridor consists of two rail lines, one in each direction. A typical cross section is shown in Exhibit 2-29.

Exhibit 2-29: Alameda Corridor Typical Cross Section



By consolidated 90 miles of branch rail lines into a high-speed expressway, the Alameda Corridor eliminated 209 highway rail crossings where cars and trucks previously had to wait for long freight trains to slowly pass. It also cut by more than half, to approximately 45 minutes, the time it takes to transport cargo containers by train between the ports and downtown Los Angeles. Additional benefits of the Alameda Corridor include:

- 54% reduction in emissions of idling cars and trucks.
- 28% reduction in emissions of locomotives.
- Increased efficiency of cargo distribution network to accommodate growing international trade.

Although the single rail line shared by multiple railroad companies meant more up-front construction cost, it results in less negative impacts in the long-term. This arrangement was approved through the Use and Operating Agreement between ACTA, Burlington Northern and Santa Fe Railway, and the Union Pacific Railroad in October 1998.

Implementation Schedule

The Alameda Corridor project required 15 years of advanced planning and five years of construction; however, construction was completed on time and within the budget. Permit facilitating agreements with corridor communities and utility providers, as well as the decision to utilize design-build contracts for the Mid-Corridor-Trench, helped ensure the project stayed on schedule. In addition, before construction began, ACTA negotiated separate Memoranda of Understanding with each jurisdiction along the route, detailing expedited permitting processes, routes for construction traffic, and the protocol for construction traffic control.

Additional success for the project was ensured through direct and tangible benefits to the community as a result of the project construction. For example, a project-supported conservation program hired some 300 youths to remove graffiti, plant trees and remove trash along the corridor.

Financing

Since opening in April 2002, the Alameda Corridor has assessed the railroads operators approximately $61 million on 4.6 million 20-foot equivalent container units (TEUs). These fees are used to pay off the bonds sold to assist in construction financing. The railroads pay TEU-based fees for cargo transported on the Alameda Corridor as well as for cargo departing or arriving in the five-county Southern California region by rail, regardless of whether the cargo actually traverses the Alameda Corridor.

The project was constructed at a cost of $2.4 billion by the Alameda Corridor Transportation Authority – a joint powers agency known as ACTA and governed by the cities and ports of Los Angeles and Long Beach and the Los Angeles County Metropolitan Transportation Authority. The Alameda Corridor opened on time and on budget on April 15, 2002. It was funded through a unique blend of public and private sources, including $1.16 billion in proceeds from bonds sold by ACTA; a $400 million loan by the U.S. Department of Transportation; $394 million in grants from the Ports of Long Beach and Los Angeles; $347 million in grants administered by the Los Angeles County Metropolitan Transportation Authority and $130 million in other state and federal sources and interest income. Debts are retired with fees paid by the railroads for transportation of cargo on the Alameda Corridor and for cargo transported into and out of the region by rail even if the Alameda Corridor is not used.[16]

Summary

The Alameda Corridor project successfully consolidated a number of privately owned and operated branch rail lines into a single shared-use corridor. In addition to providing benefits to the freight industry by reducing travel and transfer times between the high-volume Ports of Long Beach and Los Angeles, the consolidation of the multiple branch rail lines eliminated over 200 at-grade railroad crossings, which provide benefits to roadway congestion. The corridor also helps reduce the reliance on highways for freight movement, thereby providing additional benefits to congestion relief.

Through multi-agency coordination and planning, the ACTA was able to secure the necessary funding and support to complete the Alameda Corridor on schedule and within budget. The railroad companies pay fees for the transport of goods, which are used to pay down the debts incurred by the corridor during construction.

[16] Alameda Corridor Transportation Authority, Newsroom Fact Sheet, Website: www.acta.org/newsroom_factsheet.htm.

Highlights of the Similar Initiatives

Exhibit 2-30 provides a comparison of the geometric components, operational requirements, typical uses, and financing methods identified for each of the three similar initiatives discussed above.

Exhibit 2-30: Comparison of Similar Corridor Initiatives

Corridor	Geometric Components	Operational Requirements	Typical Uses	Financing
Trans Texas Corridor Plan	▪ 10 lanes for vehicles and trucks. ▪ Six Rail Lines. ▪ Separate utility right-of-way. ▪ Approximately 1,200 foot corridor width. ▪ Approximately 4,000 mile length. ▪ Lanes separated by unpaved areas.	▪ TXDOT Design Standards. ▪ High Truck Volumes. ▪ Typical highway design criteria (grades, curve radii, traffic volumes). ▪ 80 mph design speed for vehicle traffic, up to 200 mph design speed for high-speed rail. ▪ Few to no areas of substantial grades. ▪ Comprehensive corridor – Vehicle, rail, and utility components.	▪ Person travel. ▪ Goods / freight movement. ▪ Intercity transportation. ▪ Utility transmission. ▪ International / Interstate trade. ▪ Local and regional economic development.	▪ Estimated cost: $145.2 to $183.5 billion. ▪ Various Financing (from State Proposition 15) options include: Exclusive Development Agreements, Toll Equity, Regional Mobility Authorities, and Texas Mobility Fund. ▪ House Bill 3588 and *Drafting the Future* finance plans.
Interstate 81 Development Plan	▪ Approximately 325 mile length. ▪ Four lanes in each direction. ▪ Lanes separated by a rumble strip. ▪ No specified utility or rail component.	▪ VADOT Design Standards. ▪ 23% to 37% truck traffic. ▪ Dual interchanges to separate truck and vehicle movements. ▪ Average of 6% to 7% grades, much along rolling terrain. ▪ Vehicle component only.	▪ Intercity and interstate goods / freight movement. ▪ Person travel. ▪ Truck freight is diverted to rail to reduce congestion.	▪ Tolls (for commercial vehicles only). ▪ State and Federal funding sources. ▪ VPPTA allows tolling on the Interstate.
Alameda Corridor	▪ 20 mile length. ▪ Approximately 50 foot corridor width. ▪ One rail line in each direction. ▪ 10 mile trench, 30 feet deep, through commercial and residential areas.	▪ Currently accommodates 35 train movements per day. ▪ Can accommodate up to 150 train movements per day. ▪ Average speeds of 30 to 40 mph. ▪ Rail component only.	▪ Goods / freight movement. ▪ Eliminated 209 at-grade roadway crossings.	▪ Bonds issued by ACTA. ▪ Loans from USDOT, to be paid through collection of fees levied on the railroads. ▪ Grants from the Ports and LACMTA.

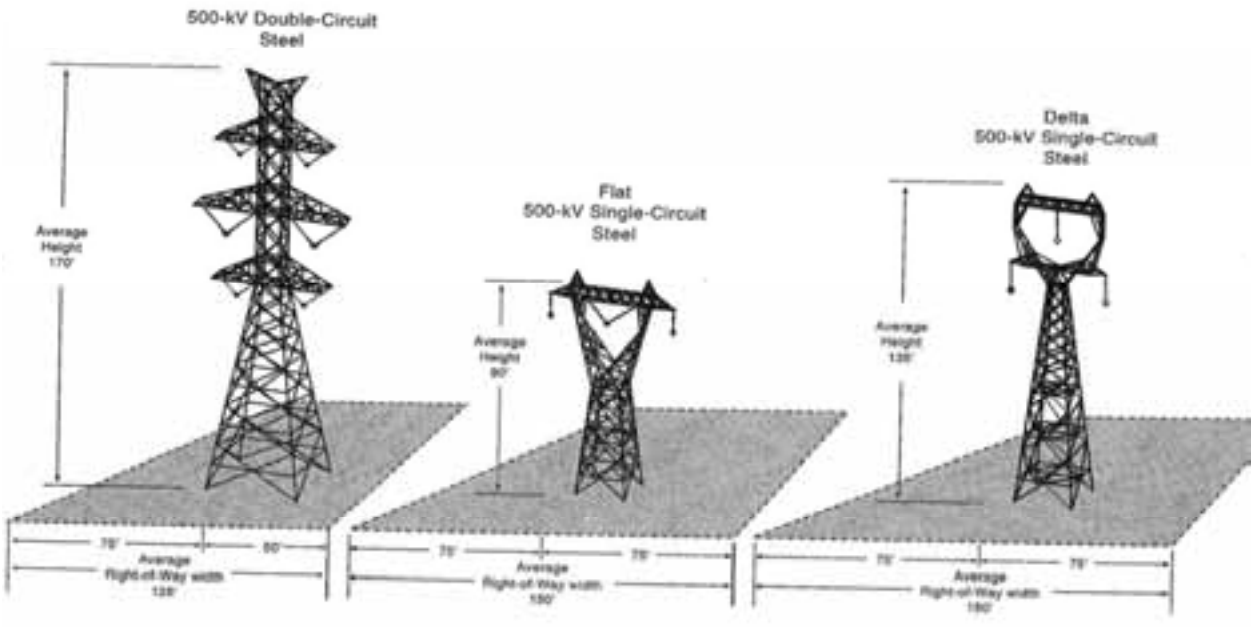
Utility Corridor Components

Throughout the United States there has been limited application or development of large scale utility corridors that combine petroleum, natural gas, electric power, and telecommunications. In the year 2000, nine utility providers in the western United States filed a plan to consolidate over 50,000 miles of high voltage transmission lines and form a regional transmission organization (RTO) known as RTO West.[17] The formation of the RTO, however, is intended to streamline the utility rates, and not to facilitate construction of the corridor. In fact, RTO West will be a non-profit independent system operator and will not initially own transmission wires and poles; nor will they build, maintain or repair facilities.[18]

A recent study by the United States Department of Energy Office of Fossil Energy examined the environmental impacts of an electric power transmission line through southern Arizona. Approximately 17 miles of the proposed transmission line would follow or cross a petroleum natural gas pipeline ROW.[19]

Exhibit 2-31 below shows the average ROW widths associated with 500-kV electric power transmission lines, used for the Schulz-Hanford transmission line project in Washington State.

Exhibit 2-31: ROW Widths for Electric Power Transmission Lines



[17] United States Department of Energy, Bonneville Power Administration, November 2000.
[18] Ibid.
[19] United States Department of Energy, Tucson Electric Power Company Sahuarita-Nogales Transmission Line Draft Environmental Impact Statement, July 2003.

CONCLUSION

The information contained in this chapter represents the early analysis of the feasibility assessment of the Washington Commerce Corridor. The chapter has established the following:

1. *The corridor concept and components* – As a preliminary basis for the feasibility analysis, this chapter has defined the corridor in terms of potential uses, design standards, right-of-way requirements, and minimum and maximum conceptual corridor cross-sections. The corridor concept and components presented in this chapter are preliminary in nature, and reflect the feasibility nature of this study.

2. *Probable alignment opportunities* – A second key component of the WCC feasibility analysis presented in this chapter are the probable corridor alignment opportunities. Using a broad-based review of major environmental, topographic, geometric design, and socio-economic factors, a number of probably alignment opportunities have been presented. These alignment opportunities have been developed to minimize impacts to the factors listed previously; however, it is understood that all reviews to this stage have been at the macroscopic level. As specific corridor alignment opportunities are examined further, in combination with the refinements to the corridor components, refinements to specific alignments alternatives will continue.

3. *Other similar initiatives* – This chapter presents examples of other similar initiatives undertaken throughout the United States, in order to summarize the current "state of the practice." Each of the similar initiatives discussed includes one or more of the components of the WCC, and an exhibit is included to compare these components and primary features.

CHAPTER THREE
Potential Environmental and Community Issues

INTRODUCTION

The purpose of this Chapter is to provide an overview of the potential environmental and community issues related to the development of the WCC. The Chapter seeks to first identify those resources and areas that may present a fatal flaw to the WCC project and offer recommendations about possible avoidance and mitigation of these issues. The next step is to identify specific environmental resources in proximity to the potential corridor alignments that may be affected by the WCC project. Following this, a discussion of environmental review and permitting provides recommendations of more efficient and streamlined strategies in performing the environmental review and permitting of the WCC.

The second major component of the chapter is a review of the potential community issues that could be affected by the WCC. This includes the identification of specific issues and land uses that may be impacted by the project, an overview regarding the consistency of the WCC with Washington's Growth Management Act (GMA) and county comprehensive plans, and a community-based economic analysis highlighting the benefits and costs of the WCC to the affected communities of Washington State.

Both components were evaluated along a 5 mile wide, north/south aligned corridor. This assessment area was chosen in response to the Washington State Legislative initiative to study the possibilities of locating a north/south aligned commerce corridor in the region west of the Cascade Mountains. A 5-mile corridor is sufficiently broad to allow for a thorough survey of issues that may be encountered should the WCC continue into the planning stages.

It is important to note that this study has received considerable public comment. Though varied in its exact nature, much of the feedback can be summarized into the following major areas:

- Impacts/costs to the natural environment and wildlife
- Quality of life concerns
- Fear of uncontrolled growth and sprawl along the WCC alignment
- Possible loss of private property and subsequent dislocation of families, businesses, and small towns
- Possible loss of a valuable natural area

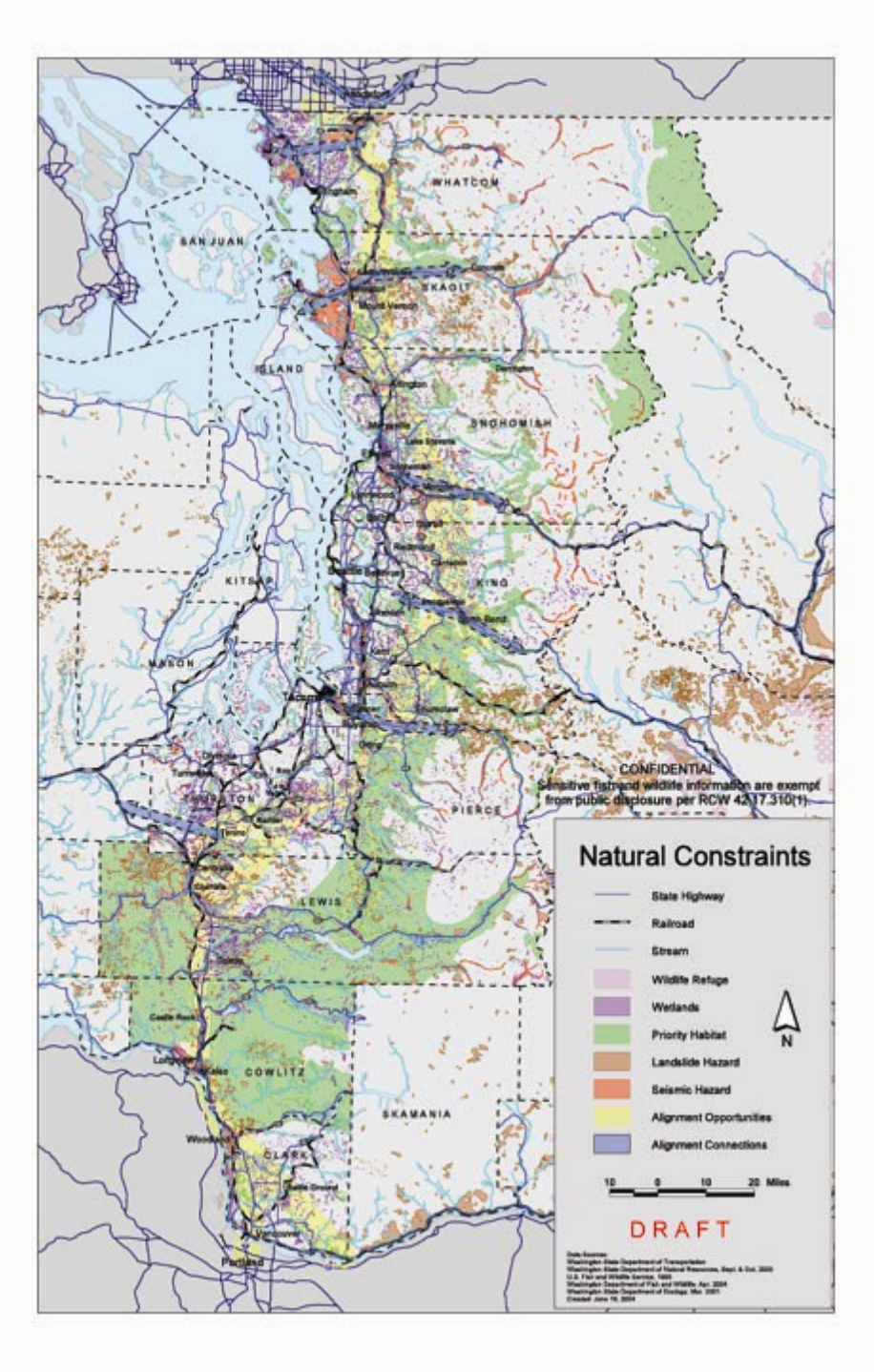
This chapter does not address these areas in a comprehensive manner. However, it does organize across these general themes and introduce concepts for further study as deemed necessary.

Potential Fatal Flaws

During the course of the analysis, effort was made to identify specific areas and resources that may result in a fatal flaw to the WCC project. These issues and resources would be situations where the current protection level, uses, and mitigations costs (if the corridor would be located in/around them) would force the abandonment of the WCC in that area and would result in categorizing the route as unfeasible. Segments of the potential WCC area pass through federally-protected lands and species habitat, in addition to areas where current zoning and uses would be in direct conflict with the corridor. However, many of these areas/resources could be bypassed or avoided by locating the corridor where impacts to these resources would be mitigated or would be recognized as negligible or non-existent.

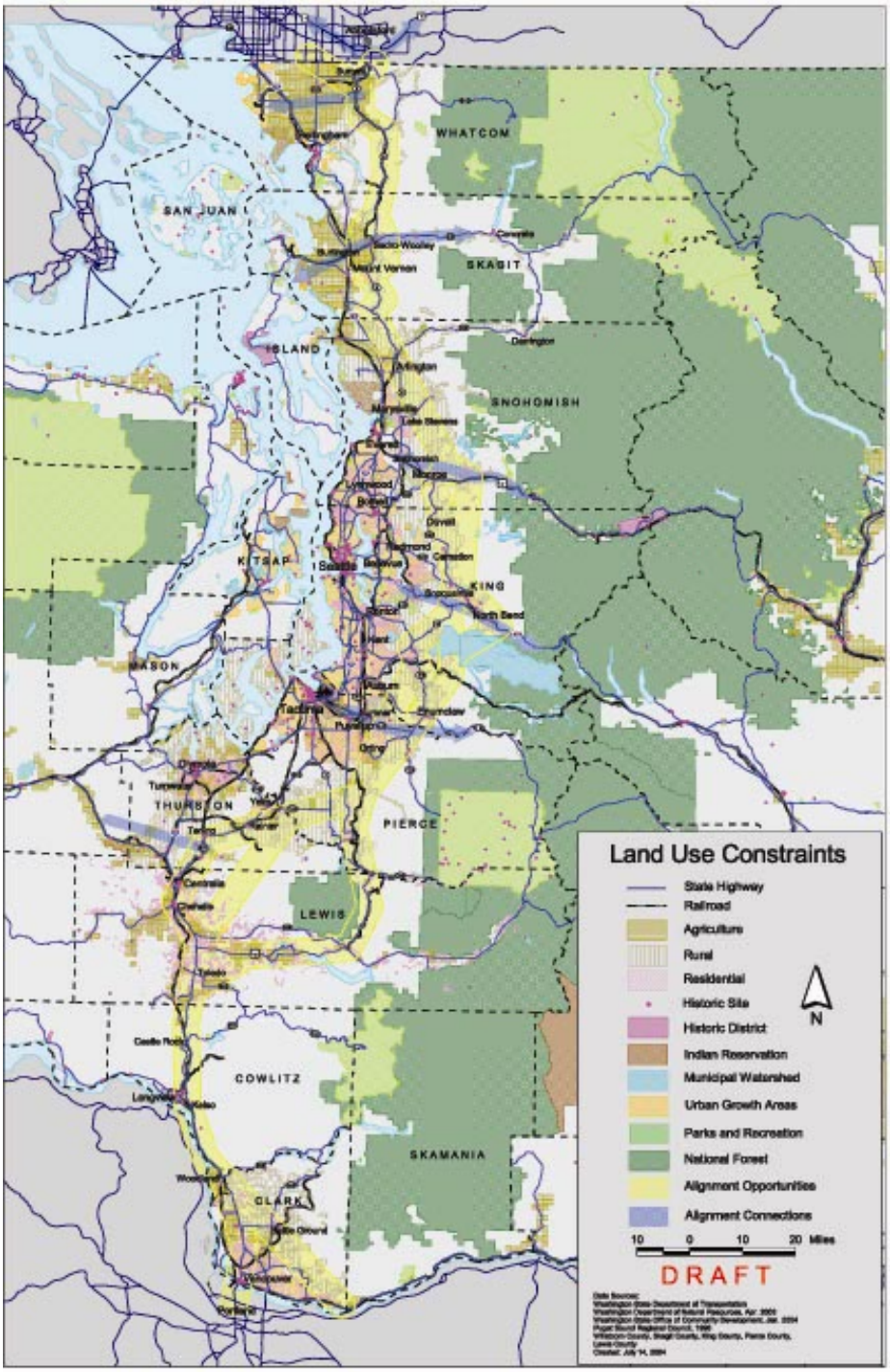
Only one major resource was identified that would significantly decrease the feasibility of a corridor route and where any mitigation efforts and costs would outweigh any potential benefits the WCC may offer. This resource is the Cedar River Watershed, which supplies the drinking water to approximately 1.3 million people in the Seattle area. One alternative 5-mile wide corridor area passes through 30,605 acres (48 square miles) of this municipal watershed. This represents 34 percent of the watershed's approximately 90,000 acres, although an actual alignment would encompass a much smaller area. The potential impacts to this area from the development of a regional transportation system such as the WCC would be significant and represent a fatal flaw for this section of the corridor. The selection of an alternate route, such as the one located to the west, would be necessary (see Exhibit 3-2).

Exhibit 3-1*: Natural Constraints



* This map is shown for illustrative purposes only- larger copies are available by request from WSDOT

Exhibit 3-2*: Land Use Constraints



* This map is shown for illustrative purposes only- larger copies are available by request from WSDOT

Potential Environmental Issues

The 5-mile wide WCC area crosses over 2,297 square miles of land from Vancouver, WA to Sumas, WA (see Exhibits 3-1 and 3-2). Beneath this corridor footprint lie abundant natural resources that could influence the overall feasibility of the corridor. The following discussion provides a general overview of the potential impacts to key natural resources of western Washington. To facilitate the discussion, the corridor itself is broken up into three main sections that include three counties in each section.

- Section A includes Whatcom, Skagit, and Snohomish counties and includes a corridor footprint area of 593 square miles, or roughly 26 percent of the total potential corridor area.
- Section B includes King, Pierce, and Thurston counties, and includes a corridor footprint of 864 square miles, or approximately 38 percent of the total area.
- Section C includes Lewis, Cowlitz, and Clark counties, and includes a corridor footprint area of 840 square miles, or 36 percent of the total WCC area.

The potential corridor area identified for testing the project's feasibility for this specific study is 5 miles wide; this represents a footprint over 35 times the width of the actual maximum alignment width of 710 feet identified in "*Chapter Two, Definition of Project Features*" for all the uses of interest. This was done to identify additional potentially affected resources and communities in addition to offering options and flexibility in locating an alignment within the corridor that would decrease the impact to a given resource or area. The corridor area does not represent any actual or final potential alignments.

The analysis in this section provides a broad overview of the types of resources that may be impacted by the proposed WCC and generally quantifies the overall magnitude, extent, duration, and probability of impacts on these resources. This exercise only represents an initial step in the process; further study would be necessary to determine additional site-specific impacts and resources and to quantify these impacts and their influence on the overall corridor's feasibility.

Natural Constraints Identified

To determine the influence of natural resources on the overall feasibility of the WCC, specific natural constraints must first be identified that provide examples of key resources and issues that could be impacted by such a project. The following list of natural constraints has been identified for this analysis and provides a starting point for additional in-depth study. While the following list does not represent a comprehensive catalogue of the natural resources of western Washington, it does allow for a general measurement of the overall impact to corridor feasibility. The identification and location of natural constraints in relation to the corridor area may be found in Figure 1.

- Streams
- Wetlands
- Priority Habitat
- Landslide Hazards
- Seismic Hazards
- Wildlife Refuges

The measurements of the constraints listed above consist of percent cover estimates based on Geographic Information System (GIS) layers obtained from key agencies and affected counties in Washington State. The intent is to provide a general level of impact that the corridor would have on any given resource. Further study could identify specific levels of impacts on a given resource based on individual modal components of the proposed corridor to provide a comparison of the impacts' influence on specific component feasibility.

Natural Constraints Measured

Streams

As a result of the unique hydrology of western Washington, numerous streams and rivers cross the area covered by much of the proposed corridor. These areas provide critical habitat for a vast number of species, supply water to the people of Washington, and offer numerous recreational opportunities for many individuals.

To determine a general level of impact from the proposed WCC area, the numbers of stream crossings were identified for each corridor section. Stream crossings are one indication of the potential impacts a project such the WCC would have on shoreline and aquatic resources in proximity to these crossings. The data identifying the streams was developed by Ecology under the Shoreline Management Act of 1971 and includes streams with a mean annual flow greater than 20 cubic feet per second (cfs). The coverage was published in April of 1994.

The WCC would potentially cross a total of 177 streams in the effected areas of western Washington. This includes 46 potential crossings in Section A (Whatcom, Skagit, and Snohomish), 75 potential crossings in Section B (King, Pierce, and Thurston), and 56 crossings in Section C (Lewis, Cowlitz, and Clark). As with other resources in this study, potential impacts to streams from WCC construction would be directly correlated with the type of mode or utility chosen for a given area. In some cases, it would be possible that only one or two of the modes would be chosen, therefore changing the potential impacts to those effected streams. For example, transmission lines may have considerably less impact to a stream than a pipeline in terms of both construction and maintenance. In any event, without avoidance and mitigation, the potential for adverse impacts on streams is substantial.

Wetlands

Wetlands are generally defined as lands where saturation with water is the dominant factor determining soil development and the types of plant and animal communities living in the soil and on its surface (Cowardin, December 1979). Wetlands serve as a significant food source for numerous animal species. In addition, they provide humans with natural water quality improvement, flood protection, and shoreline erosion control. Wetlands are protected by regulations such as Section 404 of the Clean Water Act and are regulated and permitted in Washington State primarily by the Army Corps of Engineers and Ecology.

The National Wetlands Inventory (NWI) classifies wetlands using the Cowardin Classification System. This includes the five main classifications, Marine, Estuarine, Riverine, Lacustrine, and Palustrine. The types of wetlands are then divided into subsystems based on substrate, flooding regime, dominant vegetation, and specific plant and animal forms.

The 5-mile wide corridor area encompasses a total of 102,109 acres of wetlands. The potential area of the WCC includes 22,903 acres of wetlands in Section A, or roughly 6 percent of the total corridor area in Section A. Section B includes 33,766 acres, or approximately 6 percent of the total area in Section B. Section C includes 45,440 acres of wetlands, or 8 percent of the total area in Section C. The breakdown of wetland type in each section is provided in Exhibit 3-3.

Exhibit 3-3: Wetland Types in Corridor Area by Section

Corridor Section	Wetland Types (ac.)			
	Riverine	Palustrine	Lacustrine	Section Totals
Section A	4,738	16,313	1,852	**22,903**
Section B	3,031	24,228	6,507	**33,766**
Section C	10,697	28,870	5,873	**45,440**
Type Total	**18,466**	**69,411**	**14,232**	**102,109**

The GIS layers that provided the wetland data for this analysis were developed by the US Fish and Wildlife Service (USFWS) as part of the National Wetlands Inventory. The data were published in May of 1996 and includes sources from 1971-1992.

Priority Habitat

Developed by the Washington Department of Fish and Wildlife (WDFW), the priority habitat and species database includes those habitat types with unique or significant value to fish and other wildlife species. Priority species are those species that require special efforts to ensure their continued existence as a result of decreasing numbers, habitat alternation, vulnerable populations, or those that are of commercial, recreational, or tribal importance. The layers also include locations of federal and state listed species, migration corridors, breeding territory, and other related themes. The data used for this analysis were published in 1990 and are based on research efforts, field surveys, and observations of WDFW biologists. It is not intended to be a complete inventory of the current habitat and species within Washington State.

The potential WCC area includes 716,681 acres of priority habitat, or approximately one-half of the entire proposed corridor area. Section A includes 54,879 acres of priority habitat (14 percent of the total section area), Section B includes 228,448 acres of priority habitat (approximately 41 percent of the total section area), and Section C includes 433,314 acres of priority habitat (roughly 80 percent of the total area). The rationale for this figure lies in the definition of priority habitat, which includes general areas such as oak woodlands, wetlands, riparian zones, and elk habitat. For example, in Section C, almost 80 percent (340,760 acres) of the land classified as priority habitat is identified as elk habitat and oak woodland. For a complete list of the specific species and habitats identified in the proposed corridor area, please see Appendix A.

Although the species and habitats identified in the data layers are important resources of Washington State, many of the individual species and areas are not currently designated for state or federal protection. The data are provided to introduce the types of species and habitat the proposed corridor may impact, and is not presented as an exhaustive list or a complete inventory.

Landslide Hazards

Landslides represent a significant hazard along the hillsides and shorelines of Washington State. Factors such as geology, gravity, weather, wave action, groundwater, and human development influence the location and severity of landslides. In particular, the areas around Puget Sound are highly susceptible to landslides as a result of steep slopes made of unconsolidated glacial deposits. As a large, multi-modal transportation system, the extent of current landslide hazards in relation to the proposed corridor area could have a significant impact on the corridor's overall feasibility.

Of the total potential WCC area, 33,934 acres (53 square miles), or 2 percent, is identified as a landslide hazard area. These areas include locations where mass wasting events (landslides) have occurred, including soil slips, slumps, or failures. Section A includes 6,665 acres of landslide hazards, predominately located along Highway 9 in Whatcom and Skagit counties (see Figure 1). This area represents roughly 1 percent of the total corridor area in this section. Section B includes 10,088 acres of landslide hazard areas, the majority of which are spread out throughout the corridor in individual locations. This area occupies approximately 2 percent of the total corridor area in this section. Section C includes 17,179 acres of landslide hazard area, or about 3 percent of the total corridor area in this section. The majority of the landslide hazard area is located in the middle section of the three possible corridor routes from Lewis County to Thurston County (see Figure 1).

The data used to categorize the landslide hazards along the corridor area comes from the Washington Department of Natural Resources (DNR), Forest Practices Division, and was published from compilation of data sources in October of 2003.

Seismic Hazards

Each year in Washington over 1000 earthquakes are recorded, and 15-20 of these are strong enough to be felt by humans. The greatest concentrations of these earthquakes are located in the Puget Sound lowlands and the western Cascade Ranges from Olympia to the Canadian Border. Seismic hazards should be of particular concern to any regional transportation system because, if significant enough, they could represent a fatal flaw for the corridor, or considerably decrease the corridor's overall feasibility. To identify the potential seismic hazards along the corridor, areas having high soil liquefaction were identified. Soil liquefaction decreases the strength and stiffness of a soil by earthquake shaking, forcing solids to behave more like liquids and causing significant damage to those structures built on the soil. Providing the location of soils with a high liquefaction hazard identifies those areas that should be avoided to decrease the impact of seismic events (see Figure 1 for general locations of these areas).

The potential WCC area includes a total of 177,178 acres of high seismic hazard areas (277 square miles), or 12 percent of the total area of the corridor. Section A includes 70,077 acres of these lands (approximately 18 percent of the total section area), predominately located along Highway 9 in Whatcom County, around the town of Sedro-Woolley in Skagit County, and around the towns of Arlington and Monroe in Snohomish County. Section B includes 46,845 acres of lands classified as high seismic hazards, or about 8 percent of the total area in this section. These areas are located throughout Section B, but occur mainly along Highway 203 from North Bend to Duvall. Section C includes 60,256 acres of high seismic hazard lands, or approximately 11 percent of the total section area. These lands are located around the towns of Toledo in Lewis County,

Longview and Kelso in Cowlitz County, and the town of Woodland, which straddles Cowlitz and Clark Counties.

The data used to identify areas that have high soil liquefaction are a product of the DNR, Geology and Earth Resources Division. The preliminary data were published in September of 2003 and are scheduled for a revision in the fall of 2004.

Wildlife Refuges

Washington State has 29 designated National Wildlife Refuges. These areas are located throughout the state and exist for the conservation, management, and where appropriate, the restoration of fish, wildlife, and plant communities. They include the following areas:

- Cold Springs NWR
- Columbia NWR
- Conboy Lake NWR
- Conboy NWR
- Copalis NWR
- Dungeness NWR
- Flattery Rocks NWR
- Franz Lake NWR
- Grays Harbor NWR
- Hanford Reach National Monument/
- Saddle Mountain NWR
- Julia Butler Hansen NWR
- Lewis & Clark NWR
- Little Pend Oreille NWR
- McKay NWR
- McNary NWR
- Mid-Columbia River NWR
- Nisqually NWR
- Pierce NWR
- Protection Islands NWR
- Quillayute Needles NWR
- Ridgefield NWR
- San Juan Islands NWR
- Steigerwald Lake NWR
- Steigerwald Lake NWR
- Toppenish NWR
- Turnbull NWR
- Umatilla NWR
- Willapa NWR
- Willapa NWR Complex

Along with the Federal National Wildlife Areas, Washington also has wildlife refuges owned by state and county agencies including designated wildlife parks and areas located throughout the state.

The proposed WCC area passes through a total of 3,528 acres of wildlife refuges and parks. Of these, 377 acres are located in Section A, 1,432 acres are located in Section B, and 1,719 acres are located in Section C. The following table provides a breakdown of the type and extent of the wildlife refuges in each corridor section.

Exhibit 3-4: Wildlife Refuges in Each Corridor Section

Section A			
Owner	**Management**	**County**	**Acres**
County Government	Wildlife Refuge	Snohomish	125
County Government	Wildlife Refuge	Snohomish	17
Washington State	Wildlife Refuge	Snohomish	9
Washington State	Wildlife Refuge	Snohomish	226
Section B			
Owner	**Management**	**County**	**Acres**
Washington State	Cherry Valley Wildlife Area	King	380
Washington State	Stillwater Wildlife Area	King	502
County Government	Northwest Trek Wildlife Park	Pierce	550
Section C			
Owner	**Management**	**County**	**Acres**
US Federal Government	NWR	Clark	356
US Federal Government	NWR	Clark	6
US Federal Government	NWR	Clark	114
Washington State	Wildlife Refuge	Clark	70
Washington State	Wildlife Refuge	Clark	138
US Federal Government	NWR	Clark	1,035
		Total Acreage:	**3,528**

Other Environmental Impacts and Natural Constraints

As previously mentioned, the constraints listed above do not represent an exhaustive list of all the potential resources that may be impacted by the proposed corridor area. Other resources and issues should be addressed in further studies to increase the level of information on overall impacts and to identify more specific and individual influences on corridor feasibility. Examples of these other environmental impacts include:

- Impacts to salmon spawning habitat and other species-specific impacts
- Noise impacts
- Impacts from developing floodplain areas and general flood-related impacts
- Volcanic instability/eruptions
- Air quality impacts (specifically in constrained valleys)
- Wildlife migration corridors

Impact Analysis – Natural Constraints

To provide general conclusions regarding the impact of the identified natural constraints on overall corridor feasibility, four main measurement parameters were identified to assess the general level of potential impacts. They include magnitude, extent, duration, and probability of impact. Within each of these parameters, general ratings of high, medium, and low measure the overall

level of the parameter. In general, the higher the rating, the greater negative impact on overall feasibility

The following general threshold definitions provide the framework of the impact analysis and were developed with the intention of qualitatively measuring the overall relationship with corridor feasibility.

Magnitude	
High	The WCC would substantially degrade and threaten existing natural resources within and around the corridor footprint. Impacts would destroy pristine areas and extirpate species, migration routes, and other natural resources.
Medium	The WCC would partially degrade or threaten existing natural resources within and around the corridor footprint. Impacts would be at higher levels that are currently occurring and some specific impacts could be directly attributed to corridor-related components.
Low	The WCC would slightly degrade or threaten existing natural resources within or around the corridor footprint. Impacts would be similar to other abiotic factors currently affecting these resources.

Extent	
High	WCCs impacts would occur throughout the corridor and be generally classified as widespread impacts to the natural resources of western Washington.
Medium	WCCs impact would occur at multiple sections of a given natural resource along the corridor or would occur cumulatively at a general level throughout the corridor. Impacts would be expected to extend beyond the corridor footprint to include natural resources in the general areas surrounding the corridor.
Low	WCCs impact would be limited to isolated natural areas/resources along the corridor and would not be expected to extend to natural resources beyond corridor right-of-way areas.

Duration	
High	Impacts from the WCC on natural resources would occur or last through the life of the project or be generally recognized as permanent.
Medium	Impacts from the WCC on natural resources would occur during construction and the general post-construction period, with little or no impact occurring in the long-term.
Low	Impacts from the WCC on natural resources would be limited to construction and would not generally occur after completion of the WCC

Probability	
High	Impacts on natural resources from the WCC will likely occur regardless of outside factors or circumstances.
Medium	Impacts from the WCC on natural resources may occur or would be possible depending on outside factors or circumstances.
Low	There would be little or no likelihood that impacts to natural resources would occur.

At this stage, it is difficult to identify measurable thresholds within a specific natural constraint using primarily percent-cover data and without knowing more about a specific projected corridor location. As part of a feasibility-level analysis, this chapter provides a general overview of potential impacts that may occur as a result of a concept such as the WCC and attempts to generally qualify those impacts to provide a base from which to move forward to further analyses. It is during this potential further study where more detailed, quantitative data and results may be obtained.

However, the following table represents an attempt at qualifying each of the potential impacts by assigning a general rating for each threshold. From here, cumulative ratings can be developed that provide a more consolidated relationship between potential environmental impacts and overall corridor feasibility.

Exhibit 3-5: Threshold Rating for Natural Constraints

Natural Constraint	Threshold and Rating			
	Magnitude	Extent	Duration	Probability
Streams	**Medium**	**Medium**	**Medium**	**High**
Wetlands	**High**	**Medium**	**High**	**High**
Priority Habitat	**High**	**High**	**High**	**High**
Landslide Hazards	**Medium**	**Low**	**Low**	**Medium**
Seismic Hazards	**Medium**	**Low**	**Low**	**Medium**
Wildlife Refuges	**High**	**Medium**	**High**	**High**

To provide a further step in qualifying the impacts relationship to feasibility, the following table organizes and rates the thresholds according to a cumulative measurement of each natural constraints identified in this chapter. Using estimated impacts cumulatively from the identified natural constraints, an overall rating was assessed for each of the four thresholds. Overall, impacts would be expected to reach a high level for such a large scale and geographically extensive project, even accounting for mitigation that would be required by existing environmental regulations.

Exhibit 3-6: Cumulative Ratings for Natural Constraints

Threshold	Overall Ratings	Conclusions
Magnitude	Medium-High	As a result of WCC construction, it would be likely that impacts to natural constraints in and around the corridor would be at a greater level that those impacts currently occurring. Specifically, environmental impacts on species habitat and migration corridors could be substantial and would be directly attributed to WCC construction, and for some resources, could significantly degrade or threaten the resource.
Extent	Low-Medium	Although impacts to natural resources would be expected as a result of WCC development, it would be unlikely that these direct impacts would be widespread assuming the current environmental regulations are adhered to.
Duration	Low-High	As a result of the development and construction of the WCC, direct impacts to environmental resources would likely exist in the short-term, and some resources could be affected following post-construction. It would be unlikely that, for most resources, direct impacts would be considered long-term and permanent under current environmental regulations. However, some resources may be impacted in the long term and some impacts could be considered permanent.
Probability	Medium-High	There would be a significant probability that impacts to the cumulative natural constraints would occur. It would be highly unlikely that the development of a regional transportation system would not impact these resources/areas to some degree.

Review and Permitting

The purpose of this section is to identify possible approaches for review and permitting of the Washington Commerce Corridor. As the potential environmental and community impacts of such a complex and substantial transportation project are many, and the process for obtaining approvals complex, the report discusses these issues on a broad scale, attempting to provide a starting point for further detailed analysis. Although the issues are interrelated, environmental review and permitting will be addressed separately to provide a more clear and concise description of each issue.

Existing Environmental Review

The current environmental review framework in Washington is based on the State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA) for those projects that include federal components. SEPA provides the framework for agencies to consider the environmental consequences of a proposal before taking action and gives agencies the ability to condition or deny a proposal due to possible significant adverse impacts. Following a determination of significance (DS), an environmental impact statement (EIS) is prepared if the lead agency determines a proposal is likely to have significant adverse environmental impacts. The EIS provides a discussion of significant environmental impacts, reasonable alternatives, and mitigation measures that would avoid or minimize adverse impacts. Following this, the agency decision-maker must consider the environmental, technical, and economic information when deciding whether to approve a proposal.

For those projects that include federal components such as funding or permits, a NEPA analysis is required. The NEPA process consists of an evaluation of the environmental impacts of a federal action including its alternatives. There are three possible levels of analysis including categorical exclusion determination, preparation of an environmental assessment/finding of no significant impact (EA/FONSI), and/or preparation of an EIS. The NEPA EIS process is similar to the EIS process under Washington's SEPA. Scoping is performed, a draft EIS is issued, and lastly, a final EIS is prepared. After completion of the EIS, the federal agency typically issues a record of decision that includes the decisions made, the alternatives considered, and the factors that were considered in reaching a decision. The environmental documents are disclosure documents which agencies with jurisdiction use in making decisions about approvals and permits.

Many projects also require approval from both State and Federal agencies. In this situation, state and federal lead agencies are encouraged to work together as co-lead agencies in issuing a joint NEPA/SEPA EIS. State and Federal agencies may also use existing SEPA or NEPA documents for incorporation into their respective documents.

Existing Environmental Permitting

The primary agencies responsible for environmental permitting in Washington include:

- The Department of Ecology
- Department of Fish and Wildlife
- Department of Health
- Department of Natural Resources

- The US Army Corps of Engineers
- Local air quality authorities.

These agencies permit actions that have the potential to impact the natural and human environment of Washington State. Federal agencies, such as the Army Corps of Engineers, permit activities under their respective jurisdictions, and normally involve applicable state agencies in the process. In addition, the Environmental Permitting Services arm of the Washington Office of Regulatory Assistance assists citizens, businesses, and project applicants understand the environmental permitting processes. Regional staff members assist in coordinating permit applications for large, complex projects. The Department of Ecology (Ecology) is recognized as the state's principal environmental management agency and is generally involved in the review or issuance of major environmental permits in some capacity.

The environmental permits required in Washington are generally resource-based, and include the following major permit types:

- Air Quality Permits
- Aquatic Resource Permits
- Archaeology and Historic Preservation Permits
- Federal Requirements/Permits
- General Permits
- Land Resource Permits
- Livestock Permits
- Local Permits
- Pesticide Permits
- Tribal Requirements
- Waste and Toxic Substance Permits
- Water Quality Permits
- Water Resource Permits
- Wetland Permits

The permit process is unique to each agency and permit, but most permits require the following broad steps: determination of permit requirement, application submittal, agency review of application, public comment period, agency finding, appeal phase, subsequent review phase, and lastly, permit issuance or denial.

At a minimum, permitting the entire WCC under the existing framework would include the use of over 30 types of state and federal permits normally required for a transportation project. Listed in the WSDOT Environmental Procedures Manual, these permits and approvals highlight the complex nature of permitting transportation-related projects. Assuming the complexity of the proposed WCC, one can assume that the majority of these permits would be required at some point of the project. The permit types are listed below in Exhibit 3-7.

Exhibit 3-7: Types of State and Federal Permits/Approvals Required for Transportation Projects

- Section 4(f)
- Section 6(f)
- Section 106
- Critical/Sensitive Areas Ordinances
- Clearing, Grading and Building Permits.
- Operating Permit for Surface Mining
- Permit or Approval Joint Aquatic Resource Permits Application (JARPA)
- Section 9 (Bridge)
- Section 10
- Hydraulic Project Approval
- Section 401 Water Quality Certification
- Section 402 NPDES Permit
- Section 404 Individual and Nationwide Permits
- State Waste Discharge (SWD) Permit
- Easement over Navigable Water
- Sewage Facilities
- Temporary Water Quality Disturbance
- Water quality modification –herbicide use
- Coastal Zone Management Certificate
- Temporary Air Pollution
- New Source Construction
- Shoreline Permits
- Floodplain Development Permit
- Water Rights Permit
- Water System Project Approval
- Underground Injection Control
- Threatened and Endangered Species
- Fish Habitat Enhancement Project Application
- Aquatic Resource Use Authorization
- Wetlands Report
- Noise Permit
- Hazardous Waste Tracking Form
- Monument Removal
- Wild and Scenic Rivers
- Farmland conversion
- Forest Practices Application
- Archeological Resources Protection Permit
- Airport/Highway Clearance

The Environmental Procedures Manual also includes a series of checklists for Discipline Reports (air, water, socioeconomics, etc) to address the information needs of the various permits and the NEPA/SEPA process. These checklists serve as the starting point for preparing environmental documentation on a project.

The WCC would also require permits and approval for the utilitys-related components of the corridor, including petroleum and natural gas pipelines, power lines, and telecommunication lines. At the state level, several of these components fall under the authority of the Energy Facility Site Evaluation Council (EFSEC). EFSEC coordinates the evaluation and licensing steps for siting major energy facilities in Washington, and functions as a one-stop energy licensing agency. EFSEC's application and certification process includes the following primary steps:

- Application Submittal
- Application Review
- Initial Public Meeting
- Land Use Consistency Hearing
- Environmental impact statement
- Adjudicative proceedings and permits review
- Recommendation to the Governor

Following approval of the Site Certification Agreement (SCA), EFSEC is responsible for regulating the construction and operation of the facility/project. The Council has the regulatory authority to enforce compliance with state laws and the SCA through fines or by stopping construction or operation of the project. EFSEC continues this oversight responsibility through restoration of the site after the project has been completed.

WCC Challenges Under Existing Environmental Review

Existing environmental review processes in Washington, although functional, are currently not equipped to handle a project of this scope. As a result of the WCCs multiple components such as rail, highway, pipeline, transmission lines, current review methods would create a fragmented approach, increasing project delays and costs for those involved.

A new, streamlined process would serve to both expedite the review process while striving to protect and enhance Washington's State's natural environment. On a conceptual level, there are numerous options that could streamline the review process, creating an efficient and responsible review framework for the WCC. What is required, however, is to provide environmental review options that have the ability to offer practical solutions for facilitating project review for the WCC. By also incorporating existing national and state environmental streamlining processes, the WCC could benefit from strategies already in place.

Existing Streamlining Activities for Review and Permitting of Transportation Projects

TEA-21 - TEA-21 directs the Secretary of the U.S. Department of Transportation to work with the heads of the other federal agencies to streamline the environmental review of transportation projects. TEA-21 suggests the development of a Memorandum of Understanding (MOU) between the environmental agencies and the Department of transportation outlining a streamlined review process including agreed-upon shortened review time frames. It also includes a section on Environmental Streamlining Provisions (Section 1309) that aims to coordinate federal agency involvement in major highway
projects under NEPA to address concerns relating to delays in implementing projects, unnecessary duplication of effort, and added costs associated with the conventional process for reviewing and approving surface transportation projects. TEA-21 was reauthorized in 2004.

National environmental streamlining action plan – In 2002, the FHWA developed a national action plan that outlines activities to streamline environmental initiatives including: expedited reviews, flexible mitigation, cross-training, evaluation measures, and dispute resolution. The items on the action plan would lead to reduced timelines, improved interagency coordination, enhanced environmental outcomes, and cost savings.

As national strategies, the above streamlining plans could serve as a starting point for a environmental streamlining program for the WCC. Depending on the involvement of federal agencies in the WCC process, these planning guidelines themselves could be initiated early in the process to serve as a guide for the chosen review entity.

In Washington, there have also been efforts to introduce the concept of streamlined environmental review processes into transportation-related projects. The 2000 Northwest Transportation/Environmental Streamlining Summit provided a base to further environmental streamlining related to transportation projects. The summit focused the objectives of the TEA-12 legislation onto agencies and projects in the northwest. The summit developed environmental streamlining strategies and drafted the Northwest Cooperative Agreement on Environmental Streamlining and Interagency Cooperation on Environmental and Transportation Issues. This agreement was signed by agency representatives from Oregon, Washington, and Idaho, and served to develop principles of agreement including process improvements, data gathering, data development, information sharing, and resources. Exhibit 3-8 summarizes the principles of agreement that were identified at the summit.

Exhibit 3-8: Northwest Cooperative Agreement Principles

Process Improvements

- Develop processes that assure the timely development of cost-effective and environmentally sound transportation plans and projects. These processes should emphasize early involvement and the use of concurrent reviews of plans and projects.
- Recognize effective and successful coordination processes and use them as a basis for improving coordination and cooperation among stakeholders.
- Develop regional and state specific interagency agreements and mutually agreed upon standard operating procedures. Programmatic approaches and the certification of state programs based upon performance audits should be considered as a means to streamline processes.
- Agencies should recognize regional state priorities and establish interagency review time frames.
- Establish an acceptable conflict resolution process.
- Review the effectiveness of streamlining processes with respect to timeliness and environmental protection benchmarks and make adaptive management changes as needed.

Data Gathering, Data Development, and Information Sharing

- Identify data needs, emphasize the development of compatible data management systems, gather pertinent data, and share information to help shape transportation decision-making and improve environmental quality.
- Provide opportunities for the participation of all stakeholders and the public throughout transportation planning and project development processes.
- Respect other agency's proprietary information designations.
- Develop interagency capacity to share data by adopting compatible data system technologies.
- Encourage continued regional discussions as well as state specific dialogue on relationships between land use, growth, and transportation using state-of-the-art information management tools.

Resources

- Remove constraints on agency workforce, budgets, and authorities which affect the success of streamlining activities.
- Develop pilot programs to promote new ways of utilizing fiscal and human resources. Allow agencies to demonstrate sufficient technical expertise and capabilities to administer new programs.
- Develop partnership agreements between agencies to share resources, promote watershed and programmatic approaches to reduce costs and improve benefits.
- Cost savings should be recaptured by the participants to promote further improvements.
- Support adequate staffing, program, and capital budgets needed for tribes, state, and federal agencies to successfully achieve environmental streamlining.

Another focal point of streamlining efforts is the 2001 Environmental Permit Streamlining Act (RCW 47.06), enabled to coordinate and streamline the environmental permitting process for transportation projects. Reauthorized in March 2003, the bill extended the expiration date of the interagency Transportation Permit Efficiency and Accountability Committee (TPEAC) through March 2006. The primary responsibilities of the TPEAC include the following:

- Developing a one-stop permit decision-making process
- Creation of a technical subcommittee
- Creation of a process to develop a programmatic approach for transportation projects development and prioritization of a list of permit streamlining opportunities
- Development of a watershed approach to environmental mitigation
- Delegation to the state where appropriate to streamline permit processes for transportation projects of statewide significance
- Develop a dispute resolution process to resolve conflicts in interpretation of environmental standards and management practices, mitigation requirements, permit requirements, and assigned responsibilities
- Develop preliminary models and strategies for agencies to test how best to maximize the environmental investment of transportation funds on a watershed basis
- Develop a consistent methodology for the timely and predictable submittal and evaluation of completed plans and specifications detailing project elements that impact environmental resources

To date, the TPEAC has constructed technical subcommittees, initiated pilot projects, developed white papers on environmental streamlining, and drafted resolutions discussing issues such as one-stop permitting, programmatic approaches, NEPA/404 merger agreements, and other methods to provide for a more efficient environmental review and permitting process.

One project that is utilizing TPEAC procedures is the Yakima River Bridge (SR 24) The bridge is serving as the pilot project for an urban center to serve as a rural corridor in Yakima. The project is currently devising methods to reclaim and open up almost 3,000 acres of riparian habitat that was lost during the 1920's. Environmental issues of concern include habitat concerns, salmon protection, wetlands, and flooding. The project sought to identify, analyze, and resolve issues or problems resulting in streamlined documentation and permitting process. The IDT sought to accomplish numerous streamlining objectives such as:

- Compiling applications and conducting concurrent or group reviews of project details as appropriate, contributing to the development of a streamlined process.
- Identifying critical paths, setting time lines, and establishing roles and responsibilities for team members, developing focused action groups as necessary to expedite the work.
- Determining the appropriate level of documentation required for a good project description. Integrating adequate design detail and critical construction methods provide for environmental analysis resulting in a streamlined permit process.

Although the above initiatives were created on a much smaller scale than would be necessary for the proposed WCC, they offer a useful starting point for creating a streamlined process for the environmental review of such a complex project. The inclusion of many of these streamlining principles could greatly influence the overall feasibility of the environmental review and permitting process necessary for the WCC.

Transportation Projects – GMA Intent and Collaborative Review Process

In the GMA, the legislature identifies many of the issues inherent in the development of projects like the WCC. The legislature recognizes that many transportation projects involve multiple jurisdictions forcing "segmented and sequential decisions" by local governments that do not facilitate an efficient process. The legislature intends that "local governments coordinate their regulatory decisions by considering together the range of local, state, and federal requirements for major transportation projects."

One way to accomplish this coordination is discussed in the GMA under RCW 36.70A.430. The code establishes a collaborative review process that reviews and coordinates state and local permits for all transportation projects that cross city or county boundaries. It also states that the review process should at a minimum, "establish a mechanism among affected cities and counties to designate a permit coordinating agency to facilitate multijurisdictional review and approval of such transportation projects."

Opportunities for an Innovative Review Authority

The development of a review entity or authority dedicated to the WCC could provide a centralized, streamlined, and efficient method of reviewing its numerous components. The following concepts provide examples of the design and responsibilities of a potential entity and are not intended to represent the actual make-up and functions of a final WCC review authority. The concepts serve as a starting point to demonstrate possible directions for a potential review authority. A summary of the main issues of these concepts is provided in Table X.

1) WSDOT Interagency Review Board. This concept allows WSDOT to continue to play the pivotal role in the development of the WCC. WSDOT could take a lead-agency role in establishing and developing a collaborative interagency review board for the WCC. This board, similar to the make-up of Inter-disciplinary teams (IDT), could therefore serve as the environmental review mechanism for the corridor. The makeup of the board would mirror the corridors environmental components and could include representatives from FHWA, FTA, EPA, Ecology, regional transportation groups (such as PSRC), applicable local agencies, and other agencies representing the various components of the WCC.

This concept could also build on the use of liaison staff created as part of the 2001 Permit Streamlining Bill. These staff members work on transportation project streamlining and represent their respective agencies on TPEAC subcommittees such as the One-Stop Permitting, Programmatic Approvals and Watershed-Based Mitigation. Current liaison positions are filled with the following agencies:

- US Army Corps of Engineers
- US Fish and Wildlife Service
- US NOAA Fisheries Service
- WA Department of Ecology
- WA Department of Fish & Wildlife
- Tribal Organizations in WA State

In addition, further partnerships and use of existing agreements with federal agencies would be necessary. Providing for these partnerships early in the development of the review board would be critical to its success.

2) Public/Private Consortium. Using the Washington State Public Stadium Authority (PSA) as an example, a new authority could be set up to oversee environmental review of the siting, design, construction and operation of the WCC. This option could include a governor-appointed board that would function as the environmental review mechanism for the WCC. The other element of the consortium would require the development of a private conglomerate responsible for the development and operation of the corridor. The governor-appointed board, however, would retain oversight authority and ensure the protection of the state's natural resources.

This concept would require initial steps to assess industry groups' interest in such a partnership and to determine if the partnership would be an effective mechanism to protect the state's natural and human resources. Issues of entitlement and right-of ways could present an obstacle in the early participation by private industry groups in this partnership.

3) EFSEC-type authority. In the creation of EFSEC, the Washington State Legislature centralized the evaluation and oversight of large energy facilities in a single location within state government. This created a "one-stop" licensing agency capable of balancing protection of environmental quality, safety of energy facilities, and concern for energy availability. By using this as a guide for a WCC review and permitting authority, this new agency would be responsible for environmental review, siting and permitting the segments and projects that would make up the WCC. These components would all be handled imitating the "one-stop" process used currently at EFSEC. This new WCC authority would be responsible for review and oversight of all new transportation corridors in WA.

This concept would require significant legislative changes to create, staff, maintain, and fund such and agency. Other impediments may include political uncertainty, staff nominations, and the regulatory responsibility and rulemaking capacity of the agency.

This concept also differs significantly from the other options in its ability to permit the projects necessary to complete the WCC. Although review and permitting have been primarily separate functions for other projects, this combination would seek to further expedite the diverse environmental analysis required for such a large multi-modal project.

Exhibit 3-9: WCC Review Authority Concepts

Concept	Model	Environmental Lead Agency	Permitting Authority
WSDOT Interagency Review Board	Existing lead-agency/IDT models	WSDOT	No. Vested with applicable resource agencies
Public/Private Consortium	WA Public Stadium Authority	Appointed board of agency/public representatives	Same as above. Would assume a more expedited process due to partnership with private consortium responsible for development.
EFSEC-type authority	EFSEC	WCC Authority. Appointed chair and members function as lead agency	Yes. Authority retains review and permitting function

The above three options highlight a few strategic approaches that could facilitate a more efficient environmental review process for the WCC. The first seeks to build on the existing WSDOT-lead framework used in many current transportation projects while enhancing the role of TPEAC liaison staff in assisting efforts to streamline the environmental review process. The second concept involves a collaborative partnership between a public-appointed review board and a private conglomerate, based on the successful partnership used in the construction of the Seahawks Stadium. The final concept creates an entirely new Washington State agency based on an EFSEC model. This agency would also be responsible for permitting the components of the potential WCC. Further analysis into the concepts' possible makeup, authority, and governance would assist in determining the most appropriate choice for the future WCC.

Potential Community Issues

The location and size of the proposed WCC will unavoidably impact some of the communities of western Washington. The development of a multi-modal corridor has extensive benefits and costs for citizens of Washington State. The sum of these benefits and costs may significantly influence the corridor's overall feasibility. Potential community issues that the project may encounter include: loss of a sense of place, loss of community fabric, dislocation and other quality of life concerns. Though difficult to quantify, these issues are of the same importance as environmental effects in determining the overall impact of the WCC. They must therefore be considered in a comprehensive and serious manner.

The objective of this discussion is to highlight the potential community issues surrounding this project and to identify those factors that could have the greatest impact on the corridor's feasibility. To determine this, the consistency of the WCC with Washington's Growth Management Act (GMA) will highlight those components of the WCC that may be in conflict with

the GMA's regulations and those that adhere to them. The identification of land use constraints will determine the magnitude, extent, duration, and probability of these constraints on overall corridor feasibility. It will also provide a starting point for further identification of community issues, Finally, the community economic impact analysis will identify the benefits and costs of such a project on the surrounding communities and identify any potential environmental justice issues that must be addressed.

As part of a feasibility study, this document is meant to introduce a range of community issues that could be encountered throughout the duration of the project. It may appear to overlook or understate certain impacts as perceived by effected communities or individuals. It is crucial to continue to identify these views throughout the feasibility process, and to continue to consider them at every stage of the project.

Identification of Land Use Constraints

Indian Reservations

The state of Washington has 32 federally and non-federally recognized tribes. These tribes are dispersed throughout Washington and several of these tribes have lands in and around the corridor footprint. The proposed corridor area passes through a total of 1,719 acres of tribal land. These tribal lands are part of the Muckelshoot Tribe and occur only in Section B. The area is located southeast of the town of Auburn and may be located on Figure 2. According to the dataset, there are no tribal lands that intersect the proposed corridor area in any other section[3]

The data used to obtain tribal information were derived from the Major Public Lands GIS layer developed by the Washington Department of Natural Resources' (DNR) Division of Information Technology. The data layer includes ownership parcels for Federal, State, County, City, and Tribal lands within the State of Washington. The data layers were last updated in 2000 and were published in April of 2003.

Municipal Watersheds

As previously mentioned in the "Fatal Flaw" section, the proposed corridor area crosses only one municipal watershed, the Cedar River Watershed. The Cedar River Watershed is the primary water source for the 1.3 million people of the greater Seattle Area and encompasses roughly 90,000 acres. One currently proposed route of the corridor (Segments E06 and M09 as shown in Exhibit 5-1) directly crosses 30,605 acres of this watershed, or approximately 34 percent of the total watershed area. This particular resource was identified as a fatal flaw for the project as the impacts to this resource as a result of such a project would be significant and outweigh any potential benefits of such a route.

[3] The tribal data supplied by the DNR's Major Public Lands GIS Layer shows a discrepancy regarding the location of a small amount of additional tribal lands underneath the corridor area when compared to other sources. This may result from discrepancies regarding the updating of individual GIS layers in this dataset. Any further environmental analysis regarding this project should incorporate a review of this discrepancy.

Urban Growth Areas

The designation of Urban Growth Areas (UGA) is required by the GMA and it is in these areas where the majority of urban development should occur. The GMA has specific requirements of this designation, summarized in RCW 36.70A.110. It states that: "Each county that is required or chooses to plan under RCW 36.70A.040 shall designate an urban growth area or areas within which urban growth shall be encouraged and outside of which growth can occur only if it is not urban in nature...."

The GMA goes on to state that urban growth should be located first within those areas of the UGAs that are characterized as having urban growth and that have adequate existing public facilities to support that growth. Following this, urban growth should be located where the new facilities necessary to support further growth may be combined with existing facilities, and lastly, urban growth should be located in the remaining portions of the UGAs. UGAs are described in each county's comprehensive plan and are amended according to each specific county's guidelines. Counties and cities assign expected population growth to UGAs, and population growth figures for each county are provided by the state Office of Financial Management. The UGAs need to accommodate urban growth for a 20-year projected population increase.

The proposed corridor area crosses a total of 233,686 acres of land designated as UGAs, accounting for approximately 16 percent of the total corridor area. Conversely, 83 percent of the proposed corridor area is located outside of an area where urban growth is encouraged to develop. However, with each amendment to their comprehensive plans, counties increase the number of UGAs or alter the current extent of existing ones. Assumed projected growth in counties over the 30-50 year timeline of the WCC would increase the amount and extent of the UGAs , and possibly include the majority of the proposed WCC area.

Of the total acreage of UGAs in the proposed corridor area, there is a total of 16,524 acres in Section A, 48,734 acres in Section B, and 168,428 acres in Section C. This represents 4 percent, 9 percent, and 31 percent of each section's total corridor area, respectively.

The data used for the above calculations were obtained from each specific county's GIS or data management department. The majority of the counties had a specific data layer that identified the name and extent of the UGAs in their counties. Many of the counties have updated their UGA boundaries in relation to their new comprehensive plans, while others are in the process of developing the most up to date data.

Land Use/Zoning Classifications

Current land use in those areas where the proposed corridor area is located may be in conflict with the designations needed to support a regional transportation system. Much of the area underneath and around the corridor footprint is currently classified as rural and residential land and would not be consistent with a use such as the WCC without conditional approval. At this stage, three main zoning classification have been identified that will highlight where and to what extent the corridor area could conflict with existing land use. They include agricultural, residential, and rural. The following table provides a summary of the land use/zoning information in relation to the corridor area. Rural and residential Data from Cowlitz County were not available at the time of the study.

Exhibit 3-11: Existing Land Use/ Zoning in the Potential Corridor Area

Corridor Section	County	Land Use/Zoning Classification (acres)		
		Agricultural	Rural	Residential
Section A	Whatcom	38,848	17,427	*
	Skagit	21,590	11,625	*
	Snohomish	5,136	90,667	1,547
Section B	King	*	96,002	4,875
	Pierce	9,554	110,092	5,276
	Thurston	6,137	58,717	1,440
Section C	Lewis	50,065	**	33,127
	Cowlitz	12,681	No data available	No data available
	Clark	15,620	58,986	19,100
Classification Totals		**159,631**	**443,516**	**65,365**

Historic Districts and Sites

The protection of Washington's cultural resources is maintained through legislation such as the National Historic Preservation Act and the State Environmental Policy Act (SEPA). These laws require that impacts to cultural resources be considered during the public environmental review process. As the state's primary agency in maintaining historic and cultural preservation, the Office of Archaeology and Historic Preservation (OAHP) reviews more than 3,500 federal, state and local government projects for effects on cultural resources

There are numerous cultural and historic sites in and around the proposed corridor area, including a total of 120 historic points and 65 acres of historic districts. Section A includes 8 points and no districts within the corridor area; Section B includes 48 points and no districts in the corridor area; and Section C includes 64 points and the entire 65 acres of historic districts.

Data used for the historic sites and districts were obtained from the OAHP. Historic district data represent National and/or State Register-listed Historic Districts with the OAHP and the National Park Service (NPS). The data are updated every 3 months and were published in January of 2004. Historic point data represents locations of National and/or State Register-listed Historic properties reported by the OAHP or the NPS. Certain specific locations of archaeological sites are restricted and are not shown on Figure 2 or represented in the number of historic points.

* The results of the GIS queries used to develop land use data for particular counties yielded results that indicated there were some discrepancies in the representation of the data. These data discrepancies appear to be with the base data received from individual counties. As zoning acreages play only a small part in the overall analysis of corridor feasibility, the omission of this data does not substantially impact the impact analysis results displayed on pp. 28-30 of this document. However, further detailed environmental and community analysis that occurs as a result of this project should incorporate a detailed review of these discrepancies.

National Forests, Parks, and Recreation

The forests and parks within Washington State represent an invaluable resource and are among some of the most unique and impressive natural areas in the nation. Located throughout the state, these areas afford residents and tourists considerable recreational opportunities while providing critical habitat for numerous species.

The proposed corridor footprint does not include any designated National or State parks or recreation areas. It does, however, cross 25,606 acres of National Forest, 15,669 acres in Section B and 9,937 acres in Section C. There is currently no National Forest land in the proposed corridor area in Section A.

Other Community Impacts and Land Use Constraints

As noted above, the list of land use constraints identified in this study is not intended to be exhaustive, and represents only an overview of the types of issues that could be impacted by such a project. The following list seeks to highlight other concerns that should be further studied for their potential influence on corridor feasibility and to determine the corridors level of impact upon them. Much of the concerns relating to community issues are of a personal nature and depend on an individuals own view of the types or level of impact that could occur. Although difficult to identify and quantify, these types of concerns should be identified and analyzed in further studies relating to the potential effects of the WCC. The following list identifies the types of potential issues that may warrant further analysis:

- Community sense/loss of place
- Dismantling of small communities
- Impacts on small/family farms
- Effects on overall quality of life
- Effects on local schools, busing routes, and consistency with school plans
- Impacts to local tourism and recreation businesses
- Barrier effects
- Impacts on existing infrastructure
- Effects on tourism and loss of recreation lands

Impact Analysis – Land Use Constraints

As in the previous section on natural constraints, general conclusions regarding the impact of the land use constraints on overall corridor feasibility were identified. They include the same type of thresholds (magnitude, extent, duration, and probability), but with unique threshold definitions. The broad ratings of high, medium, and low measure the overall level of the parameter, and in general, the higher the rating, the greater negative impact on overall feasibility

Magnitude	
High	WCC significantly modifies/alters/conflicts with existing land use classifications, practices, and/or boundaries. Substantial changes to local or regional planning regulations would be expected.
Medium	WCC partially modifies/alters/conflicts with existing land use classifications, practices, and/or boundaries. Some changes to local or regional planning regulations would be expected.
Low	WCC slightly modifies/alters/conflicts with existing land use classifications, practices, and/or boundaries. Little or no changes to local or regional planning regulations would be required.

Extent	
High	WCCs impact would extend throughout the corridor at numerous portions and sections or occur cumulatively at a high level within the corridor as a whole. The corridor's location could not be adjusted to mitigate potential impacts to land use components.
Medium	WCCs impact would take place in multiple portions and sections of the corridor or would occur cumulatively at a general level within the corridor as a whole. The exact location of the corridor could be adjusted to mitigate these impacts, but impacts to land use components would remain in some areas of the corridor.
Low	WCCs impact would be limited to isolated portions, sections, or occurrences within the corridor. The exact location of the corridor could be adjusted without substantial difficulty to avoid or decrease the impact on land use components.

Duration	
High	Impacts from the WCC on land use components would occur or last through the life of the project or be generally recognized as permanent.
Medium	Impacts from the WCC on land use components would occur during construction and the general post-construction period, with little or no impact occurring in the long-term.

Duration, (continued)	
Low	Impacts from the WCC on land use components would be limited to construction and would not generally occur after completion of the WCC.

Probability	
High	Impacts on land use components from the WCC will likely occur regardless of outside factors or circumstances.
Medium	Impacts from the WCC on land use components may occur or would be possible depending on outside factors or circumstances.
Low	There would be little or no likelihood that impacts to land use components would occur.

The following table represents an attempt to qualify each of the potential community/land use impacts by assigning a general rating for each threshold. From here, cumulative ratings can be developed that provide a more consolidated relationship between potential community impacts and overall corridor feasibility.

Exhibit 3-12: Threshold Rating for Land Use Constraints

Land Use Constraint	Threshold and Rating			
	Magnitude	Extent	Duration	Probability
Indian Reservations	**Medium**	**Low**	**High**	**Medium**
UGAs	**High**	**High**	**High**	**High**
Land Use/Zoning	**High**	**High**	**High**	**High**
Historic Districts/Sites	**High**	**Low**	**High**	**Medium**
Forests/Parks/Rec.	**Medium**	**Low**	**Medium**	**Medium**

As in the previous case with natural constraints, it is extremely difficult to determine specific impact levels at this stage of the study. Without a specific alignment location, it is unknown where specific, or even general impacts would occur. The summary table below provides only a cumulative estimate based on the individual generalized impacts from each of the land use constraints studied above. Detailed further study into the type and extent of impacts that could occur as a result of the WCC would assist in providing more specific information regarding impact level for each specific land use constraint.

Exhibit 3-13: Cumulative Ratings for Land Use Constraints

Threshold	Overall Ratings	Conclusions
Magnitude	Medium-High	Currently, as 80 percent of the corridor area is classified as land where significant growth could occur, it would be highly likely that there would need to be extensive changes to the current zoning regulations in these areas. Additionally, significant modifications to current county and local comprehensive plans would need to occur.
Extent	Low-High	It would be expected that modifications to specific land use patterns could occur at multiple locations throughout the corridor and at a cumulatively general level throughout the corridor as a whole (although due to the limited area of some resources/uses, impacts could be limited). Although the corridor's location could be adjusted to mitigate or eliminate some of these issues, it is likely that there would be multiple locations along the corridor where impacts would occur on some constraints.
Duration	Medium-High	As current zoning and land use practices under multiple sections of the corridor would need to be altered for the development of the WCC, there would be a long-term and likely permanent impact on these zoning classifications and land uses.
Probability	Medium-High	It would be feasible that impacts to specific land uses and zoning would occur and would exist irrespective of outside factors or circumstances, while other resources that may be easily avoided due to their limited area could decrease the probability of impacts.

WCC Consistency with the GMA

Development of the WCC would need to consider consistency with the Growth Management Act (GMA). Consistency with the GMA would increase the overall feasibility of the project and ensure the development pressures associated with such a project are adequately addressed.

The Washington State Legislature enacted the GMA in 1990 in response to growth and development pressures in Washington. The Act requires local governments in fast growing and densely populated cities and counties to develop and adopt comprehensive plans. The Growth

Management Act has been amended multiple times between 1991 and 1998 to further define its guidelines and regulations.

Although the majority of the counties where the proposed WCC would be located plan under the GMA, one county, Cowlitz, is not subject to most provisions of the GMA. However, Cowlitz County has addressed many of the primary provisions of the GMA including the development and adoption of ordinances that classify, designate, and protect critical areas, and other types environmental regulations in the areas of forestry and fish and wildlife protection.

As a first step, it is necessary to determine the WCC's consistency with the GMA's planning goals. The 13 planning goals of the GMA guide the development and adoption of comprehensive plans and development regulations of those counties and cities that are required or have chosen to plan under the GMA. A summary of the WCC's adherence or challenges to each planning goal is provided.

1) Urban growth. Encourage development in urban areas where adequate public facilities and services exist or can be provided in an efficient manner.

   The corridor would mainly cross rural lands where public infrastructure is absent. While access to the corridor would be limited to a few locations, it would be expected that there would be pressures for development in proximity to these access connections.

2) Reduce sprawl. Reduce the inappropriate conversion of undeveloped land into sprawling, low-density development.

   As mentioned above under Planning Goal 1, the location of the WCC would include undeveloped and rural land. Future development pressures near the corridor could increase the potential for sprawl in some areas not classified as UGAs. As a result, reclassification of some areas as UGAs may be desirable in some locations to confine or limit the potential for sprawl.

3) Transportation. Encourage efficient multimodal transportation systems that are based on regional priorities and coordinated with county and city comprehensive plans.

   Since one of the primary objectives of the WCC is to be multi-modal, the WCC would increase the efficiency of the overall transportation system in Washington. The location of the WCC, and more specifically, the new connecting points with other existing transportation routes, could become a considerable factor in the WCC's coordination with city and county comprehensive plans.

4) Housing. Encourage the availability of affordable housing to all economic segments of the population of this state, promote a variety of residential densities and housing types, and encourage preservation of existing housing stock.

   As primarily a transportation system, the WCC would have little direct impact on current affordability and variety of housing types in the state. Indirectly, however, the construction of the corridor could impact new housing (depending on the corridor's location) development in many areas across the state. Measures would have to be taken

to preserve existing housing when possible and to construct any new housing developments stimulated by the WCC in accordance with the GMA regulations and county and local comprehensive plans. This may require updates to these documents with respect to current housing guidelines.

5) Economic development. Encourage economic development throughout the state that is consistent with adopted comprehensive plans, promote economic opportunity for all citizens of this state, especially for unemployed and for disadvantaged persons, promote the retention and expansion of existing businesses and recruitment of new businesses, recognize regional differences impacting economic development opportunities, and encourage growth in areas experiencing insufficient economic growth, all within the capacities of the state's natural resources, public services, and public facilities.

   The planning, design, construction, and operation of the WCC would encourage significant economic development in Washington and would promote transportation and utility efficiencies in the state. The WCC could have the potential to decrease freight and passenger congestion along existing transportations systems, therefore decreasing the economic costs of such delays. Although there are numerous economic benefits from such development, further study is required to ensure that the benefits or economic burden does not fall disproportionately onto one group.

6) Property rights. Private property shall not be taken for public use without just compensation having been made. The property rights of landowners shall be protected from arbitrary and discriminatory actions.

   Due to the expansive location of such a transportation system, it is assumed that both public and private property may be necessary for its construction. Just compensation for right-of-way or entitlements would be assumed, and a respect for the economic and personal rights of all property owners would be critical.

7) Permits. Applications for both state and local government permits should be processed in a timely and fair manner to ensure predictability.

   The permitting of the WCC would involve local, state, and federal permits. Although all measures would be taken to ensure that permits for the WCC would be processed efficiently, under the current permitting framework, the adequacy and predictability of this process could be strained (see "Existing Environmental Permitting" in the previous section)

8) Natural resource industries. Maintain and enhance natural resource-based industries, including productive timber, agricultural, and fisheries industries. Encourage the conservation of productive forest lands and productive agricultural lands, and discourage incompatible uses.

   During the siting of the WCC, all appropriate measures would be taken to avoid impacting the current natural resource base used for much of Washington's industries. However, is some instances, topographical or environmental considerations may force the location of the corridor to traverse such areas. In these instances, all prudent

alternatives would be evaluated and appropriate mitigation and compensation measures would be taken.

9) Open space and recreation. Retain open space, enhance recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks and recreation facilities.

   Loss of open space and recreational opportunities and impacts to fish and wildlife habitat would occur. Planning and right-of-way studies would seek to lessen such impacts. Depending on the location of connections to existing transportation systems, the corridor could increase access to natural resource lands.

10) Environment. Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.

    The proposed WCC would adhere to all existing environmental protection regulations devoted to the protection of the environment throughout the planning, design, construction, and operation of the corridor. To the extent that congestion is reduced elsewhere, some elements of the environment may be benefited.

11) Citizen participation and coordination. Encourage the involvement of citizens in the planning process and ensure coordination between communities and jurisdictions to reconcile conflicts.

    As a state-wide project that influences a large segment of the state's population, significant effort would be needed to involve the public in all stages of the WCC corridor planning. Emphasis on early and comprehensive strategies to facilitate communication between the agencies and the public would assist in increasing the feasibility of the project.

12) Public facilities and services. Ensure that those public facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards.

    This planning goal is primarily devoted to new housing and structure developments, and is therefore not applicable to the WCC.

13) Historic preservation. Identify and encourage the preservation of lands, sites, and structures that have historical or archaeological significance.

    The construction of the proposed WCC would adhere to all current regulations devoted to historic preservation. All available measures would be taken to site and construct the WCC and associated facilities away from those areas that have historical or archeological significance.

Given that these 13 planning goals of the GMA address separate issues, it would be difficult to suggest the consistency of the GMA in relation to overall corridor feasibility. In regards to those

planning goals that address the need to locate urban growth in areas served by existing facilities, it would be unlikely that the WCC would meet this particular goal without significant changes to regional and local comprehensive plans. However, in Planning Goal #3, the WCC would certainly be consistent with the need to develop multi-modal transportations systems for the state of Washington. The specific nature of each planning goal prevents a cumulative rating in terms of GMA consistency with the proposed WCC. However, the responses listed above following each of the goals provides a summary of the issues inherent in each specific goal and highlight which areas would need to be addressed prior to the development and construction of the WCC.

Siting of Essential Public Facilities

One of the primary regulations concerning the WCCs consistency with the GMA is addressed under RCW 36.70A.200, *Siting of essential public facilities – Limitation on liability*. It states, "The comprehensive plan of each county and city that is planning under RCW 36.70A.040 shall include a process for identifying and siting essential public facilities. Essential public facilities include those facilities that are typically difficult to site, such as airports, state education facilities and state or regional transportation facilities as defined in RCW 47.06.140...." In RCW 47.06.140, *Transportation facilities and services of statewide significance – Level of service standards*, the GMA includes the interstate highway system as part of the overall regional transportation system. The WCC would therefore fall under the definition of an essential public facility for the state of Washington and be subject to existing state and local regulations under the respective comprehensive plans of these areas. The following discussion summarizes the current process of siting essential public facilities for those counties where the proposed WCC would be located. In cases where a county specifically addresses the process for siting transportation corridor-related facilities such as highways, those regulations are provided in place of the general regulations. In addition, the list for each county is intended to highlight specific key regulations pertinent to the WCC. General regulations such as requiring environmental reviews, public participation, and adherence to existing land use policies are not included.

Whatcom County

The primary essential public facility regulations for Whatcom County include:

Highways and railroad tracks should be located:

- In a manner that minimizes or mitigates noise impacts to surrounding residential areas
- Outside of the Lake Whatcom Watershed, unless there are no viable alternatives.
- In a manner that allows continued fish passage beyond the road or railroad tracks or restores blocked passage.
- In a manner that avoids or mitigates wetland impacts.
- In a manner that minimizes impacts of additional impervious surfaces by treating stormwater runoff.
- In a manner that encourages a vibrant economy by facilitating the efficient movement of people and freight.
- In a manner that accommodates pedestrians, bicycles, and transit.

Major passenger intermodal terminals should be located in General Commercial, Tourist Commercial, Airport Operations, Urban Residential-Medium Density or industrial zones. Freight railroad switching yards and terminals should be located in industrial zones.

Skagit County

The primary essential public facility regulations for Skagit County include the following:

- The state is required to provide a justifiable need for a public facility and for its location in Skagit County based upon forecasted needs and a logical service area.
- The state is required to establish a public process by which the residents of the County and of affected and "host" municipalities have a reasonable opportunity to participate in the site selection process.
- Affected agencies and utilities shall be consulted in preparing recommendations and shall be given opportunities for effective review and comment.
- Notice and opportunity to review and comment on draft recommendations shall be given to adjacent jurisdictions.
- Proposals for siting essential public facilities shall contain a rationale for why that facility is needed.
- Recommendations for essential public facilities shall contain a rationale for why the facilities listed need to be located in Skagit County.
- When identifying essential public facilities with siting difficulties, the characteristics of the facility that make it difficult to site shall be indicated.

Impacts of the facility should be addressed including present and proposed population density of surrounding area, environmental impacts and opportunities to mitigate environmental impacts; effect on agricultural, forest, or mineral lands, critical areas, and historic, archaeological and cultural sites; effect on areas outside of Skagit County; effect on the likelihood of associated development; and effect on public costs, including operating and maintenance.

Snohomish County

The primary essential public facility regulations for Snohomish County include the following:

- Project sponsors must demonstrate the need for their proposed essential public facilities
- The propose project should be consistent with the sponsor's own long-range plans for facilities and operations
- The proposal must demonstrate the relationship of the project to local, regional, and state plans.
- The facilities service area population should include a significant share of the host communities population
- Sponsors shall submit documentation showing the minimum siting requirements for the proposed facility
- The project sponsor should search for and investigate alternative sites before submitting a proposal for siting review.
- The local review agency will examine the overall concentration of essential public facilities within Snohomish County to avoid placing an undue burden on any one community
- The proposal must include adequate and appropriate mitigation measures for the impacted communities

King County

The primary essential public facility regulations for King County include the following:

- King County and neighboring counties, if advantageous to both, should share essential public facilities to increase efficiency of operation.

- King County should strive to site essential public facilities equitably so that no racial, cultural, or socio-economic group is unduly impacted by essential public facility siting or expansion decisions
- The net impact of siting new essential public facilities should be weighted against the net impact of expansion of existing essential public facilities, with appropriate buffering and mitigation.
- Essential public facilities that directly serve the public beyond their general vicinity shall be discouraged from locating in the Rural Area.

Siting analysis for proposed new or expansions to existing essential public facilities shall also consist of the following:

- An inventory of similar existing essential public facilities in King County and neighboring counties, including their locations and capacities
- A forecast of the future needs for the essential public facility; an analysis of the potential social and economic impacts and benefits to jurisdictions receiving or surrounding the facilities
- An analysis of alternatives to the facility, including decentralization, conservation, demand management and other strategies
- An analysis of economic and environmental impacts, including mitigation, of any existing essential public facility, as well as of any new site(s) under consideration as an alternative to expansion of an existing facility;
- Consideration of any applicable prior review conducted by a public agency, local government, or citizen's group.

Pierce County

The primary essential public facility regulations for Pierce County include the following:

- An owner of a facility(ies) that believes its facility(ies) to be an essential public facility or a representative group may petition to be identified in the Pierce County Comprehensive Plan as an essential public facility in accordance with the procedures for comprehensive plan amendments.
- An analysis shall be conducted when a specific land use or category of land uses is proposed to be precluded from locating within Pierce County. The analysis must conclude that the land use is not an essential public facility or that the category of land use does not list a land use that is an essential public facility in order for the proposal to be approved.
- Recognition of existing essential public facilities.
- All applicable siting criteria listed under 19A.120.040 of the Pierce County Comprehensive Plan should be followed.

Thurston County

The primary essential public facility regulations for Thurston County include the following:

Classify essential public facilities as follows:

- Type One: Multi-county facilities. These are major facilities serving or potentially affecting more than one county. These facilities include, but are not limited to, regional transportation facilities, such as regional airports; state correction facilities; and state educational facilities.
- Type Two: These are local or inter-local facilities serving or potentially affecting residents or property in more than one jurisdiction. They could include, but are not limited to,

county jails, county landfills, community colleges, sewage treatment facilities, communication towers, and inpatient facilities
- Type Three: These are facilities serving or potentially affecting only the jurisdiction in which they are proposed to be located.

- Essential public facilities shall not have any probable significant adverse impact on critical areas or resource lands, except for lineal facilities, such as highways, where no feasible alternative exist.
- Major public facilities which generate substantial traffic should be sited near major transportation corridors
- Applicants for Type One essential public facilities shall provide an analysis of the alternative sites considered for the proposed facility.

Lewis County
The primary essential public facility regulations for Lewis County vary by case[4]

Cowlitz County
Cowlitz County is not subject to essential public facility provision of the GMA.

Clark County
The primary essential public facility regulations for Clark County include the following:
- Government facilities may be established as provided in other land use districts through the procedures specified in the applicable district without plan amendment.
- The county shall in cooperation with other jurisdictions ensure that siting of regional facilities is consistent with all elements of the adopted county comprehensive plan, local city plan and other supporting documents
- The proposed project complies with all applicable provisions of the comprehensive plan, including countywide planning policies
- The proposal for siting of a public facility contains inter-jurisdictional analysis and financial analysis to determine financial impact and applicable intergovernmental agreement
- Needed infrastructure should be provided for
- Provision is made to mitigate adverse impacts on adjacent land uses
- The plan for the public facilities development is consistent with the county's development regulations established for protection of critical areas
- Development agreements or regulations are established to ensure that urban growth will not occur if located adjacent to non-urban areas.

Although the above lists are not exhaustive, they provide the primary requirements the WCC would need to meet as part of the siting of essential facilities process for those affected counties. Further analysis into the specific location of the corridor's components would yield additional information regarding other specific requirements under this process. It would be prudent for

[4] The regulations in siting of essential public facilities in Lewis County are tied to individual zoning regulations that are specific to the type of facility being developed. The majority of these individual regulations are included in '*Title 17 Land Use and Development Regulations*' of the County's Land Use Code."

WCC project sponsors to engage representatives of the jurisdictions in the planning process in order to maximize compliance with the provisions for siting essential public facilities.

More broadly, consideration should be given to amending the GMA to provide for a statewide process for identifying and siting essential public facilities of statewide significance. Such a process could provide for a uniform set of criteria and guidelines that recognizes the regional or statewide attributes of the project and the regional or statewide context with respect to land use and environmental constraints for siting such facilities. Further, such an approach could be considered in conjunction with an EFSEC-type review authority (as discussed previously under "Opportunities for an Innovative Review Authority.")

Community/Regional Economic Impact Analysis of the WCC

The WCC would impact numerous communities of Western Washington in and around the proposed corridor area. These community-based impacts include measurable factors such as job opportunities, property values, economic development, and transportation costs. Equally important are impacts to more qualitative issues such as an individuals' or communities' quality of life, potential effects on small, vibrant communities, and changes to one's sense of place in a community. This section provides an overview of these types of issues while identifying the anticipated effects on them from the proposed WCC.

Background

Washington State is the Pacific Northwest's gateway to the Asia Pacific economies. With its world-class trade facilities—marine ports, airports, inter-modal yards, warehouse/distribution centers—enabling it to move vast amounts of goods, services, and people, Washington State transportation services employ significant number of workers and create substantial wealth for the state. Nearly 100,000 transportation workers with wages and salaries of over $4.5 billion generate $6.6 billion of gross state product in Washington.

Washington State competes with other West Coast gateways (particularly, Long Beach-Los Angeles; Oakland-San Francisco; and Vancouver, BC) for business and jobs. Puget Sound facilities, worksites, and residents are connected by an increasingly congested urban transportation network. Addressing this rising congestion is one of the paramount economic challenges facing the region today as the existing transportation infrastructure capacity is insufficient to sustain future regional economic growth. Furthermore, gridlock damages international competitiveness for regional companies and the quality of the local environment.

Forecasts for continued population and economic growth in Washington State show increasing pressure on the state's ground transportation system. The growth of road and rail traffic (multi-modal) is expected to be particularly strong for commercial movements. These include movements that serve freight cargo moving to and from marine ports, airports, industrial parks, warehouse/distribution centers, and international border crossing facilities. Future congestion delays and capacity constraints will be of particular concern to commercial land traffic. For example, projected road and rail demand is expected to outstrip capacity within the overall transportation system. Severe future travel times and costs are expected unless substantial investments are made to upgrade and expand many aspects of the region's transportation infrastructure.

The marine ports, airports, multimodal facilities and warehouse/distribution centers of Western Washington provide a key strategic link in the logistics chain between North America and Asia Pacific economies. A tremendous amount of cargo and numbers of passengers are transported throughout the region each year. The Ports of Tacoma and Seattle—the number three load center in North America–handled a combined 3.2 million containers of cargo in 2003, much of the cargo passing through the region. At the same time, the Seattle-Tacoma International Airport serviced 26.8 million passengers. In addition, the region's burgeoning cruise ship industry expects that 550,000 passengers will embark on a regional Alaska cruise this year.

Overview of Socioeconomic Effects

The Washington State Department of Transportation has defined the concept of the Washington Commerce Corridor (WCC) as a multi-modal infrastructure system that would provide a blueprint for future investments in new infrastructure for the movement of goods, services, and people. It is intended to be an efficient and safe system of routes linking facilities, businesses, industrial and commercial areas, and residents to the state's major trade routes by sea, air, rail, pipeline, power line, and road.

The Washington Commerce Corridor is conceived as a north-south corridor that will facilitate the movement of freight, goods, people, and utilities. The WCC is preliminarily situated in the valley east of 1-405 and west of the Cascade Mountains. It extends about 280 miles from the Canadian border in the north to the border with Oregon in the south. The corridor will add capacity for long-haul trucking freight and passenger auto travel as well as provide for freight and passenger rail, public utilities and other facilities. Construction of the corridor would require about $24.4 billion (in 2003 dollars), including $9.8 billion for each of the auto and truck toll highways, $3.9 billion for the rail facilities, and about $900 million for the remaining pipeline, power transmission lines, and trails. Land acquisition associated with right-of-ways will cost an additional $16.4 billion.

Certainly, these costs are very high. However, they would be offset somewhat by the economic benefits received from investing in the Washington Commerce Corridor. Failure to invest in the performance and capacity of the region's infrastructure, facilities, and services will lead to significant losses of business activity as travel times and costs for commercial shipping are increased. Investing in the Washington State Commerce Corridor will help to mitigate these losses.

While the full social benefit of investing in the WCC is not known at this time, it may be construed as the sum of the net economic impacts plus the additional value of time savings not included in gross state product calculations. It is expected that this larger benefit measure would be in the hundreds of billions of dollars.

Planning for the Washington Commerce Corridor would need to consider its social and economic effects. Comprehensive socioeconomic assessments are inherently complex and should identify:

- The benefits of users of the proposed corridor and its effects on communities
- Numerous effects that interact (some of which are positive while others are negative), even among residents within the affected region.

- Various population groups within the region that may be affected quite differently in terms of mixes of socioeconomic effects
- People's preferences and opinions, so what may be acceptable or even desirable to some may in fact be unacceptable to others.

Community Impacts

The construction of the Washington Commerce Corridor would likely have both positive and negative impacts on the socioeconomic fabric of nearby communities. Accessibility along the new commerce corridor will create a number of social and economic impacts on the surrounding communities.

Social impacts to be considered in the context of the Washington Commerce Corridor include community cohesion, relocation impacts, the impacts on residential neighborhoods related to the loss of land and diminished access, and "barrier" effects. Direct community impacts will depend upon the location of the final alignment and the connections and the distance between the community and the commerce corridor. Travel patterns, accessibility, mobility, social cohesion of established neighborhoods, and economic viability of established businesses/enterprises may all be indirectly impacted by the commerce corridor.

Community cohesion refers to the attitudes and feelings of the residents of a community or geographic area. Ties can be somewhat amorphous and may change over time. New residents to a community can feel differently than longtime residents. Traditions have a significant role in determining and maintaining community cohesion. Rural areas have a different sense of community than more urban or suburban neighborhoods. Many of these rural places derive their sense of place more from geographic isolation or the need to be near natural elements than from a conscious desire to live in proximity to others. Accordingly, it would be expected that there would be reduced community cohesion at some locations due to the project.

Relocation impacts associated with the Washington Commerce Corridor will vary according to final location of the right-of-way. Relocations of both residences and businesses are anticipated. Ideally, all of the relocations should be accomplished within their respective area, if not within their respective community. If residential displacements are relocated into the same general area, the indirect effects to other businesses by the displacement of their customer base are expected to be minimal. The extent of relocation would have a direct bearing on the overall feasibility of the WCC project.

The adverse impacts caused by commercial displacements are expected to be minimal, especially when compared to the anticipated beneficial industrial and commercial economic impacts from the project.

The corridor would likely create a barrier effect in several respects. First, it may divide properties, rendering the properties useless or diminishing their current use.. For example, the corridor could conceivably take farmland out of production and create a barrier to efficient movement of farming equipment between fields that have been separated by the corridor. In addition, the corridor could inhibit localized movement of people and commerce. Finally, neighborhoods and areas such as public school districts could be separated. This could result in reduced community cohesion and lowered quality of life.

Regional Economic Effects

Commerce corridors do not automatically create private sector investments and jobs. Commerce corridors do, however, create opportunities for economic development in concert with other factors. These factors include, but are not limited to, local land use regulations, availability of appropriate land and other infrastructure, a labor force appropriate for the new/expanded industries under consideration, and other local factors that fall under the categories of "quality of life" or "business climate."

The Washington Commerce Corridor could result in the following changes:

- With development of the Washington Commerce Corridor and associated gains in freight efficiencies, industry may be attracted to the project study area over other locations elsewhere in Washington and the Pacific Northwest.
- The study-area could gain a greater share of national industry with development of the commerce corridor.
- New jobs and new businesses might be expected if land along the commerce corridor were developed.

One of the primary considerations in undertaking this preliminary analysis is to note that the commerce corridor could have limited-accessibility. Preliminary conceptual designs identify only a few east-west connections for the north-south commerce corridor. Residential growth goes in concert with industrial growth and new service connections generate commercial growth. Although the commerce corridor is not conceived as a freeway, it is likely that corridor connections will exhibit similar attractive features for highway-oriented retail commercial services.

A limited access corridor underscores the most difficult aspect in analyzing the community-specific economic development impacts of a corridor investment—assessing the potential for business attraction and retention. The WCC could potentially improve access to markets for existing firms, as well as encourage new firms to locate along its alignment. Both actions would enhance business attraction and retention, as well as possibly help surrounding communities to grow. With limited access in the form of east-west connections, economic benefits would be geographically focused on those areas and communities proximate to these nodes. It is anticipated that commercial and industrial development supporting surrounding residential growth and freight movement would be attracted to these interchanges. For those areas and communities located near the corridor but with no proximate access, the potential exists for no beneficial development (at best) or adverse impacts on existing residences and businesses (at worse).

In general, the main benefit of regional transportation infrastructure system changes is improved commerce for all uses. Economic effects that could occur include impacts on traveler costs, economic development, land and property values, construction effects on businesses, and linkages between residences and jobs.

Changes in traveler and shipper costs

Transportation system changes may significantly affect travelers, presumably by decreasing the amount of time required to reach a destination. Projects that aim to reduce congestion often provide significant time savings for travelers and shippers resulting in improved regional commerce for all uses. Likewise, changes often improve the safety of system users. There are variety of methods for assessing how a transportation change affects travelers and shippers, including: gravity models, analyses of travel time savings, safety effects, geographic information systems (GIS), changes in vehicle operating costs, and comprehensive economic models. Once additional specificity is provided (e.g., location) on the commerce corridor, these models will assist analysts and policy makers in evaluating socioeconomic impacts by community and area.

Economic Development

Generally, policy makers are interested primarily in expanding jobs and income within a particular corridor or region. In such cases, it may not matter whether these impacts are generative (expansion through productivity improvements) or distributive (transfer of investment from outside areas to the study area). Many different methods have been employed to predict the economic development benefits of transportation investments. In general, the economic development analysis compares a "no-build" or status quo base case scenario to one or more transportation scenarios. Impacts are often forecast by both construction and operation phases outward to 20 years into the future. From a socioeconomic perspective, analysts and decision-makers are interested in the economic development impacts of a transportation infrastructure project measured in terms of job creation and changes in personal income or wages and salaries, changes in the type of jobs available, changes in property values, and net changes in business activity and investment in the commerce corridor.

There are many different methods employed to predict the economic development benefits of infrastructure investments. Analysts and decision-makers are interested in the economic development impacts of infrastructure projects measured in terms of job creation, labor income (wages and salaries, proprietor income), and business activity. The approach most often used to forecast employment, income, and business activity impacts of infrastructure investments are input-output (I-O) models. In general, I-O models contain a wealth of information on inter-industry relationships, including accounting tables for each industry that describe the amount of input the industry requires from other industries to produce one unit of output and the amount of production of each industry for various final demands. Using purchase and sales data, multipliers are calculated to forecast impacts as dollars spent on the infrastructure investment project ripple through the regional economy.

Construction of the Washington Commerce Corridor could provide a significant economic stimulus for the entire corridor region. Given an "order-of-magnitude" construction cost estimate of $24.4 billion (alternative 1) over an estimated construction period of 20 years, the forecasted economic impacts are listed in Exhibit 3-14.

Exhibit 3-14: Estimated Economic Impacts of Constructing Washington Commerce Corridor

Category	Direct	Total	Multiplier
Jobs	9,000	16,300	1.81
Output *(Millions of 2003 $)*	$1,220	$1,980	1.62
Labor income *(Millions of 2003 $)*	$480	$770	1.60

Sources: Huckell/Weinman Associates, Inc.; IMPLAN

In this "first-order" impact analysis of WCC construction, the direct jobs created within the construction industry number 9,000, with additional jobs created in other linked sectors totaling 7,300. Thus, each WCC construction job is estimated to support another 0.81 jobs within the region. The total estimated jobs generated are considerably less than the 35,000-42,000 estimated jobs associated with each $1 billion spent on construction and maintenance of the nation's transportation infrastructure (Buechner, 1999). These generative impacts provide little insight, however, as to how and where these jobs are distributed within the affected corridor region.

Land and property values

Transportation system changes may affect property values in a number of ways. Changes may provide improved access to an area, thereby increasing nearby property values. From this perspective, transportation projects may serve as catalysts to comprehensive regional reinvestment projects with the expectation that they will increase property values. On the other hand, properties adjacent to projects may decline in value as a function of their proximity and/or accessibility to the improved infrastructure, or as a result of a new undesirable visual feature in the environment. Most property value changes represent economic transfers—increases in one location are offset by reductions elsewhere. Keeping this balanced perspective may lead mixed results, including for certain areas the potential for no new increase in overall property values from the project.

Effects on competitiveness of businesses

The Washington Commerce Corridor, like many major construction projects, may disrupt routine business activity. Business owners may suffer customer losses as access to their business becomes restricted, which in turn will affect the number of employees that business requires. In addition, customers who find alternative businesses during the construction period may not necessarily return once construction is completed.

Once the WCC is completed, the improved infrastructure is predicted to enhance the competitiveness of existing businesses and communities within Western Washington.

Linkages Between Residences and Jobs

Historically, there has been a spatial separation of jobs and housing within the region. Affordable housing is often not located near jobs, causing many people to commute long distances to their work places. Most transportation infrastructure enhancements have the potential to alleviate the negative effects caused by this spatial mismatch between jobs and housing. Given the orientation of the Washington Commerce Corridor to freight movement, there are a limited number of access points affecting the personal commute.

Environmental Justice

Environmental justice is defined as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal and commercial operations or the execution of federal, state, local and tribal programs and policies."

Federal agencies or projects involving federal monies are required to consider impacts on minority and low-income populations (Executive Order 12898). A low-income population is generally defined by annual statistical poverty thresholds developed by the U.S. Bureau of the Census, and secondarily by state and regional definitions of poverty. The U.S. Bureau of the Census listed $9,359 as the poverty threshold for a one-person household in 2002, and $12,047 for a two-person household.

Environmental justice represents a similar line of inquiry to the distributional effects of the Washington Commerce Corridor. In general, the generative effects of jobs, incomes, and business activity are less difficult to predict and measure. More problematic are the project-related impacts distributed on minority or low-income populations within the Washington Commerce Corridor region. Even a very small minority or low-income population affected by a commerce corridor alternative does not eliminate the possibility of disproportionately high or adverse effect of the proposed commerce corridor.

The purpose of such an analysis is to assess whether there will be a disproportionately high and adverse impact on a low-income and minority population resulting from the Washington Commerce Corridor. Such an analysis must first identify low-income and minority populations related to the engineering, environmental, and planning activities impacting those populations. An evaluation and analysis would assess whether these target populations would receive a disproportionate share of the adverse impacts from the proposed route of the commerce corridor. Although a first level screening of environmental justice is beyond the scope of this concept feasibility study, it is expected that potential environmental justice impacts would be minor with the possible exception of effects on Native Americans.

Conclusions

The proposed WCC would be a significant alteration of the current transportation system in the State of Washington. While it has the potential to considerably improve the movement of freight and people across the state, there would be extensive impacts to existing environmental and community resources as a result of such a project. As discussed, these potential impacts are directed upon multiple issues and resources in both the natural environment and the communities in and around the proposed corridor area. These potential impacts play a significant role in determining the overall corridor's feasibility. They warrant further study to increase the overall understanding of the full potential effect of the WCC.

CHAPTER FOUR
Legal and Institutional Analysis

INTRODUCTION

The vision of the WCC is to enhance transportation in the State of Washington with an integrated, multi-modal system that will facilitate the efficient movement of freight, goods, people, and utilities with greater safety and security. The WCC is proposed as a North-South corridor with connectivity to major cities that will ease the growing congestion of freight and passenger travel along Western Washington's major transportation corridor, Interstate 5, as well as to provide other important facilities, such as public utilities. The potential components of the WCC will accommodate truck and rail freight, passenger rail and vehicles, non-motorized traffic, and utilities such as power, natural gas, petroleum, and telecommunication.

Nossaman, Guthner, Knox and Elliott, LLP's assignment was to conduct a legal analysis of the institutional issues surrounding the assembly, master planning, construction, and management of the WCC. In the *Institutional Framework Alternatives Analysis* section of this chapter, we discuss our alternatives analysis of different institutional structures for the WCC and recommend use of a single purpose government agency for the development and management of the WCC. In the section entitled *Powers and Authority of a Single Purpose Government Entity*, we discuss the powers and authority to entrust to this government agency in order to ensure its effectiveness. The *Limitations on Powers and Authority* section discusses the recommended limitations on the government agency's powers and authority. In the section *Challenges to WCC Public-Private Initiatives*, we discuss the challenges of public-private partnership initiatives as they apply to the WCC. We discuss design issues in the section entitled *Design Issue Regarding Utilities*. We conclude with a summary of the key issues and our recommendations for meeting the goals of the WCC from a legal perspective.

INSTITUTIONAL FRAMEWORK ALTERNATIVES ANALYSIS

The institutional framework of a project significantly impacts key aspects of its development and is an important consideration for the WCC. We have screened numerous alternatives and have selected three with the greatest potential for the feasible assembly, master planning, and management of the WCC. These alternatives are a) use of an existing government agency; b) creation of a joint powers authority; and c) creation of a single purpose government agency.

Existing Government Agency

The first alternative is to use an existing government agency, such as the Washington State Department of Transportation (WSDOT) to master plan, develop, and manage the WCC. There are several advantages to using WSDOT. As an existing government agency, WSDOT has an established organization, with the management, functions and personnel to facilitate the development of transportation projects. It is also uniquely positioned by virtue of its experience in overseeing a variety of transportation areas such as aviation, public transportation and rail, freight strategy and policy, highways, and the Washington State Ferries.[1] WSDOT's established statutory authority, such as in purchasing, building and managing transportation corridors, and its established organizational structure and staffing may assist WSDOT in administering the WCC, managing professional relationships, and managing public relations on a project where a successful public relations plan is critical to the success of the WCC.

The Transportation Expansion Project (T-REX) in Colorado, formerly known as the Southeast Corridor Multi-Modal Transportation Project, is one project that has successfully used an existing government agency. T-REX is a multi-modal transportation project using design-build contracting that combines highway construction and light rail transit.[2] The Colorado Department of Transportation (CDOT), which is responsible for highway construction, and the Regional Transportation District (RTD), which is responsible for light rail, formed a unique partnership to address highway mobility and safety issues, while offering travelers the option of riding light rail through the corridor. CDOT and RTD signed an Intergovernmental Agreement (IGA) that outlined the responsibilities of each agency, a project description, an explanation of the design-build concept and the proposed method of financing the project. The T-REX project also involves federal agencies. The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) signed an IGA that outlined the guiding principles and responsibilities regarding their work on T-REX. Groundbreaking for the project took place in 2001, after almost 10 years of planning. When it is completed in late 2006, it will offer expanded transportation options and safer highways in the metro Denver area.

The disadvantage to using an existing government agency is that it is less flexible and could slow down the process. The established powers, organizational structure and management that an existing government agency offers may not be well suited to the specific needs of the WCC. Furthermore, it may be difficult to make necessary structural modifications in WSDOT's organization to accommodate the needs of the WCC. For example, creating a department dedicated to the WCC may be procedurally or politically complicated. Such a division within WSDOT would have to compete for staffing, funding and other scarce resources available to the department. Additionally, WSDOT's powers are limited to state transportation purposes (and operating the state ferries).[3] This limitation could hobble pursuit of effective contracting structures for developing utility projects in the WCC.

1 WSDOT Table of Organization. See Appendix 1.
2 T-REX Fact Book (2003). Available at http://www.trexproject.com/.
3 47.01.260 RCW; 47.56.030 RCW.

Joint Powers Authority

The second alternative is to create a joint powers authority (JPA).[4] A JPA is the consolidation of two or more public entities with common powers for the purpose of acquiring or constructing a joint-use facility. The joint powers agreement, which is approved and signed by all government participants, states its purposes and how that purpose will be accomplished or joint powers will be exercised. The agreement may be administered by one or more of the parties, or by a board or commission created specifically for this purpose. The entity created by the joint powers agreement is separate from the parties to the agreement. The agreement vests the entity with specified powers, such as the power to make contracts, hire employees, construct or operate buildings, and sue and be sued in its own name. A JPA's bonding authority and taxing power flows directly from the authority and power of the individual entities making up the JPA. In general, the debts, liabilities and obligations of the JPA will be those of the parties to the agreement, unless the agreement specifies otherwise.

New legislation would not be required to allow WSDOT to enter into a JPA. Section 39.34.030 of the Revised Code of Washington (RCW) allows public agencies to establish a joint powers authority and finance joint projects.

A JPA is most successful for discrete, focused projects in which the entities share very similar goals. The Kern Water Bank Authority in California, for example, is a JPA that has successfully and profitably involved farmers and water district officials in a growing water market. In contrast, California's Alameda Corridor Transportation Authority (ACTA) is a JPA formed by the Cities and Ports of Long Beach and Los Angeles to build the Alameda Corridor. Though the Alameda Corridor was ultimately successful, the broad and disparate range of interests among the different members often created conflict and delays. For example, the commercial interests of the ports were very different from the interests of the people living in the cities through which the Alameda Corridor traverses.

A principal disadvantage to a JPA for the WCC is the sheer difficulty of successfully forming one. Affecting, and located in, numerous state, regional, county and city jurisdictions, it would be a very complicated endeavor to appropriately include the best mix of jurisdictions to facilitate WCC planning and implementation. All-inclusive recruitment of jurisdictions could produce an unwieldy governance structure within the JPA. Failure to be all-inclusive would tend to assure opposition from omitted jurisdictions. Reaching consensus on the terms and provisions of a joint powers agreement could be unattainable.

Even if successfully formed, the JPA would be challenged to reach consensus, resulting in delayed decision-making. This is a particular concern for a project such as WCC which will involve a large geographical area, various modes of transportation and types of utilities, and therefore a broad range of diffuse interests. Shifting or conflicting political agendas among various constituent members of the JPA could delay if not thwart the mission of the agency. Narrow interests could use their powers within a JPA to obstruct work that may be in the best interests of the state generally.

4 39.34.030RCW. See Appendix 2 for the full text of the statute.

Single Purpose Government Entity

The third alternative is to create a single purpose government entity, which is an entity that is created by the government for the sole purpose of planning and implementing a designated project. A single purpose government entity for the WCC can be formed only through new state legislation.

There are several advantages to single purpose entities. First, creating a single purpose government entity allows for the greatest flexibility, since the entity can tailor its structure to meet the specific needs of the project. It is also possible to create an entrepreneurial culture at a single purpose government entity, since it is unencumbered by existing policies and bureaucratic procedures. In addition, the single purpose government entity is able to select a team of professionals who are uniquely qualified and interested in the success of the project. Another distinct advantage is that a single purpose government entity is able to focus exclusively on the project and does not need to prioritize competing projects for time and funding. Examples of successful single purpose government entities include the Seattle Popular Monorail Authority (known as the Seattle Monorail Project), the Gold Line Construction Authority in Los Angeles and the Orange County Transportation Corridors Agencies.

It is critical that single purpose entities have the necessary powers and authority to direct the project and own right-of-way for project purposes.[5] Some of the difficulties the Seattle Monorail Project has encountered are the result of these constraints on its authority.

A disadvantage of a single purpose government entity is that it does not have the benefit of historic professional and political relationships that may assist in administering the project and securing public support. Another potential disadvantage is that a single purpose government entity may require additional effort to garner the support of existing government agencies who may be reluctant to have more competition for future federal funding.

Recommendation

Of the three alternatives, a single purpose entity, vested with the powers and authority necessary to oversee project planning, development, and administration will most effectively achieve the successful development of the WCC while responding to environmental and social concerns. A project of this scope requires a team that is exclusively devoted to achieving its goals. A single purpose government entity would have the opportunity to create a structure and assemble a team that would be tailored to meeting the goal of creating an environmentally sensitive, efficient, safe and secure system that encompasses utilities and different modes of transportation. A single purpose entity also has great potential to foster an entrepreneurial culture with an emphasis on quality and accountability.

One of the predictable areas of controversy in adopting legislature to form a single purpose entity for the WCC will be its governance provisions. Provisions on such issues as whether the Board of Directors should be elected or appointed, on the process for election and appointment, on the number and composition of the Board of Directors, and on the interests they will represent all

5 Right-of-way is a general term denoting land, property, or an interest, usually in a strip, acquired for or devoted to the corridor.

have political ramifications.[6] This report does not purport to make any recommendations on these issues; they must be sorted out through the legislative process. It is the experience of the authors, however, that the legislative process is, in the end, the most effective means to achieve compromise and balance among competing interests in controversial large infrastructure projects.[7]

In making this recommendation, we considered the fact that WSDOT has a broad variety of responsibilities to balance and that the addition of such a major program as the WCC could stretch its resources. The addition of the WCC to WSDOT's authority might also create conflicts between its continuing immediate responsibilities and the more long-term needs of the WCC. In addition, while WSDOT has expertise in managing different modes of transportation, it does not have authority to acquire, develop and manage utility infrastructure projects.

A Joint Powers Authority is also not optimal. Because the WCC will run through the jurisdiction of numerous cities and counties, including urban, suburban, and rural areas and involve a wide array of parties with differing interests, a truly representative JPA would have many members, making decision-making unwieldy and potentially ineffective.

POWERS AND AUTHORITY OF A SINGLE PURPOSE GOVERNMENT ENTITY

To achieve the goals of the WCC efficiently, it is important to vest the single purpose government entity with the comprehensive powers and authority it needs to be effective. This section of the report identifies the powers and authority that will be instrumental to the operations and success of a single purpose government entity ("Entity") in developing the WCC.

Environmental Review

One of the key initial steps in developing the WCC is conducting and successfully completing the NEPA and SEPA environmental review process. The Entity will need authority to act as lead agency for Tier 1 environmental review for NEPA and SEPA. It will need non-exclusive authority to act as lead agency for Tier 2 environmental reviews of projects within the corridor under NEPA and SEPA. Avoidance or minimization of adverse environmental and social impacts will be paramount in garnering the approvals and public support necessary for the development of the WCC.

6 E.g California state legislation established the Gold Line Authority for the single purpose of pursuing construction of the urban light rail transit line in two phases, with the second phase running east from the City of Pasadena to the easterly border of LA County. The legislation specifically provided for the appointments of several Board positions by city governments along the phase 1route, but omitted the cities along phase 2 route. With phase 1 complete and attention turned to the second phase, the omitted cities have strenuously objected to the provisions on Board control and taken action seeking to obstruct the phase 2 work. The state legislature probably will intervene and amend the legislation to reconstitute the Board appointment powers.

7 E.g. The Washington legislature intervened in major controversies affecting the proposed projects, including the Tacoma Narrows bridge, under the Public-Private Initiatives program, Chapter 47.46RCW, amending the statutory scheme on more than one occasion to address the competing concerns of affected citizens. The amendments ultimately enable the Tacoma Narrows Bridge project to be financed and proceed with construction.

Master Planning Authority

In partnership with private enterprises, the Entity will need authority to adopt a master plan for the WCC, and periodically update, revise and supplement the master plan as necessary or desirable. The master plan will be a comprehensive document that will identify the modes and uses of the WCC and include the conceptual design showing overall alignment of the corridor, the relative locations of each mode, separations, as well as other major design features. Prior to the adoption of the master plan, the Entity should be statutorily authorized and obligated to consult with state agencies such as WSDOT, Department of Natural Resources (DNR), and the Department of Ecology (DOE), regional agencies such as Regional Transportation Investment Districts, regional planning organizations, cities and counties within the WCC or its area of influence, federal agencies such as the FHWA, FTA, and the general public. The advice of these various parties will provide the Entity with a broad range of important factors to consider in its master plan, allowing it to expedite the progress of the WCC. Additionally, such consultation is required for NEPA and SEPA review, important for public relations, and an effective means to garner support. The WCC will be responsible to take the necessary actions to protect, restore and enhance the environment and affected communities.

Right-of-Way Assembly and Management Authority

The Entity will need authority to acquire, own, protect, lease and manage the WCC right-of-way and other property needed for the Entity's purposes, and to exercise the power of eminent domain as necessary to assemble and develop the WCC right-of-way. It will also need authority to adopt rules, regulations, guidelines, policies, covenants, conditions and restrictions (a) pertaining to the acquisition, financing, management, use, leasing, licensing, transfer, sale or other disposition of the WCC right-of-way; or (b) necessary or appropriate to assure environmental compliance, compatibility, interoperability, efficacy, efficiency, health and safety of all modes within the WCC. It is especially important to consider safety and security precautions for the utilities component of the WCC. We note that, as envisioned, utilities (including oil and gas) will be routed below grade, except for power transmission lines, greatly reducing the safety and security issues raised by above-grade installations.

Expenditure and Financing Authority

The Entity must have the authority to raise funds and make expenditures as appropriate to carry out its purposes.

A critical factor to feasibility is the ability to secure private financial participation in the development of the WCC, given the many competing demands on limited public funds. Private financial participation requires authority to enter into innovative public-private contracting arrangements. The financial portion of the feasibility study identifes and analyzes various potential sources for financing the development, construction and operation of the WCC and will not be addressed here in great depth. Private entities that may have the capability and interest to contribute private sector financing to WCC projects include utilities, railroad companies, power companies, freight and trucking companies, lumber interests, oil and gas interests, highway developers and landowners.

The Entity will also need authority to issue debt for the purpose of funding WCC right-of-way acquisitions or funding other agency purposes and activities, provided that such authority should be limited to debt backed only by agency funds and revenues and not the full faith and credit of the State. Innovative finance techniques include cash management, Grant Anticipation Revenue Vehicles (GARVEEs), which are capital market borrowings repaid by future appropriations of federal transportation funds deposited in the state highway account, property benefit assessments, tax increment financing, developer mitigation fees, "shadow tolls," local assessment bonds, deeply subordinated debt and deferred payments to design-build contractors, section 129 loans, concessions, and IRS 63-20 financing.[8] The Entity will need the authority to enter into or support all these forms of financing.

The Entity will also need authority to obtain and spend funds from federal loans and credits, such as through the federal Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA).[9] Under the TIFIA, the U.S. Department of Transportation may provide three forms of credit assistance—direct loans, loan guarantees, and standby lines of credit—for surface transportation projects of national or regional significance.[10]

Another critical source of financing is federal and state grants. The Entity will need authority to obtain and spend funds appropriated by the State and from federal grants, subject to the allocation authority of the State Transportation Commission over federal and state transportation funding. Federal funds may be available through the Transportation Equity Act for the 21st Century (TEA-21),[11] high-speed rail grants,[12] grants for public works and economic development from the U.S. Department of Commerce,[13] the Railroad Rehabilitation and Improvement Financing program and other public funding sources.[14]

Authority to Grant Rights of Use and Entry

The Entity will need authority to grant short-term and long-term rights of use, rights of entry, licenses, leases, ground leases, franchises and concessions, for portions of the WCC: This authority should include grants to WSDOT for transportation and transit uses, with or without compensation, provided that all necessary financing for the subject transportation or transit project has funded or is ready to fund concurrently with transfer; grants to public and private utilities at fair market rental rates for utility uses; and grants to other government agencies responsible for developing or regulating connections with or to WCC facilities.

8 Karen Hedlund, The Use of 63-20 Nonprofit Corporations in Infrastructure Development (May. 2001) (unpublished article, Nossaman, Guthner, Knox, & Elliott internal document). See Appendix 3.
9 23 U.S.C.A. § 101.
10 Program Fact Sheet, Transportation Infrastructure Finance and Innovation Act of 1998 (January, 2000). Available at http://tifia.fhwa.dot.gov/.
11 Transportation Act for the 21st Century, Pub. L. No. 105-178 (codified as amended in scattered sections of 23 and 49 U.S.C.A.).
12 49 U.S.C.A. § 24101
13 15 C.F.R. Part 24, Subtitle A. Available at http://www.osec.doc.gov/oebam/15cfr24.pdf.
14 Transportation Act for the 21st Century, Pub. L. No. 105-178 (codified as amended in scattered sections of 23 and 49 U.S.C.A.). The Railroad Rehabilitation and Improvement Financing program is a part of TEA-21. See http://www.fhwa.dot.gov/tea21/factsheets/r-rrehab.htm.

Contracting Authority

The entity will need authority to execute and deliver contracts, agreements, affidavits, certificates and other instruments and documents reasonably necessary to achieve its purposes.

This authority should include the power to enter into contracts with private entities for the development of all types of transportation projects. The Entity need authority to sue and defend suits, and will be subject to appropriate governmental immunities.

Authority Respecting Intergovernmental Agreements

The Entity need authority to enter into intergovernmental agreements for the master planning, financing, management and development of the WCC.

Transfer and Sale Authority

The Entity will need authority to transfer and sell portions of the WCC as necessary or desirable to: (a) WSDOT for transportation and transit uses, with or without compensation, provided that all necessary financing for the subject transportation or transit project is arranged and has funded or is ready to fund concurrently with transfer; (b) public and private utilities at fair market value for utility uses; (c) public and private parties regarding surplus and remnant parcels of land that are not needed for reasonably foreseeable purposes of the WCC. Sale of surplus and remnant parcels should be subject to existing state law regulating such sales.

Procurement and Employment Authority

The Entity will need authority to employ staff as needed. It will also need authority to procure and retain, under general state procurement laws and regulations, consultants and advisors, including planners, appraisers, surveyors, geotechnical engineers, architects, engineers, real estate, investment, insurance and other brokers, estimators, attorneys, traffic and revenue consultants, etc.

It is advisable to provide the Entity with flexible procurement authority for procuring public-private contracts and other contracts for the design, construction, operation and maintenance of WCC projects. The types of contracting arrangements in public-private partnerships are described below. Typical sealed low bid procurement procedures are not well suited to these contracting arrangements, because selection depends not merely on pricing but on the qualifications, ideas and technical capabilities of the private party. Accordingly, the Entity should have the authority to conduct procurements using other techniques, including competitive negotiation, qualifications-based selection and best value selection. Precedent for such procurement authority is discussed below.

Insurance Authority

The Entity will need authority to carry insurance or self-insure. It is quite possible that the most cost-effective means to place insurance will be through an owner-controlled insurance program. OCIPs are one form of "wrap-up" insurance, in which owners, contractors and their respective subcontractors all can be insured under one common program managed by the owner. However,

under current Washington law, public agencies lack the ability to construct a full, effective OCIP. RCW 48.270 prohibits any public agency or authority in connection with competitive bidding for a public contract from requiring competitors "to obtain or procure, any ... contracts of insurance specified in connection with such contract from a particular insurer or agent or broker." It further prohibits the public agency or authority from "obtain[ng] or procur[ing] any of such ... contracts of insurance, except contracts of insurance for builder's risk or owner's protective liability, which can be obtained or procured by the bidder, contractor or subcontractor."

Special legislation granting an exception from RCW 48.270 was adopted to allow Sound Transit to to put together an OCIP program. The benefits of an OCIP for a multi-dimensional, long-term project like the WCC may be significant. Accordingly, legislative exception to RCW 48.270 for the Entity should be considered.

Limitations on Power and Authority

The Entity's powers and authority should be commensurate with its limited purposes. Its purposes are only to assemble and manage the WCC right-of-way and to facilitate, oversee and manage design, construction, operation and maintainance of projects in or relating to the WCC. Recommended ancillary powers and authority include:

- Conceptual design for master planning of the WCC;
- Design and construction of facilities within the WCC if not appropriate for design and construction by third parties;
- Design and construction of agency administrative and management facilities;
- Design and construction of conduits, fiber optic lines and equipment for telecommunication uses, including the operation of the same for the sole purpose of providing support for other corridor uses and for the Entity's telecommunication needs;
- Operation of projects due to reversion of ownership to the Entity upon expiration or earlier termination of any franchise, lease, concession, license or right of entry granted to a third party; and
- In conjunction with or upon the written consent of WSDOT, design or construction of improvements to transportation projects under WSDOT's jurisdiction as may be appropriate to achieve connectivity or full efficiency of the WCC.

Implicit in this limited purpose model are limitations on the Entity's power and authority. The legislation should set forth express limitations, Among the fundamental limitations to be considered are the following:

- Restrictions on ownership, operation and maintenance of any highway improvements (unless within the foregoing ancillary powers), which functions should rest either with WSDOT or with a private concessionaire or franchisee;

- Restriction on ownership, operation and maintenance of utilities (unless within the foregoing ancillary powers), which functions should rest with the public and private utilities that utilize the WCC;

- Restrictions on engaging in any regulatory activity that is within the power of any other state regulatory agency;

- Prohibitions on making gifts of public funds or assets; and

- Restrictions on authority to impose any general or special tax, provided the Entity should be authorized to issue debt backed by the tax revenues of other taxing authorities, and take loans of proceeds of such debt issued by other taxing authorities.

Challenges to WCC Public Private Partnerships

Description of Public Private Partnerships

Public-private partnerships are innovative collaborations between the public and private sectors that expand upon the traditional private sector participation in project design, financing, operation, and maintenance. Public agencies will consider public-private partnerships where any of the following circumstances exist:[15]

- Need for private sector special expertise with project development or operations;
- Ability to generate a dependable revenue stream from project operations;
- Need for accelerated project delivery;
- Need for innovative solutions to design or construction problems;
- Project involves repetitive design and construction elements;
- Desire for enhanced project quality;
- Need for cost certainty early in the project development process;
- Insufficient staff to manage a traditional project;
- Lack of sufficient staff experience with the type of project
- Lack of public funds to finance the project

Public-private partnerships take various forms, including long-term concessions, franchises, Design-Build-Operate-Maintain, and Design-Build.

Concessions and Franchises

In the context of infrastructure projects, the terms franchise and concession are often used interchangeably. For simplicity, we will use the term concession for both franchises and concessions. Under concession agreements, the government grants the right to a private entity to finance, build, own (or lease), and/or operate. The public agency and the selected private entity typically negotiate the terms of exclusive development and operating rights for a fixed term of years. The agreement may also contain a non-compete provision. The public agency may retain ownership of the facility or real property on which it is constructed with a lease back to the developer, or it may transfer ownership to the developer that reverts back to the government after the concession ends.

The public agency may award a concession for a project that it conceives, request proposals for project development from the private sector, or in certain jurisdictions, accept unsolicited

15 In part, from Nancy C. Smith, Brian G. Papernik, and Corey A. Boock, Design-Build Contracting with State and Local Agencies, in Design-Build Contracting Handbook, 391, 394-395 (Robert F. Cushman and Michael C. Loulakis eds., 2nd Edition, 2001).

proposals. The agency evaluates proposals based on the independent merit of the submitted project concepts against predetermined criteria, as well as the proposer's technical, management, and financial strength.

A concession project necessarily requires an operating revenue stream to service project debt and provide the concessionaire the opportunity to earn a return on investment. Concessions typically provide for early termination if and when a maximum allowable return on investment is realized.

In addition, the public agency will usually retain the right to terminate the concession if the contractor fails to proceed to develop and finance the project in accordance with predetermined performance milestone schedules. It also provides general oversight of construction to ensure it complies with the concession agreement, applicable state standards, and other legal requirements.

Design Build

In design-build, the design-builder is responsible for the design and construction of the project in accordance with specified design parameters or performance specifications. A publicly funded design-build project typically involves a government agency giving contractual delegation to a builder of full authority and responsibility for assembling and managing all disciplines and resources required to complete the design and construction of a project, with the right to receive progress or milestone payments as work is performed. RCW § 39.10.051(1) defines design-build as "a contract between a public body and another party in which the party agrees to both design and build the facility, portion of the facility, or other item specified in the contract."[16] The contract price is typically a lump sum or guaranteed maximum price. Design-build is suitable for public agencies needing to operate under, or wishing to impose on a project, fiscal and/or schedule constraints and willing to cede detailed project control to a contractor in exchange for price and completion guarantees and broader performance warranties. Many state highway agencies have used design-build on projects.[17]

Although Washington's design-build statute does not explicitly refer to the ability to select proposals based on best value, best value selection is implied by RCW §39.10.051(4), which states that contracts for design-build services shall be awarded through a competitive process that includes factors other than price. It describes a number of factors a public body will use to evaluate requests for proposals including in part:

> ...proposal price; ability of professional personnel; past performance on similar projects; ability to meet time and budget requirements; ability to provide a performance and payment bond for the project; recent, current, and projected work loads of the firm; location; and the concept of the proposal.[18]

However, where proposals are deemed equivalent, best price will determine selection. 39.10.051(5) RCW provides as follows:

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16 39.10.051(1) RCW. See Appendix 4.
17 Smith et al., supra note 14, at 405.
18 39.1.051(4)(d) RCW. See Appendix 4.

> ...If the public body determines that all finalists are capable of producing plans and specifications that adequately meet project requirements, the public body *may* award the contract to the firm that submits the responsive *best and final proposal* with the *lowest price*.[19]

Design-Build-Operate-Maintain

Design-Build-Operate-Maintain (DBOM) is an innovative contracting method that reduces the time and owner risks associated with delivering major projects. In DBOM, the design-builder is responsible for the design, construction, operations, and/or maintenance for a specified period. Financing of the project may come from the public agency, from the design-builder or a combination of public and private sources.[20] It provides a powerful incentive for the team to build a high-quality system that will endure over time. Proposing teams bid on all aspects as a single package. The price is typically a fixed amount (usually with the price for operations and maintenance subject to escalation on a specified index), often coupled with incentives and disincentives. Operating costs sometimes include a variable component based on units of output (e.g. water/wastewater flow) or usage (e.g. vehicle trips). Hence, costs, including base operations and maintenance costs, are known up front with a greater degree of certainty.[21] DBOM also ensures that the entity designing the project will be thoughtful about the expense of operations and maintenance, since inefficiencies in those areas will ultimately affect profitability. DBOM is distinguished from concessions by the lack of direct private participation in revenue opportunities and risks.

Recommendation of Public-Private Partnership

The use of public-private partnerships is recommended for, if not essential to the success of, the WCC. This section briefly discusses the primary reasons for this recommendation.

Innovative Financing

It is foreseeable that public sector funding will be insufficient to develop the WCC. Private sector partners bring capital and can make up-front payments to a government agency that has significant financial needs. Traditional state and federal funding is scarce and often involves a long waiting period. In California, for example, toll roads were originally planned as freeways but traditional state or federal funding was not available. The projections of new housing development and an influx of population in the area made the need for new roads critical. Instead of waiting for state or federal funding, Orange County leaders in the early 1980s decided to look at alternative ways to fund road construction. In 1986, the state legislature authorized the creation of the Transportation Corridors Agencies (TCA) to collect developer fees and tolls to finance, design, build and operate the roads. TCA was authorized to issue non-recourse bonds that could be sold to private investors,

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19 39.1.051(5)(b) RCW. Italics added. See Appendix 4.

20 E.g., the SH130 turnpike in Texas is being developed under a DBOM project delivery method. Financing sources include federal and state grant funds, TIFIA financing, toll revenue bonds and subordinated contractor debt.

21 James Dobbs, Privatization: What Works and What Doesn't, Privatizing Government Functions, 4-1, 4-6 (Deborah Ballati ed., 2003).

and to collect tolls to repay the bond debt. Without this innovative financing plan, the roads would not have been built and existing roads would carry the burden of additional traffic.

Technical Innovation

Projects pursued through public-private partnerships typically rely on the private partner to develop design subject to basic scope or work requirements and performance parameters and specifications. Prescriptive specifications are minimized, enabling the private partner to introduce its own concepts for design and its own means, methods and techniques to execute the work, so long as they satisfy the owner's performance criteria and comply with law.

As a result, public-private partnerships create better opportunities for the private sector to develop and apply their innovations. The private sector can invest in technology and systems innovations that the public sector cannot obtain because of lack of funds or the complexities of procurement systems.[22]

Risk Management

Private sector partners bring cohesive, integrated decision-making to the design and construction process and are the single point of responsibility for quality, cost and schedule adherence.[23] In a design-build approach, for example, conflicts between design and construction are the responsibility of the design-builder and not the government agency. Hence, the government agency is relieved of the risk that construction costs or schedule may increase due to faulty design or engineering, as well as risks associated with coordinating between the designer and the builder. Having sole responsibility for the design and construction of a project is also a strong motivator for the private party to maintain quality, since it is not possible to shift deficiencies to another party. Public-private partnerships realize cost savings because there is only one team working together to evaluate alternative designs, materials, and methods efficiently and accurately, which shortens the length of time to complete a project.[24]

Public-private partnerships expand the choices for allocation and management of risks. For example, the success of an infrastructure concession often depends upon the ability of private entrepreneurs to raise the equity and loan capital needed for a project. Since private investors and lenders seek returns on investments equal to those they can obtain elsewhere with similar levels of risk, and since governments want sustainable concessions, both must know the acceptable levels of risk and return, and what is required for concessionaries to attract adequate financing.

The WCC will greatly benefit from the fair allocation and management of risk. Design-build or DBOM projects typically require contractors to commit significant time, effort and money up-front to submit a proposal. To draw a large enough pool of proposals to stimulate competition, it is essential that contractors be able to accurately estimate their costs. The increase in competition is desirable because it translates into value pricing, which benefits the public. Because the WCC will encompass a large geographic area and involve multiple phases of development of diverse

22 Id., 4-5.
23 Design-Build Institute of America, An Introduction to Design-Build, Document Number 101, Design-Build Manual of Practice, First Edition, (October 1996).
24 Id.

infrastructure, the fair allocation of risk is essential to encouraging competition in the proposal process and achieving the best value.

The fair allocation of risk requires several steps. First, it is important to identify all of the possible risks. These risks cover a broad range of categories and include safety, environmental protection, service quality, technical, commercial, as well as random, unpredictable events. For example, there is the risk of design flaws, encountering environmentally protected plants or species, rising prices of building materials, other changes in market conditions, changes in law and natural catastrophes such as wildfires or earthquakes. Second, once the parties have identified all of the possible risks, they may begin to estimate the probability of each event occurring and its magnitude of impact on cost and schedule. This allows the parties to quantify risk by determining expected values. Based on these figures, parties may decide how to best allocate all of the possible risks. For example, in the case of rising prices of building materials, the contractor may agree to pay for price increases up to a certain limit, after which the owner would be responsible.

Once the parties have properly identified, estimated, quantified and allocated the risks, they may engage in various strategies to manage them. Risk allocation and mitigation tools include contractual indemnities, fully considered insurance requirements given current market conditions, bonding, contingency pools, allowances, bondholder risk absorption and potentially, limitations on liability.

Intermodalism

Intermodalism is an integral aspect of the WCC.[25] Public-private partnerships harness private sector innovations in intermodalism, design, engineering, and operations to improve performance and create efficiencies. The freight industry, for example, has applied the concepts of intermodalism for many years to provide an efficient transport of goods for the best value. In addition to allowing the convenient, rapid, efficient and safe transfer of people or goods from one mode to another, intermodalism offers the benefits of expanding the choices of transportation options. Finally, intermodalism requires collaboration among the different transportation organizations and operators, which encourages each organization and operator to continually improve its service and adopt best practices.

Public-Private Partnership Legislative Precedent

Washington

In the state of Washington, the secretary of transportation has general public-private partnership authorization under the provisions of Chapter 47.46 RCW.[26] RCW § 47.46.10 provides in relevant part as follows:

> The secretary of transportation should be permitted and encouraged to test the feasibility of building privately funded

25 In this chapter, we use the term "intermodal" to refer to an integrated system in which utilities and individual modes of transportation, such as automobiles, mass transit, and passenger and freight railways, work together to provide the user with the best choices of service and in which the consequences of a policy on a single mode are considered for all modes.
26 Chapter 47.46 RCW. See Appendix 5 for full text.

> transportation systems and facilities or segments thereof through the use of innovative agreements with the private sector. The secretary of transportation should be vested with the authority to solicit, evaluate, negotiate, and administer public-private agreements with the private sector relating to the planning, construction, upgrading, or reconstruction of transportation systems and facilities.[27]

Chapter 47.46 also authorizes the use of private entities to design and operate proposed facilities,[28] including "...highways, roads...transit stations and equipment, transportation management systems, and other transportation-related investments.[29] Public-private partnerships authorized under Chapter 47.46 RCW are subject to the approval of WSDOT, state and local lead agencies, and must have public support. A legislative oversight committee is responsible for monitoring and reporting on the progress, execution, and efficiency of design-build contracts for such public-private projects.[30]

Chapter 47.46 has been less than ideal in generating public-private projects. In 1994 WSDOT solicited proposals for up to six demonstration projects, as authorized by 47.46.030(1) RCW. WSDOT accepted six proposals for negotiation, including two toll bridges (the Tacoma Narrows bridge and the SR 520 floating bridge), two toll roads (SR 18 and SR 522), a park and ride facilities project and a proposal for congestion pricing of new toll lanes in the Puget Sound region. Several of the projects were abandoned during negotiations due to intense local opposition. The Legislature then intervened and amended Chapter 47.46 to bar any congestion pricing project absent legislative approval[31] and to require an "advisory vote" in the "affected project area" for all other projects receiving petitions of opposition with 5,000 or more signatures.[32] The amendments neither defined the meaning of an advisory vote nor indicated what legal effect, if any, it would have. The advisory vote process interposed considerable delay while administrative rules were adopted, analysis conducted to identify and certify the affected project areas, public comments received and elections held. These delays led to abandonment of all remaining projects other than the Tacoma Narrows Bridge, which went to election and received a majority advisory vote in November 1998.

Thereafter, WSDOT and the private developer for the Tacoma Narrows Bridge entered into a second round of intensive negotiations of public-private agreements for the financing, design, construction, operation and maintenance of the project. After agreement was reached, final environmental review and documentation proceeded, followed by further preliminary design and permitting and approval work. In addition, the developer formulated and started implementing a plan for the private finance of the project through issuance of tax-exempt toll revenue bonds.

Throughout this period, WSDOT defended against several lawsuits brought by a small local citizen's group seeking to halt the project or force it to be financed without tolls. All but one of the lawsuits failed. However, in 2000 the Washington supreme court brought work on the project to a halt when it held that WSDOT lacked the authority to toll the project.

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27 47.46.010 RCW.
28 Id.
29 47.46.020 RCW.
30 47.46.180 RCW.
31 47.46.010 RCW.
32 47.46.030(3) through 47.46.030(10) RCW.

It took the Legislature almost two years to enact legislation that cured the legal infirmities cited by the supreme court. This legislation, however, provided the state with the preemptive right to finance projects under Chapter 47.46 RCW with state bond financing[33], notwithstanding that a developer's proposal and economic terms may be predicated on private sector financing. If the private developer does not accede to any such election, WSDOT is prohibited from proceeding with the project.[34] The legal and practical effect was to place the financing burden for the Tacoma Narrows Bridge project on the State's treasury, subject to reimbursement from toll revenues. These legislative changes required yet a third round of negotiations to change the role of the developer in the project and finalize terms and price for the design-build contract for the project. It was not until September 2002, eight years after WSDOT received the initial public-private proposal for the Tacoma Narrows Bridge project, that financing closed and construction began.

The adverse experiences on the six demonstration projects, and particularly the Tacoma Narrows Bridge project, have dampened the appetite of the private sector for risk-taking during the early development stages. The developer of the Tacoma Narrows Bridge project agreed under its development contract to defer compensation for the cost of most pre-financing work, with compensation dependent on successful close of financing. The developer stood to lose approximately $25 million of investment in the work if the project had not proceeded. The risks caused by legislative changes, the advisory vote and adverse court decisions, not to mention the substantial risk that environmental clearances, permits and approvals might not have materialized, were sobering to the developer and the private sector transportation industry in general. No solicitations of proposals for new projects under Chapter 47.46 RCW are currently outstanding, requested or planned.

Comparison to Other States

Currently, 23 states have legislative authority for public-private partnerships.[35] Some states have established broad authority to engage in public-private partnerships, [36] while other states limit public-private partnerships to specific projects.[37]

Texas is an example of a state that has broad public-private partnership authorization. Texas Transportation Code §227.023 states in relevant part "...the department shall encourage the participation of private entities in the planning, design, construction and operation of facilities."[38] Texas allows the Texas Department of Transportation (TxDOT), the Texas Turnpike Authority, and Regional Mobility Authorities to accept both solicited and unsolicited bids for public-private partnerships. Texas also adopted legislation that was tailored to aid the creation of the Trans-Texas Corridor.

Virginia also authorizes public-private partnerships and allows both solicited and unsolicited proposals through the Public-Private Transportation Act of 1999 (PPTA), which was enacted to make public-private highway partnerships as adaptable and efficient as possible. The PPTA

33 47.46.070 RCW.
34 47.46.070(3) RCW.
35 See Appendix 6.
36 E.g., Ark. Stat. Ann. §§ 28-7701 to 28-7758.
37 E.g., 20 Ill. Comp. Stat. § 2705-450 (providing public-private partnerships for high speed rail and magnetic levitation transportation).
38 Tex. Transp. Code Ann. Ch. 227.

streamlined the application and approval process and returned the responsibility of project evaluation and selection to the Department of Transportation.[39] While the state has the power to issue proposals, the PPTA allows the private sector flexibility to select the types of projects it wishes to implement rather than have to take a complete package. This flexibility allows the state to capitalize on the creativity of the private sector. A unique provision of the PPTA is that it gave the state the ability to use its condemnation power on behalf of a private developer of a public-private partnership.[40]

Limits on Private Sector Participation in Environmental Review

One of the threshold issues facing any public-private partnership for the development of infrastructure projects is what role the private partner may play in environmental review and assessment of the project under the National Environmental Policy Act ("NEPA") and Washington's State Environmental Policy Act ("SEPA"). This section discusses the law applicable to this issue.

NEPA

Congress adopted NEPA in 1969 to ensure the evaluation of the probable environmental consequences of a proposal before federal agencies make a decision.[41] NEPA also allows federal agencies to change, condition, or deny proposals based on environmental considerations. NEPA applies to (1) federal projects, (2) any project requiring a federal permit, and (3) projects receiving federal funding

Council on Environmental Quality (CEQ) regulations state that an environmental impact statement (EIS) prepared pursuant to the requirements of NEPA "shall be prepared directly by or by a contractor selected by the lead agency" (or where appropriate, by a federal cooperating agency).[42] The stated intent of the regulations is to avoid any conflict of interest. Any "financial or other interest in the outcome of the project" would cause a conflict of interest.[43] This includes any known benefits other than general enhancement of professional reputation.[44] The CEQ's interpretation of this regulation (section 1506.5, subd. (c)) is that "a firm which has an agreement to prepare an EIS for a construction project cannot, at the same time, have an agreement to perform the construction, nor could it be the owner of the construction site.[45]

Furthermore, contractors shall "execute a disclosure statement. . . specifying that they have no financial or other interest in the outcome of the project."[46] The statement assures the public that the EIS is "free of subjective, self-serving research and analysis."[47] "If the document is prepared by contract, the responsible Federal official shall furnish guidance, participate in the preparation and

39 Dobbs, supra note 17, at 4-9.
40 Id.
41 42 U.S.C. § 4321.
42 40 C.F.R. § 1506.5, subd. (c) (1999).
43 Forty Most Asked Questions Concerning CEQ's NEPA Regulations (40 Questions) 46 Fed.Reg. 18028, (March 23, 1981), as amended, 51 Fed. Reg. 15618 (April 25, 1986).
44 40 Questions, Question No. 16.
45 CEQ 1983 Guidance Regarding NEPA Regulations, 48 Fed.Reg 34263 July 28, 1983 (CEQ Guidance).
46 40 C.F.R. § 1506.5, subd. (c) (1999).
47 48 Fed.Reg. 34263, July 28, 1983.

shall independently evaluate the statement prior to its approval and take responsibility for its scope and contents."[48]

NEPA cases prior to the Transportation Equity Act for the 21st Century ("TEA-21") addressed contractor involvement in environmental analysis where the contractor was also the design engineer or would be the manager of future construction of the project or the developer of the project.[49] These cases hold that a firm with a financial interest may "assist" in drafting the EIS, and can provide data, reports, etc. as long as the federal agency remains ultimately responsible for the EIS. The contractor or its affiliates can provide project information, engineering and design services that are used by the environmental consultant in the preparation of the environmental documents. Examples of such services include engineering drawings and geotechnical studies. The key factors in these cases were the extent of the federal agencies' active and independent participation in the EIS; the agencies did not just rubber stamp the material provided by others.

In these cases, the contractors participated or assisted in the preparation of the EIS, they did not "prepare" the EIS. A "preparer" is one who puts in written form or draws up a document..."[50] A preparer has discretion "to accept, reject, or modify the information submitted for consideration by subordinate participants in the EIS process."[51]

Under §112(g) of TEA-21, Congress authorized the preparation of highway impact statements by engineering firms. Section 112(g) provides that a state may procure the services of a consultant to prepare any environmental document for a highway project, as well as subsequent engineering and design work on the project if the State conducts a review that assesses the objectivity of the environmental document prior to its submission to a federal agency.[52]

Congress enacted this statute to allow State highway agencies to hire engineering firms to prepare environmental documents and conduct engineering and design work for the project evaluated in the environmental document. Section 112(g), however, does not authorize a firm to provide both environmental and construction services on the same project. Thus, the statute does not insulate the private partner from the general NEPA conflict of interest rules.

Only one reported decision ("AWARE"") has addressed the TEA-21 NEPA amendment.[53] In AWARE, the issue was a contract for preliminary and final design work, not for construction. The

48 40 C.F.R. § 1506.5, subd. (c) (1999).
49 Essex County Preservation Assn. v. Campbell (1st Cir. 1976) 536 F.2d 956, 959, 960) (Design Engineer for highway project may participate in drafting the EIS (as private construction firms involved in constructing a project have done) but considerable caution must be exercised by federal agency who bears responsibility for ultimate work product); Life of the Land v. Brinegar (9th Cir. 1973) 485 F.2d 400, 468 (Construction management firm with financial interest in airport runway project may assist in drafting EIS where there was significant and active participation by federal agency); Sierra Club v. Lynn (5th Cir. 1974) 502 F.2d 43, 59 (Financially interested developer of new community can provide data, reports and assistance in EIS, because HUD performed analytical and judgmental functions of drafting EIS); Lake Erie Alliance for Protection of Coastal Corridor v. United States Army Corps of Engineers (W.D. PA 1981) 526 F. Supp 1063, 1073 (Permit applicant for improvements in lake can supply information and respond to comments on Draft EIS because Corps of Engineers evaluated validity and accuracy of studies).
50 Sierra Club v. Marsh, (D. Me. 1989) 714 F.Supp. 539, 551.
51 Id. at 551.
52 23 U.S.C.A. § 112, subd. (g).
53 Associations Working for Aurora's Residential Environment ("AWARE") v. Colorado Dept. of Transportation (10th Cir. 1998) 153 F. 3d 1122.

court held that the contractor preparing the EIS did not have a conflict of interest. The court reached this conclusion based on the fact that the contractor had no contractual guarantee of future work on the project; an expectation of future work is not a conflict. When the contract was amended to add preparation of the EIS, the design work was eliminated from the contract. The court also emphasized the importance of agency involvement in directing the analysis because this active role strengthens the public perception of the integrity of the process, even when the contractor performs future work on the project. Referring to TEA-21, the court noted that Congress shares this view.

SEPA

The SEPA, adopted in 1971, is Washington State's counterpart to NEPA.[54] SEPA provides the framework for agencies to consider the environmental consequences of a proposal before taking action. It also gives agencies the ability to condition or deny a proposal due to identified likely significant adverse impacts. SEPA does not limit the participation of the private sector in environmental review.

Joint NEPA/SEPA Review

A federal agency can delegate preparation of the EIS to a state agency (if the agency or official has statewide jurisdiction), and can utilize documents prepared by a consultant or project applicant as long as the federal agency retains sufficient control and responsibility for the NEPA compliance. In addition, agencies are encouraged to issue combined documents that meet the requirements of both NEPA and SEPA. For example, when an environmental impact statement (EIS) is needed for a proposal, the NEPA and SEPA lead agencies may agree to be co-lead agencies and issue a joint NEPA/SEPA EIS. The NEPA regulations **require** federal agencies to cooperate "to the fullest extent possible to reduce duplication between NEPA and State and local requirements." 40 C.F.R. § 1506.2(b). The EIS will discuss all issues needed to meet the needs of both agencies. In some instances a federal agency may use existing SEPA documents to meet NEPA requirements, depending on the adopted NEPA policies of that agency. Federal delegation of NEPA preparation to a state agenecy, or joint preparation of the combined NEPA/SEPA EIS, still must proceed in compliance with NEPA's conflict of interest regulations. The requirement for analysis of conflicts and completion of the disclosure statements is not eliminated by delegation or joint preparation. The conflict of interest regulations apply any time a federal lead agency determines that it needs contractor assistance in preparing an EIS. (CEQ Guidance).

Summary

In summary, a private sector partner cannot complete the NEPA document on its own. However, it may work on the NEPA documentation as well as do follow-up design work. This can be done under separate contracts for NEPA and design work or under a single contract. The lead agency, however, must provide direction and oversight over any actual NEPA document. There are several cases where a highway construction contractor has submitted extensive environmental analysis to a state highway authority (SHA) that, in turn, was used by the SHA in finalizing its independent NEPA document. To comply with §112(g), the state must conduct a review assessing the objectivity of the environmental documentation prior to submission for approval.[55]

54 Wash. Admin. Code § 197-11.
55 Id.

Recommendation for Public-Private Partnership Legislation

There are some statutory tools in place that will facilitate the development of the WCC, but the State of Washington will need to enact new legislation to fully realize the goals of the WCC. First, legislation authorizing the creation of a new single purpose state entity is required. Under § 35.21.730 RCW, cities, towns, and counties have the authority to create public corporations, commissions, and authorities to perform any lawful public purpose or public function.[56] However, because the WCC will encompass several cities, towns, and counties, it is not possible to create a single purpose entity for the WCC under this section.

The Entity's authority to enter into public-private partnerships should be strong. The new legislation should incorporate existing public-private partnership authority granted to WSDOT under Chapter 47.46 RCW, grant additional authority to expedite processes related to the WCC, as well as provide flexibility in dealing with utilities, railroads, and private landowners. One of the strengths of Chapter 47.46 RCW is its mandate for citizen participation through local involvement committees. Public-private agreements must "include a process that provides for public involvement in decision making with respect to the development of the projects."[57] The private entity must "proactively seek public participation ... that assesses and demonstrates public support among: Users of the project, residents of communities in the vicinity of the project, and residents of communities impacted by the project."[58] The public involvement process is to be "comprehensive" and afford opportunity to comment on key issues such as project alternatives, design, environmental assessment, right-of-way, traffic impacts, tolling, project cost, construction impacts and operations.[59]

However, simply including the Entity in the scope of Chapter 47.46 RCW will not be sufficient to enable practicable and workable formation of public-private partnerships due to a number of shortcomings in that statute.

First, the limitation on the number of demonstration projects under 47.46.030 RCW (to six projects) is unworkable for the WCC, which predictably would include multiple projects and facilities over time. The legislation should remove the six-project limitation or at least not apply it to the WCC.

Second, the statute lacks the flexibility to allow private parties to submit, and WSDOT to consider, unsolicited proposals. This contrasts with the more successful programs in Texas and Virginia, and the new public-private law in Georgia, all of which contain procedures for unsolicited proposals. Chapter 47.46 RCW does not permit WSDOT to consider or solicit proposals until 45 days after potential projects are submitted to review and comment under a public involvement plan approved

56 35.21.730(5) RCW. See Appendix 8.
57 47.46.040(8) RCW.
58 47.46.040(9) RCW.
59 Id.

by the state legislature, submitted to review by the State Transportation Commission and submitted for consideration by the legislative transportation committee.[60] This is a long, cumbersome process that discourages private developers from initiating potential projects.

Third, the advisory vote requirement and restrictions on private participation in project financing limit the continuing effectiveness of Chapter 47.46 RCW as a means to engender new transportation infrastructure development in Washington. The advisory vote, with its legal vagueness, considerable delay and uncertainty of outcome, is a formidable obstacle to new project proposals. The potential for state preemption of private financing under Chapter 47.46 RCW discourages investment and financing innovations from the private sector. An additional discouragement is a requirement that a citizens' advisory committee first review and comment on any imposition or modification of toll rates. This provision creates uncertainty that has yet to be tested in the bond markets.

We recommend that public-private statutes in other states be reviewed and the history of projects thereunder be surveyed to ascertain advantages, disadvantages and current best practices. Such a survey will inform the State about amendments to Chapter 47.46 RCW that can improve its effectiveness.

Legislation for the Entity should also establish all the powers and authority discussed in *Powers and Authority of a Single Purpose Government Entity* above. This includes authorizing the Entity to acquire property by purchase or condemnation for all purposes contemplated by the WCC master plan, including entering into franchise and concession agreements. This authority should include the power to acquire additional right-of-way and lease it to private entities for compensation. The Entity should have explicit authority to enter into contracts with public and private entities for all types of transportation and utility projects. Legislation should also establish the Entity's authority to issue non-recourse debt, set tolls, enter into master development agreements, direct utility installations, and exercise other appropriate means to fully develop the WCC project.

Design Issue Regarding Utilities

Depending upon the ultimate width and alignment of the WCC, there may be an issue with the placement of utility lines in highway right-of-way. The current proposal has a minimum right-of-way requirement of 500 feet and a maximum of 710 feet. The design width for the corridor of 500 feet requires installation of below-grade oil and gas pipelines and below-grade fiber optic lines directly underneath the shoulder of the planned highway right-of-way.

Under 47.44 RCW, WSDOT may grant franchises to "persons, associations, private or municipal corporations, the United States government, or any agency thereof to use any state highway for the construction and maintenance of ...gas, oil...".[61] However, FHWA and WSDOT utility accommodation policies restrict the type of proposed longitudinal installation in which utilities run directly underneath highway right-of-way.[62] Longitudinal installations raise issues of access for maintenance of oil and gas pipelines, concerns of traffic disruption, and safety. [63] WSDOT

60 47.46.030(2) RCW.
61 47.44.010 RCW. See Appendix 9.
62 WSDOT, Utilities Accommodation Policy, M22-86, 3-5 (May 1992).
63 Wash. Admin. Code §§ 468.34.130 and 468.34.150. See Appendix 10.

guidelines specify that utilities should be located outside Control Zones, defined as the roadside area within the highway right-of-way in which placement of utility objects is controlled, unless a variance applies.[64] A variance applies when it is impractical to comply with the maximum Control Zone. For example, compliance is impractical when right-of-way is not adequate to accommodate utility objects outside the Control Zone. Washington has accommodated fiber optic facilities under specified terms and conditions, but they have not traditionally permitted longitudinal installations of below-grade oil and gas pipelines. Should WSDOT wish to implement the proposed 500 foot wide corridor, it may be necessary to revise guidelines that limit installation of oil and gas under highway rights-of-way.

Conclusion

The WCC is a unique project that combines multiple modes of transportation and utilities. Analysis of similar projects and research into Washington and federal law suggests that the WCC is feasible from a legal perspective, but will require new state legislation.

Because the WCC will run through several jurisdictions and involve numerous entities, we recommend that a state-created single purpose entity as the institutional structure that will best facilitate the assembly, master planning, construction and management of the WCC. The legislature should create the entity and provide for the composition of the Board of Directors, including the number of members and the way in which they are selected. The legislature should grant the Entity the necessary powers and authorities it needs to be effective. This includes acting as lead agency for environmental review under NEPA and SEPA. However, its powers and authority should be limited to the WCC.

Because of limited public funding, public-private partnerships are critical to developing the WCC. Public-private partnerships will allow the WCC to benefit from private sector innovations and the fair allocation and management of risk. Washington has a limited public-private authorization statute but the legislature will need to pass legislation that will grant this authorization to the single purpose entity and cure shortcomings of the existing statute.

Finally, the ultimate width and alignment of the WCC will warrant further investigation as to whether there is a need to revise WSDOT guidelines that limit the installation of oil and gas utilities under highway rights-of-way.

64 WSDOT, Utilities Accommodation Policy, M22-86, 3-7 (May 1992).

CHAPTER FIVE
Construction and Right-of-Way Costs

INTRODUCTION

This chapter summarizes the estimated construction and right-of-way acquisition costs for the Washington Commerce Corridor. It also includes potential ranges of costs for several different alignment options, offers an estimate for the East-West connector costs, and explains the assumptions and reasoning behind these estimates.

This chapter is not a discussion of the feasibility of the corridor. It merely outlines the costs associated with the type of corridor outlined thus far in thus study (refer to *Chapter 2: Definition of Project Features*). It also provides part of the overall information needed to determine the feasibility of the corridor. Other factors will be discussed in different chapters of the study.

The costs shown in this document represent an estimate of the probable costs prepared in good faith and with reasonable care.[1] The estimates of order-of-magnitude probable project costs reflect the current level of planning and design decisions, and the range of potential costs for project elements for which the scope has been defined on only a conceptual basis. At this level of development, the estimates of project cost are illustrative in nature.

OVERALL METHODOLOGY

Corridor Broken Into "Costing" Segments

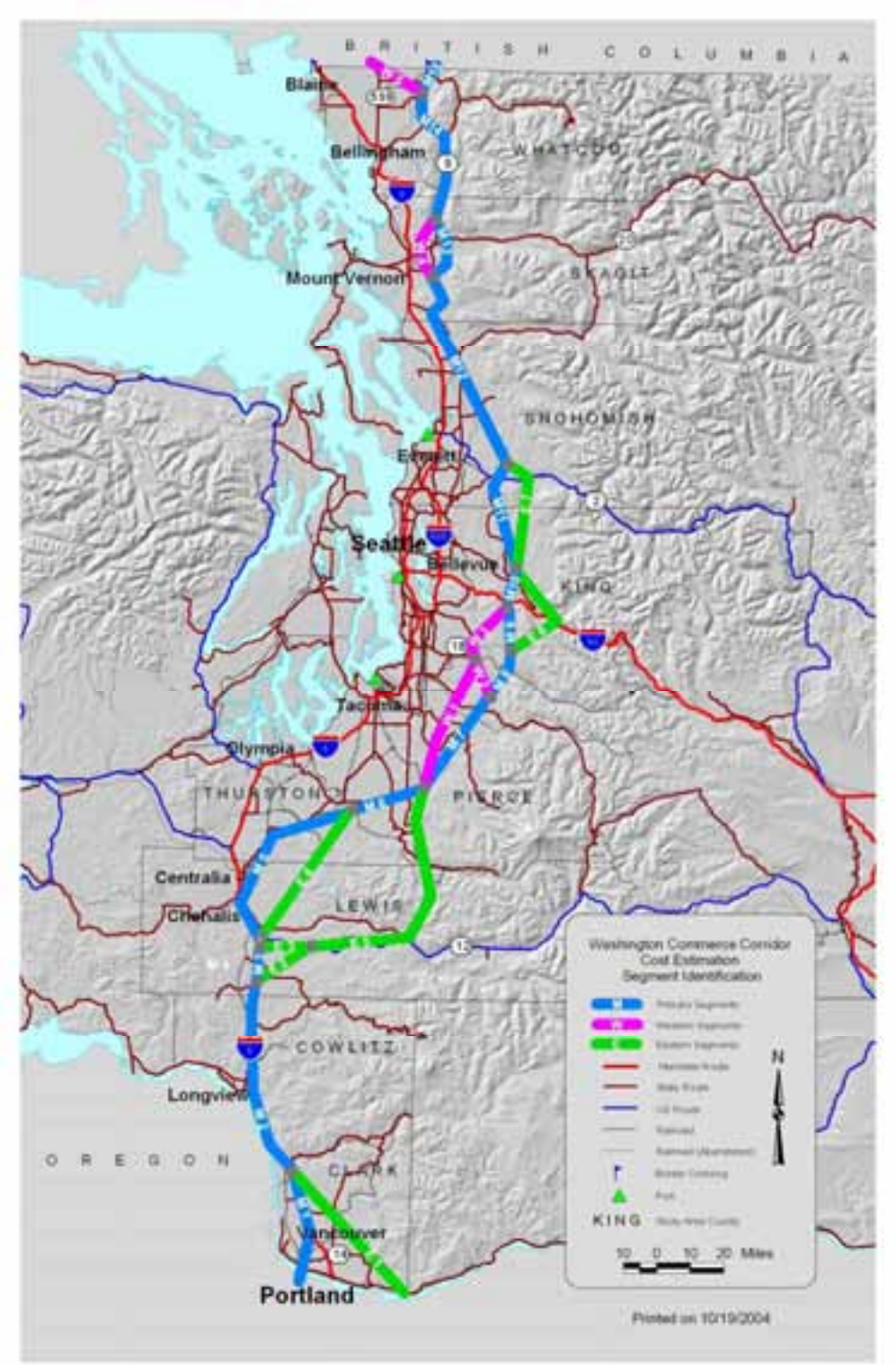
Given that the total study area incorporates some 2,297 square miles, it was deemed necessary to break the corridor into smaller, more manageable pieces to perform the costing analysis. In all, the corridor is divided into 27 smaller "costing" segments that range in size from 1.6 miles in length to 50 miles in length. Segments were defined by a combination of natural and human-made parameters. Every effort was made to divide segments at natural breaks or geographic boundaries, such as rivers, ecosystem boundaries, or geologic profile; as well as man made boundaries such as freeways or political boundaries. This method of dividing the corridor into smaller segments allows for:

1) Customizing cost estimates based on geography, terrain, land use, land values, construction techniques, etc; and,
2) Flexibility to develop a variety of alternative scenarios by mixing the combination of segments.

For purposes of this analysis, each segment was assigned a number, as is shown in Exhibit 5-1.

[1] The consultant team has no control over the costs of construction labor, materials, or equipment, nor over competitive bidding or negotiating methods and does not make a commitment or assume any duty to assure that bids or negotiated prices would not vary from the attached estimates.

Exhibit 5-1
Corridor is Divided into 27 Costing Segments



Corridor Super Segments

While breaking the corridor into smaller sections improves the cost estimates and allows for greater flexibility in defining the scenarios, they must be aggregated to allow clearer descriptions for purposes of this chapter. Therefore, much of the discussion in this report is based on a set of 5 "Super Segments". The super segments represent natural breaks to the corridor that relate to major east-west corridors. They are summarized in the table below.

Exhibit 5-2
Table Showing the Super Segments Along the Corridor

Super Segment	Costing Segments	Approx. Length in Miles
Vancouver WA to Chehalis	M01, M02, E01	59.6
Chehalis to I-90	E02, E03, E04, E05, M03, M04, M05, M06, M07, M08, M09, E06, W01, W02, W03	186.6
I-90 to SR 2	M10, M11, E07	31.6
SR 2 to SR 20	M12, M13, W04	54.5
SR 20 to Canada (Border)	M14, M15, W05	33.1

Definition of Alignment Alternatives

This chapter outlines costs estimates for three different scenarios:

- **Alternative 1 -** Incorporates all modes along the entire alignment;
- **Alternative 2 -** Uses all existing railroad infrastructure; and,
- **Alternative 3 -** Is an eastern route through Lewis County, by-passing part of the Mt. Baker Snoqualmie National Forest.

The three alternatives are described in full below.

Alternative 1 – This is a full-length, all-component alternative that includes truck roadway, railroad, natural gas pipeline, mixed-use trails, electric power lines, and petroleum pipeline along its entire alignment. This alternative represents the combination of costing segments options that provide the most direct route, over the flattest possible terrain, with the least possible river crossings, through the least possible urbanized areas.

1) **M01, M02, M03, M04**: The alignment begins near Portland, Oregon and runs almost due N along the I-5 corridor;
2) **M05**: Alignment veers NE off I-5 at Chehalis to a point roughly 25 miles south of Olympia in Thurston County, WA;
3) **M06**: The alignment turns eastward into Pierce County, traveling about 40 miles NE into Pierce County in order to bypass the heavily populated and congested Tacoma/Seattle Metropolitan corridor;

4) **M07, M08, M09, M10**: The alignment turns back towards due N as it enters and travels through King County at a distance roughly 30 miles E of the Seattle Metropolitan region, creating a broad arc around the metro region;
5) **E07, M12**: Roughly 10 miles past the King County/Snohomish County border, at approximately US Route 2, the alignment begins to point NW, coming closer to the coast and skirting the western edge of the Cascade mountain range;
6) **W04, M14, M15:** The alignment roughly follows SR 9 and the western edge of the Cascade foothills through Skagit and Whatcom counties and across the Canadian border, where it turns NE into British Columbia.

Alternative 2 – This alternative is very similar to Alternative 1, except that it utilizes as much existing railroad track and abandoned rail ROW as possible, resulting in partial separation of railroad from the other components. This occurs at:

1) **M09, M10, E06:** The modes briefly split up at a point roughly 10 miles N of the Pierce County/King County border.
    - **E06:** The railroad ROW heads sharply NE for 15 miles, before turning sharply NW to travel 15 miles back and rejoin the alignment, effectively making a "V" shaped derivation from the main alignment.
    - **M09, M10:** The truck roadway, mixed use path, electric power lines, gas and petroleum pipelines continue N, rejoining the railroad tracks (E6).
2) **E07:** All the components join together again and follow the same alignment as in Alignment 1, traveling N through to the Canadian border.

Alternative 3 - Like Alternative 1, Alternative 3 includes every corridor component (truck roadway, railroad, natural gas pipelines, mixed-use trails, power lines and petroleum pipelines) along its entire alignment; however it tests the impact of using tunneling as a method of avoiding terrain. As a result:

1) **Instead of M03, M04, M05 and M06, it takes E02, E05:** Five miles N of the Cowlitz/Lewis County border, the alignment turns sharply E to by-pass part of the Mt. Baker Snoqualmie National Forest, running roughly 40 miles along US Route 12 into the center of Lewis County. At this point the alignment turns N, traveling through Pierce County (E05 includes a significant amount of tunneling for the rail and highway components) and rejoins Alternative 1.

Exhibit 5-3
Table Summarizing the Costing Segments for Each Alternative

Super Segment	Alternative 1	Alternative 2	Alternative 3
Vancouver WA to Chehalis	M01, M02	M01, M02	M01, M02
Chehalis to I-90	M03, M04, M05, M06, M07, M08, M09*	M03, M04, M05, M06, M07, M08, M09, E06 (rail)*	E02, E05, M07, M08, M09*
I-90 to SR 2	M10, E07	M10, E07	M10, E07
SR 2 to SR 20	M12, W04	M12, W04	M12, W04
SR 20 to Canada (Border)	M14, M15	M14, M15	M14, M15

* These are the segments that come close to or involve the Cedar River Watershed

Exclusions from the Alternatives Analysis – Several costing segments were not included as part of any of the three alternatives.

1) **E1**: This segment was initially identified as a potential energy corridor cutting eastward away from the transportation corridor toward central Oregon. Since it only serves utilities, it was subsequently deemed as infeasible and is not included in the cost analysis.
2) **E3:** Plays the same role as E2 (connects to E5) but is less direct; therefore deemed as an unfeasible option and deemed as infeasible and is not included in the cost analysis.
3) **E4**: Includes 3-4 miles of tunnels, and tests the same tunneling cost hypothesis as E5 option although less expensive (discussion of costs points out the difference in cost between E4 and E5).
4) **W1**: This segment goes directly through the Muckelshoot tribal land. Moreover, this segment connects with W2 and W3 on the north (see below). No further cost analysis is conducted as part of the three alternatives.
5) **W2, W3**: These two segments run through the communities of Maple Valley, Black Diamond, and North Bend, areas that are largely urbanized. No further cost analysis is conducted as part of the three alternatives
6) **M11**: Runs through part of the Snoqualmie valley protected farmland. In addition, it skirts the Monroe urbanized area. These factors made E7 the more attractive and reasonable segment to evaluate.
7) **M13**: This segment would require tunneling to accommodate the railroad option. On the other hand, W4 runs parallel to M13 and already has existing railroad infrastructure. Therefore, W4 was evaluated instead of M13.
8) **W5**: Serves only utilities and was not evaluated as part of the scenarios.

COST ASSUMPTIONS AND RATIONALE

The overall methodology was to estimate the cost of purchasing the rights-of-way (ROW) needed for developing and constructing a multi-purpose transportation corridor as is outlined in *Chapter 2: Definition of Project Features*, as well as the construction costs associated with the types of uses outlined in that chapter. The costs estimates provided herein are on an order-of-magnitude basis and are intended for planning and policy level decisions. ROW costs are assigned on a per-acre

basis, and vary by land use, etc. The construction costs are assigned on a per mile basis and vary based on type of construction, terrain, mode, etc.

This approach of using order-of-magnitude costs, while not as detailed as that used for detailed construction projects, is robust enough for this particular type of study.

Two overall types of costs are outlined herein;

- The costs associated with purchasing adequate **rights-of-way** needed for the corridor.
- The costs associated with **constructing** the corridor.

ROW Cost Assumptions

Right-of-way costs were developed for rural and urban settings. The assumed urban land value is $4 million per acre and the assumed land value for rural land is $75,000[2] per acre. These costs are applied to the mix of rural and urban acreage estimated for each costing segment. A baseline right-of-way width of 645 feet is assumed, consistent with the range of 506 to 710 feet developed in *Chapter 2*. In order to accommodate rolling terrain, right-of-way width for the highway and rail elements of the corridor were increased by 200 feet, and an additional 200 feet in mountainous terrain. These adjustments reflect the influence of cut and fill slopes with these terrain types, accounting for heights of fill or depths of cuts of up to 100 feet in mountainous terrain. No such right-of-way adjustments were made for the pipeline or power transmission modes.

Construction Cost Assumptions

The following section outlines the assumptions used for estimating the construction costs. Appendix 1 to this chapter outlines the per unit cost assumptions.

Types of Costs Included - The per-mile unit costs include the costs of surveying, engineering, inspection services, geotechnical investigations, environmental "best practices" in storm water treatment, and construction traffic control, but exclude highly variable costs such as wetland mitigation. The bridge, tunnel and causeway segments are intended to avoid critical environmental impacts and community concerns at several locations in the corridor.

Contingencies - A contingency figure equal to 20 percent of the construction cost is incorporated in the cost estimates to reflect uncertainties associated with unanticipated construction features and additional environmental mitigation.

Highway Cost Assumptions - The estimates of probable project cost for the highway elements of the corridor are based on "per lane-mile" and other gross unit costs developed from comparisons to other projects that involve construction of freeways in urban and rural environments. Unit costs vary according to rural/urban environments and level, rolling, or mountainous terrain types.

[2] Based on discussions with WSDOT, the default rural ROW cost assumptions are $1 per sf (or $43,560 per acre) for farmland and $2 per sf (or $87,120 per acre) for all other rural. Based on *Chapter 3*, 26.5% of the rural land is farmland; therefore, a weighted cost per acre of $75,000 was used for this study.

Bridge crossings of rivers, streams, and local roads and streets were estimated separately and added to the on-grade segment costs. Where tunnel segments are included, a specific cost was developed for bored tunnels. The tunnel segments include two two-lane bores for each of the auto and truck highway facilities, consistent with the limitations of current tunneling technology. Railway tunnels consist of two bores, each accommodating one rail line and maintenance access. Lane-mile unit costs generally represent recent projects within Washington State, summarized in a January, 2003 WSDOT memorandum. Bridge unit costs also represent recent local experience. Tunnel costs were derived from recent East Coast and European experience. A summary of typical lane-mile costs is attached for reference.

Railroad Cost Assumptions - Railroad facility costs were based on centerline track miles, representing the construction costs of double-track Class I railroad. Bridge crossings, tunnels, and causeways were estimated separately and added to the on-grade segment costs. These data are based on recent Northwest railway projects.

Utility Cost Assumptions - Costs for construction of pipelines, power lines, and trails were estimated by centerline miles.

Toll Technologies - Costs for toll equipment and corridor management functions are added to the capital costs because they are not included in the representative existing per-mile construction costs. These include toll collection stations, camera systems, active traffic monitoring, variable message signing, and traffic management center. Costs associated with the telecommunications network for the corridor are assumed to be the responsibility of a leaseholder, and are not included in the ITS estimate. No costs are included for commercial vehicle tracking networks, or for additional security provisions pursuant to potential legislation.

Maintenance Costs[3] - Estimates of maintenance costs were prepared for the highway portions of the project, based on historic WSDOT statistics. Operations and maintenance costs for the remaining modes are typically supported by the facility owners or leaseholders in the private realm, and statistics are difficult to obtain due to the proprietary nature of the information. No estimate of operations and maintenance costs was performed for the railroad, pipeline or power transmission modes. In Washington State, maintenance costs for Interstate highways averaged about $4,300 per lane-mile in 1997, including both urban and rural facilities. Costs associated with toll collection and operation of the corridor are added to the routine maintenance costs, because these functions are not represented in today's WSDOT maintenance budgets. These costs typically are estimated at about $0.20 per trip for electronic toll transactions. Without firm activity forecasts, they are estimated on the basis of 100,000 daily trips (total for both auto and truck tollways), and translated to a lane-mile basis. Operations and maintenance costs derived in this way would total about $7,500 per lane mile of highway. A total of 10 maintenance facilities would be distributed over the length of the corridor to serve maintenance functions. No rest area maintenance costs are included.

East West Connector Costs - Estimates of costs to improve the infrastructure of the E-W connectors to the WCC were also prepared. (see appendix 15) The estimates were based on the assumption that there would only be one E-W connector per county along the length of the WCC.

[3] Maintenance costs were calculated for illustrative purposes only and are not included in the final capital cost estimates.

Estimates included various scenarios of probable necessary improvements to the modes of highway, utility pipeline, and railroad tracking. The costs are preliminary in nature and are not based on a detailed capacity analysis of the respective E-W corridors. They include the following costs:

- Whatcom County: New 2-lane arterial highway and single track rail
- Skagit County: Improvements to SR 20 and utility infrastructure
- Snohomish County: Improvements to SR 2 and utility infrastructure
- King County: Improvements to I-90
- Pierce County: Improvements to SR 410, new single-track rail connecting Orting to Tacoma, and utility infrastructure
- Thurston County: New 2-lane arterial and utility infrastructure

These costs are estimated on the anticipation that the development of the WCC will result in added capacity needed for the E-W corridors. Taken together, these costs would total an additional $1.2 billion dollars to the total cost of the WCC. Though preliminary in nature, it is evident that the costs for these connecting corridors are a significant cost which will affect the feasibility of the WCC corridor.

RESULTS OF COST ANALYSIS

Comparison across Scenarios

Based on our evaluation of probable project costs, the Washington Commerce Corridor could be implemented for between $42 billion and $50 billion[4]. The most cost effective approach is to use as much of the existing rail infrastructure as is available (Alternative 2), saving approximately $1 billion over the baseline option (Alternative 1) of $42.8 billion [5]. The most expensive option is to by-pass part of the Mt. Baker Snoqualmie National Forest, requiring a significant amount of tunneling and causing the cost to jump by $6.7 billion.

Exhibit 5-4
Cost Estimates by Alternative
(In 2003 Dollars)

Alternative	Description	Estimated Cost ($M)
1	All Modes Together	42,770
2	Use Existing Railroad Grade in Eastern King County	41,867
3	Eastern Route Through Lewis County	49,492

[4] All Costs are in 2003 dollars

[5] Note that, for Alternative 1, using a more direct route west of part of the Mt. Baker Snoqualmie National Forest (M05) as opposed to E05 will likely cut the overall cost for Alternative 1 to $38.8 billion. This is because of the significantly lower ROW costs associated with M05. While E05 costs $2.2 billion more to construct (6 miles of tunneling), M05 costs $4.5 billion more in ROW.

Comparing ROW Acquisition and Construction Costs

The ROW costs for Alternative 1 and Alternative 2 are both $17 billion, a figure that is approximately 40% of total costs for each alternative. Construction costs represent approximately 60% of total costs. Alternative 3, on the other hand, has considerably higher construction costs (associated with tunneling costs) but lower ROW acquisition costs (due to a larger share of rural ROW).

Exhibit 5-5
Construction Costs and ROW Costs

Estimated Cost (billions of 2003 dollars)

Item	Alternative 1	Alternative 2	Alternative 3
Construction	$25.5	$24.5	$34.9
Right-of-Way	$17.2	$17.4	$14.6
Total	**$42.8**	**$41.9**	**$49.5**

Comparing the Costs for Each Super Segment

It can be expected that total cost grows relative to segment length. The section with the highest cost is also the longest of the 5, the 186.6 mile "Chehalis to I-90". The shortest segment, "SR 20 to Canada", is 33.1 miles and has the lowest costs. It is also worth noting that there is very little variation between the three alternatives across the Super Segments, with the exception being the "Chehalis to I-90" segment where the Alternative 3 costs are $6.7 billion higher due to tunneling costs (see below).

Exhibit 5-6
Total Costs by Super Segment
(Millions of 2003 $)

Corridor Super Segment	Alternative		
	1	2	3
SR 20 to Canada	4,103	4,103	4,103
SR 2 to SR 20	4,719	4,719	4,719
I-90 to SR 2	4,449	4,335	4,449
Chehalis to I-90	14,480	13,862	19,641
Vancouver to Chehalis	10,895	10,895	10,895
Subtotal ($M)*	**38,646**	**37,914**	**43,808**

*Note: Excludes ITS and contingency costs.

ROW costs are somewhat consistent across each of the alternatives, except for a $3 billion drop in the "Chehalis to I-90" super segment for Alternative 3, largely due to a comparatively larger share in rural ROW. While rural ROW acreage for Alternatives 1 and 2 represents 80% of the ROW acreage needed, this figure jumps to 85% for Alternative 3.

Exhibit 5-7
ROW Acquisition Costs by Super Segment
(Millions of 2003 $)

Corridor Segment	Alternative		
	1	2	3
SR 20 to Canada	764	764	764
SR 2 to SR 20	2,146	2,146	2,146
I-90 to SR 2	2,247	2,184	2,247
Chehalis to I-90	6,956	7,140	4,312
Vancouver to Chehalis	5,126	5,126	5,126
Total ($M)	**17,239**	**17,359**	**14,595**

Isolating construction costs reveals a similar pattern as ROW costs. As is shown in Exhibit 5-8, the construction costs of each Super Segment stay roughly similar between the three alternatives. As before, the one exception to this rule is the "Chehalis to I-90" Super Segment - Alternative 3 is almost $9 billion more due to costs associated with tunneling.

Exhibit 5-8
Construction Costs Across Super Segments
(Millions of 2003 $)

Corridor Segment	Alternative		
	1	2	3
SR 20 to Canada	3,162	3,162	3,162
SR 2 to SR 20	2,395	2,395	2,395
I-90 to SR 2	1,771	1,721	1,771
Chehalis to I-90	7,214	6,412	15,019
Vancouver to Chehalis	5,688	5,688	5,688
Total ($M)	**20,230**	**19,378**	**28,035**

Impact of Structural Costs on the Overall Costs

"At grade" construction refers to construction that can proceed without the use of structures to separate the facilities from the natural grade of the ground. "Structured" implies that infrastructure such as grade separations, bridges, tunnels, and causeways are necessary prior to proceeding with construction. Due to the nature of the terrain along the overall corridor, at least half of all construction costs are related to structures, and up to 65% for Alternative 3. Structured construction is typically considerably higher cost than at grade construction.

Exhibit 5-9
At Grade Vs. Structured Percentages
(% Share of Construction Cost)

Type	Alternative		
	1	2	3
At-Grade	47%	50%	35%
Structured	53%	50%	65%

Comparison Across Modal Components

The roadway components contribute 70% of the total costs of the corridor (35% each for the truck and general purpose components). Rail contributes between 10% and 16% of the total cost, depending on the alternative. For example, Alternative 2 utilizes existing rail infrastructure and is the most favorable while Alternative 3 requires considerable tunneling and is hence the least favorable. The energy (power and pipeline) component contributes between 10% and 14%, with Alternative 3 being the most favorable due to a larger proportionate share of rural ROW. Trails contribute the lowest share of the cost with approximately 3% of the total corridor cost.

Exhibit 5-10
Costs by Mode
(Millions of 2003 $)

Mode	Alternative		
	1	2	3
Truck	13,636	13,734	15,593
Railroad	4,962	3,939	7,136
General Purpose	13,636	13,734	15,593
Trails	1,236	1,255	1,024
Power	3,064	3,108	2,588
Pipeline	2,113	2,146	1,872
Subtotal ($M)*	**38,646**	**37,914**	**43,808**

*Note: Excludes ITS and contingency costs.

When comparing the various modal contributions toward ROW and construction costs, there are some important differences.

- While the roadway components contribute a 35% share each (truck and general purpose) towards overall costs, their relative contribution toward construction costs are greater (40%) than towards ROW (30%).
- The same effect exists for rail – a 12-20% relative share toward construction and 8-10% relative share toward ROW.
- The energy components have an opposite effect – while they only contribute 2-4% toward construction costs, they contribute 25% toward ROW costs.

- The trail component contributes less than 1% towards construction costs but 7% towards ROW costs.

These distinctions have an impact on the various roles of the private sector versus the public sector involvement. For example, if government was to assume the cost of the right-of-way and recoup the facilities costs through a user fee, the transportation components would present the greatest share return due to their relatively higher contribution toward construction costs which are recouped. On the other hand, the energy components present the least opportunity of recouping the costs. This is unless, of course, the government intends to recoup 100% of the development costs (ROW and construction) from the different modal components. This is dependent on the ability of the various modal components to produce adequate revenue streams to recoup 100% of the development costs.

Exhibit 5-11
Modal Contribution to Type of Cost (ROW vs Construction)
(Millions of 2003 $)

Alternative 1	**Truck**	**Railroad**	**GP**	**Trails**	**Power**	**Pipeline**
Construction Cost	8,584	3,321	8,584	91	421	406
Share of Const Cost	40%	16%	40%	0%	2%	2%
ROW Cost	5,052	1,641	5,052	1,145	2,642	1,707
Share of ROW Cost	29%	10%	29%	7%	15%	10%
Subtotal (Const & ROW)	13,636	4,962	13,636	1,236	3,064	2,113
Share of Subtotal	35%	13%	35%	3%	8%	5%
Alternative 2	**Truck**	**Railroad**	**GP**	**Trails**	**Power**	**Pipeline**
Construction Cost	8,584	2,468	8,584	91	421	406
Share of Const Cost	42%	12%	42%	0%	2%	2%
ROW Cost	5,149	1,470	5,149	1,164	2,686	1,740
Share of ROW Cost	30%	8%	30%	7%	15%	10%
Subtotal (Const & ROW)	13,734	3,939	13,734	1,255	3,108	2,146
Share of Subtotal	36%	10%	36%	3%	8%	6%
Alternative 3	**Truck**	**Railroad**	**GP**	**Trails**	**Power**	**Pipeline**
Construction Cost	11,255	5,790	11,255	85	422	406
Share of Const Cost	39%	20%	39%	0%	1%	1%
ROW Cost	4,339	1,346	4,339	939	2,167	1,466
Share of ROW Cost	30%	9%	30%	6%	15%	10%
Subtotal (Const & ROW)	15,593	7,136	15,593	1,024	2,588	1,872
Share of Subtotal	36%	16%	36%	2%	6%	4%

Detailed Cost Comparison Tables

Exhibits 5-12, 5-13, and 5-14 are all-inclusive cost estimates for each of the three alternatives. They include segment construction cost by mode, construction cost by segment, and ROW costs per segment. In addition, they include an ITS capital cost, a 20% contingency cost and an estimate for annual route maintenance costs. The Appendices to this report contain detailed tables to support the cost estimates produced herein.

Exhibit 5-12
Alternative 1 Cost Estimate by Mode and Segment
(Millions of 2003 $)

Corridor Segment	Segment Construction Cost by Mode ($M)						Const. Cost ($M)	ROW Cost ($M)	Seg. Cost ($M)
	Truck	Railroad	GP	Trails	Power	Pipeline			
SR 20 to Canada	1,196	825	1,196	10	50	62	3,339	764	4,103
SR 2 to SR 20	1,053	286	1,053	20	82	79	2,573	2,146	4,719
I-90 to SR 2	952	183	952	11	47	56	2,202	2,247	4,449
Chehalis to I-90	2,854	1,490	2,854	36	153	137	7,524	6,956	14,480
Vancouver to Chehalis	2,529	537	2,529	14	89	72	5,769	5,126	10,895
Subtotal ($M)	8,584	3,321	8,584	91	421	406	21,407	17,239	
ITS Capital Cost ($M):							78		
Const. Contingency (20%):							4,046		
Construction Cost ($M)							25,531		
Total Route Capital Cost ($M):									**42,770**
Annual Maintenance ($M):									16.2

Exhibit 5-13
Alternative 2 Cost Estimate by Mode and Segment
(Millions of 2003 $)

Corridor Segment	Segment Construction Cost by Mode ($M)						Const. Cost ($M)	ROW Cost ($M)	Seg. Cost ($M)
	Truck	Railroad	GP	Trails	Power	Pipeline			
SR 20 to Canada	1,196	825	1,196	10	50	62	3,339	764	4,103
SR 2 to SR 20	1,053	286	1,053	20	82	79	2,573	2,146	4,719
I-90 to SR 2	952	132	952	11	47	56	2,152	2,184	4,335
Chehalis to I-90	2,854	688	2,854	36	153	137	6,722	7,140	13,862
Vancouver to Chehalis	2,529	537	2,529	14	89	72	5,769	5,126	10,895
Subtotal ($M)	8,584	2,468	8,584	91	421	406	20,555	17,359	
ITS Capital Cost ($M):							78		
Const. Contingency (20%):							3,876		
Construction Cost ($M)							24,508		
Total Route Capital Cost ($M):									**41,867**
Annual Maintenance ($M):									16.2

Exhibit 5-14
Alternative 3 Cost Estimate by Mode and Segment
(Millions of 2003 $)

Corridor Segment	Segment Construction Cost by Mode ($M)						Const. Cost ($M)	ROW Cost ($M)	Seg. Cost ($M)
	Truck	Railroad	GP	Trails	Power	Pipeline			
SR 20 to Canada	1,196	825	1,196	10	50	62	3,339	764	4,103
SR 2 to SR 20	1,053	286	1,053	20	82	79	2,573	2,146	4,719
I-90 to SR 2	952	183	952	11	47	56	2,202	2,247	4,449
Chehalis to I-90	5,525	3,960	5,525	30	153	137	15,329	4,312	19,641
Vancouver to Chehalis	2,529	537	2,529	14	89	72	5,769	5,126	10,895
Subtotal ($M)	11,255	5,790	11,255	85	422	406	29,213	14,595	
ITS Capital Cost ($M):							78		
Const. Contingency (20%):							5,607		
Construction Cost ($M)							34,897		
Total Route Capital Cost ($M):									**49,492**
Annual Maintenance ($M):									15.3

CONCLUSION

Based on our evaluation of probable project costs, the Washington Commerce Corridor could be implemented for between $42 billion and $50 billion.

Corridor construction would require between $20 - $29 billion dollars between the Canadian and Oregon borders, a distance of about 280 miles. This includes $9 - $11 billion for each of the auto and truck toll highways, $2.5 - $5.8 billion for the rail facilities, and about $900 million for the remaining pipeline, power transmission lines, and trails proposed for the corridor.

Alternative 1 - The construction cost for the baseline alignment includes tunnel segments at two locations in the corridor, for the highway and rail modes only. Near Deming, tunnel lengths of 3.5 miles would be required for the highway modes, and 3.8 miles for the rail mode. South of Snoqualmie, highway tunnels of 3.8 miles, and rail tunnels of 5.8 miles are included. Right-of-way costs for the project total about $17.2 billion for land acquisition for the baseline alternative. A total of about 16,800 acres of rural land and 4,000 acres of urban land would be required.

Alternative 2 - Placement of the rail facilities at grade using the alignment option near North Bend could eliminate the need for rail tunnels south of Snoqualmie, at a potential savings in construction cost of about $1.0 billion. This savings is partially offset by additional right-of-way costs of approximately $0.1 billion, so that Alternative 2 would produce a net savings of about $0.9 billion, compared to the baseline alignment.

Alternative 3 - Inclusion of optional segments with additional tunnel mileage could be expected to produce a maximum construction cost. An alignment alternative following the SR 7 and SR 12 corridors would include about 16 miles of tunnel for highway and rail modes (total of 6 bores). An illustrative estimate for this alignment is shown as Alternative 3, with a total cost of almost $50 billion. The construction cost would rise by $9billion with the additional tunnels, and right-of-way costs would drop by $2.6 billion, to produce a net increase of $6.8 billion relative to the baseline alignment.

Maintenance - Annual operating and maintenance cost for the highway facilities are estimated at $15 to $18 million dollars, with the higher figures representing those alignments with significant tunnel segments. Estimated maintenance cost for the baseline alignment would be about $16 million annually.

Financial Perspective – The total annual transportation capital budget for WSDOT (new projects and maintenance of existing facilities) for entire state averages between $600 and $900 million dollars. The annual debt service on a 30 year bond to finance the completion of the entire corridor ($40 billion), if it were to be completed, would likely amount to an estimated $2.75 billion per year (this estimate may vary depending on actual interest rate and financing terms). In other words, the annual debt service payments on the fully developed WCC, as is defined in *Chapter 2: Definition of Project Features* would be 3-5 times the total current levels of annual capital expenditures on statewide transportation. Based on this, the costs associated with developing the corridor in its entirety present a virtually impossible financial challenge for WSDOT and for the state as a whole. It would not be possible to implement without generating additional revenue from the users of the corridor, or pursuing a less comprehensive approach.

CHAPTER FIVE APPENDICES

Appendix 1:Per Unit Construction Cost Assumptions

Construction Unit Cost Estimate by Mode

	Unit Cost ($ million)	Units
Commercial Vehicle Roadway Construction Unit Costs		
On-grade Construction		
Urban, Level Terrain	6.0	lane-mile
Urban, Rolling Terrain	6.0	lane-mile
Urban, Mountainous Terrain	19.0	lane-mile
Rural, Level Terrain	2.5	lane-mile
Rural, Rolling Terrain	4.0	lane-mile
Rural, Mountainous Terrain	9.0	lane-mile
Structures		
Bridges		
Minor Crossings and Causeways	20.0	lane-mile
Major Crossings	30.0	lane-mile
Tunnels		
Bored Tunnel (Two-Lane Highway or Single RR Track)	80.0	lane-mile
Interchanges		
Diamond Interchange	10.0	each
Maintenance Facility (every 30 miles)	3.0	each
Toll Collection Equipment (per interchange)	0.5	each
Closed Circuit Television Cameras (every mile)	0.05	each
Active Traffic Monitoring Station (3 per interchange)	0.05	each
Double-Track Railroad Construction Unit Costs		
On-Grade Construction	4.4	mile
Structures		
Bridges		
Minor Crossings and Causeways	15.0	mile
Major Crossings	25.0	mile
Tunnels		
Bored Tunnel (Two Tunnel Bores, 1 Track in Each)	160.0	mile

General Purpose Roadway Construction Unit Costs		
On-grade Construction		
Urban, Level Terrain	6.0	lane-mile
Urban, Rolling Terrain	6.0	lane-mile
Urban, Mountainous Terrain	19.0	lane-mile
Rural, Level Terrain	2.5	lane-mile
Rural, Rolling Terrain	4.0	lane-mile
Rural, Mountainous Terrain	9.0	lane-mile
Structures		
Bridges		
Minor Crossings and Causeways	20.0	lane-mile
Major Crossings	30.0	lane-mile
Tunnels		
Bored Tunnel (Two-Lane Highway or Single RR Track)	80.0	lane-mile
Interchanges		
Diamond Interchange	10.0	each
Traffic Systems Management Center (For Truck and GP Facilities)	7.0	each
Toll Collection Equipment (per interchange)	0.5	each
Closed Circuit Television Cameras (every mile)	0.05	each
Active Traffic Monitoring Station (3 per interchange)	0.05	each

Trail Construction Unit Costs		
12 Foot Shared-Use Path, All Conditions	0.3	mile
10 Foot Soft-Surface Equestrian Trail, All Conditions	0.1	mile

Power Line Construction Unit Costs		
Two 500kV Lines, All Conditions	1.5	mile

Pipeline Construction Unit Costs		
16 Inch Diameter Steel, All Conditions	1.0	mile

Appendix 2: Alternative 1 ROW Cost Estimates

Assumptions

Urban Land Value ($M /acre):	4
Rural Land Value ($M / acre):	0.075
Square feet per acre (ft^2):	43,560
Feet per mile (ft):	5,280
Increase in roadway ROW in rolling terrain (ft):	200
Increase in roadway ROW in mountainous terrain (ft):	400

Segment	Segment Length (miles)			ROW Base (ft)			Land Use and Terrain Type by Segment (%)						ROW, Adj. for Terrain Type (ft)				Urban ROW (acres)	Rural ROW (acres)	ROW Total ($M)
							Urban Area			Rural Area									
	Total Length	Highway Length	Railroad Length	Pipes	Rail	Power	Level	Rolling	Mount.	Level	Rolling	Mount.	Truck, GP, Pipes	Rail	Power, Trail	Total			
W04	12.5	10.9	10.9	380	65	150	15%	0%	0%	55%	30%	0%	440	65	150	655	134.4	761.7	595
M15	5.4	5.0	5.0	380	65	150	20%	0%	0%	80%	0%	0%	380	65	150	595	73.8	295.1	317
M14	27.7	21.2	20.9	380	65	150	5%	0%	0%	95%	0%	0%	380	65	150	595	82.3	1563.1	446
M12	42.0	40.9	40.9	380	65	150	5%	5%	0%	65%	20%	5%	450	65	150	665	331.9	2986.8	1,551
M10	7.0	6.4	6.4	380	65	150	0%	30%	0%	15%	55%	0%	550	65	150	765	181.6	423.8	758
M09	7.6	3.5	1.5	380	65	150	0%	0%	0%	0%	50%	50%	680	65	150	895	0.0	433.9	33
M08	10.9	10.5	10.5	380	65	150	0%	0%	0%	0%	30%	70%	720	65	150	935	0.0	1194.8	90
M07	21.3	20.2	20.2	380	65	150	25%	0%	0%	10%	50%	15%	540	65	150	755	466.3	1398.8	1,970
M06	14.8	14.3	14.3	380	65	150	0%	0%	0%	90%	10%	0%	400	65	150	615	0.0	1076.1	81
M05	38.2	36.9	36.9	380	65	150	10%	25%	0%	25%	40%	0%	510	65	150	725	1143.8	2124.3	4,735
M04	1.6	1.5	1.5	380	65	150	0%	0%	0%	100%	0%	0%	380	65	150	595	0.0	109.4	8
M03	7.8	7.3	7.3	380	65	150	0%	0%	0%	100%	0%	0%	380	65	150	595	0.0	538.4	40
M02	38.5	21.5	21.5	380	65	150	35%	5%	0%	50%	10%	0%	410	65	150	625	774.3	1161.5	3,184
M01	21.1	15.3	15.3	380	65	150	25%	10%	0%	40%	25%	0%	450	65	150	665	469.0	871.1	1,942
E07	24.6	23.7	23.7	380	65	150	5%	10%	0%	25%	40%	20%	560	65	150	775	336.4	1906.5	1,489
Total	280.9	239.2	236.9																17,239

Appendix 3: Alternative 2 ROW Cost Estimates

Assumptions

Urban Land Value ($M /acre):	4
Rural Land Value ($M / acre):	0.075
Square feet per acre (ft^2):	43,560
Feet per mile (ft):	5,280
Increase in roadway ROW in rolling terrain (ft):	200
Increase in roadway ROW in mountainous terrain (ft):	400

Segment	Segment Length (miles)			ROW Base (ft)			Land Use and Terrain Type by Segment (%)						ROW, Adj. for Terrain			Urban ROW (acres)	Rural ROW (acres)	ROW Total ($M)
							Urban Area			Rural Area								
	Total Length	Highway Length	RR Length	Truck, Gp and Pipe	Rail	Power & Trail	Level	Rolling	Mount.	Level	Rolling	Mount.	Truck, GP, Pipes	Rail	Power, Trail			
W04	12.5	10.9	10.9	380	65	150	15%	0%	0%	55%	30%	0%	440	65	150	134.4	761.7	595
M15	5.4	5.0	5.0	380	65	150	20%	0%	0%	80%	0%	0%	380	65	150	73.8	295.1	317
M14	27.7	21.2	20.9	380	65	150	5%	0%	0%	95%	0%	0%	380	65	150	82.3	1563.1	446
M12	42.0	40.9	40.9	380	65	150	5%	5%	0%	65%	20%	5%	450	65	150	331.9	2986.8	1,551
M10	7.0	6.4	6.4	380		150	0%	30%	0%	15%	55%	0%	550	0	150	166.4	388.3	695
M09	7.6	3.5	1.5	380		150	0%	0%	0%	0%	50%	50%	680	0	150	0.0	422.4	32
M08	10.9	10.5	10.5	380	65	150	0%	0%	0%	0%	30%	70%	720	65	150	0.0	1194.8	90
M07	21.3	20.2	20.2	380	65	150	25%	0%	0%	10%	50%	15%	540	65	150	466.3	1398.8	1,970
M06	14.8	14.3	14.3	380	65	150	0%	0%	0%	90%	10%	0%	400	65	150	0.0	1076.1	81
M05	38.2	36.9	36.9	380	65	150	10%	25%	0%	25%	40%	0%	510	65	150	1143.8	2124.3	4,735
M04	1.6	1.5	1.5	380	65	150	0%	0%	0%	100%	0%	0%	380	65	150	0.0	109.4	8
M03	7.8	7.3	7.3	380	65	150	0%	0%	0%	100%	0%	0%	380	65	150	0.0	538.4	40
M02	38.5	21.5	21.5	380	65	150	35%	5%	0%	50%	10%	0%	410	65	150	774.3	1161.5	3,184
M01	21.1	15.3	15.3	380	65	150	25%	10%	0%	40%	25%	0%	450	65	150	469.0	871.1	1,942
E07	24.6	23.7	23.7	380	65	150	5%	10%	0%	25%	40%	20%	560	65	150	336.4	1906.5	1,489
E06	22.0	18.7	18.7		65		0%	20%	10%	0%	25%	45%		65		44.2	103.1	184
Total	280.9	239.2	247.7															17,359

Segments not used in calculation

Appendix 4: Alternative 3 ROW Cost Estimates

Assumptions

Urban Land Value ($M /acre):	4
Rural Land Value ($M / acre):	0.075
Square feet per acre (ft^2):	43,560
Feet per mile (ft):	5,280
Increase in roadway ROW in rolling terrain (ft):	200
Increase in roadway ROW in mountainous terrain (ft):	400

Segment	Segment Length (miles)			ROW Base (ft)			Land Use and Terrain Type by Segment (%)						ROW, Adj. for Terrain			Urban ROW (acres)	Rural ROW (acres)	ROW Total ($M)
							Urban Area			Rural Area								
	Total Length	Highway Length	RR Length	Truck, GP Pipes	Rail	Power, Trail	Level	Rolling	Mount.	Level	Rolling	Mount.	Truck, GP, Pipes	Rail	Power, Trail			
W04	12.5	10.9	10.9	380	65	150	15%	0%	0%	55%	30%	0%	440	65	150	134.4	761.7	595
M15	5.4	5.0	5.0	380	65	150	20%	0%	0%	80%	0%	0%	380	65	150	73.8	295.1	317
M14	27.7	21.2	20.9	380	65	150	5%	0%	0%	95%	0%	0%	380	65	150	82.3	1563.1	446
M12	42.0	40.9	40.9	380	65	150	5%	5%	0%	65%	20%	5%	450	65	150	331.9	2986.8	1,551
M10	7.0	6.4	6.4	380	65	150	0%	30%	0%	15%	55%	0%	550	65	150	181.6	423.8	758
M09	7.6	3.5	1.5	380	65	150	0%	0%	0%	0%	50%	50%	680	65	150	0.0	433.9	33
M08	10.9	10.5	10.5	380	65	150	0%	0%	0%	0%	30%	70%	720	65	150	0.0	1194.8	90
M07	21.3	20.2	20.2	380	65	150	25%	0%	0%	10%	50%	15%	540	65	150	466.3	1398.8	1,970
M02	38.5	21.5	21.5	380	65	150	35%	5%	0%	50%	10%	0%	410	65	150	774.3	1161.5	3,184
M01	21.1	15.3	15.3	380	65	150	25%	10%	0%	40%	25%	0%	450	65	150	469.0	871.1	1,942
E07	24.6	23.7	23.7	380	65	150	5%	10%	0%	25%	40%	20%	560	65	150	336.4	1906.5	1,489
E05	50.0	32.7	32.7	380	65	150	0%	5%	5%	0%	45%	45%	680	65	150	386.1	3474.5	1,805
E02	12.5	12.3	12.3	380	65	150	10%	0%	0%	90%	0%	0%	380	65	150	88.8	799.4	415
Total	281.1	224.0	221.7				= Segment or mode not included in Alternative.											14,595

Appendix 5: Alternative 1 On Grade Vs. Structure Cost Comparison

Segment Identifier	Segment Construction Cost by Mode ($M)												All Modes ($M)		
	Truck			Railroad			General Purpose			Trails	Power	Pipeline			
	Total	On Grade	Struc-ture	Total	On Grade	Struc-ture	Total	On Grade	Struc-ture	On Grade	On Grade	On Grade	Total	On Grade	Struc-ture
M01	721	251	469	164	67	96	721	251	469	6	32	21	1,663	629	1,034
M02	1,774	348	1,426	373	94	279	1,774	348	1,426	8	58	39	4,025	894	3,131
M03	119	73	45	41	32	9	119	73	45	3	12	8	302	202	100
M04	22	15	7	8	7	1	22	15	7	1	2	2	56	41	15
M05	772	639	133	197	162	34	772	639	133	14	57	38	1,850	1,550	300
M06	203	152	51	81	63	18	203	152	51	5	22	15	529	409	120
M07	535	411	124	121	89	33	535	411	124	8	32	21	1,252	972	280
M08	359	314	45	55	46	9	359	314	45	4	16	11	805	705	100
M09	730	90	640	941	6	934	730	90	640	1	11	8	2,420	206	2,214
M10	181	112	69	50	28	22	181	112	69	2	10	7	433	273	160
E07	568	467	101	132	104	28	568	467	101	9	37	25	1,338	1,108	230
M12	680	569	111	202	180	22	680	569	111	16	63	42	1,683	1,438	245
W04	296	152	145	84	48	36	296	152	145	4	19	13	712	387	325
M14	1,050	227	823	758	92	666	1,050	227	823	8	42	28	2,936	623	2,313
M15	92	64	27	27	22	5	92	64	27	2	8	5	226	166	60
Subtotal ($M)	8,101	3,885	4,216	3,236	1,042	2,193	8,101	3,885	4,216	91	421	281	20,230	9,604	10,626
Share of Cost		48%	52%		32%	68%		48%	52%					47%	53%

Appendix 6: Alternative 2 On Grade Vs. Structure Cost Comparison

Segment Identifier	Segment Construction Cost by Mode ($M)												All Modes ($M)		
	Truck			Railroad			General Purpose			Trails	Power	Pipeline			
	Total	On Grade	Struc-ture	Total	On Grade	Struc-ture	Total	On Grade	Struc-ture	On Grade	On Grade	On Grade	Total	On Grade	Struc-ture
M01	721	251	469	164	67	96	721	251	469	6	32	21	1,663	629	1,034
M02	1,774	348	1,426	373	94	279	1,774	348	1,426	8	58	39	4,025	894	3,131
M03	119	73	45	41	32	9	119	73	45	3	12	8	302	202	100
M04	22	15	7	8	7	1	22	15	7	1	2	2	56	41	15
M05	772	639	133	197	162	34	772	639	133	14	57	38	1,850	1,550	300
M06	203	152	51	81	63	18	203	152	51	5	22	15	529	409	120
M07	535	411	124	121	89	33	535	411	124	8	32	21	1,252	972	280
M08	359	314	45	55	46	9	359	314	45	4	16	11	805	705	100
M09	730	90	640				730	90	640	1	11	8	1,480	200	1,280
M10	181	112	69				181	112	69	2	10	7	383	245	138
E06				139	82	57							139	82	57
E07	568	467	101	132	104	28	568	467	101	9	37	25	1,338	1,108	230
M12	680	569	111	202	180	22	680	569	111	16	63	42	1,683	1,438	245
W04	296	152	145	84	48	36	296	152	145	4	19	13	712	387	325
M14	1,050	227	823	758	92	666	1,050	227	823	8	42	28	2,936	623	2,313
M15	92	64	27	27	22	5	92	64	27	2	8	5	226	166	60
Subtotal ($M)	8,101	3,885	4,216	2,383	1,090	1,294	8,101	3,885	4,216	91	421	281	19,378	9,652	9,726
Share of Cost		48%	52%		46%	54%		48%	52%					50%	50%

Appendix 7: Alternative 3 On Grade Vs. Structure Cost Comparison

Segment Identifier	Segment Construction Cost by Mode ($M)												All Modes ($M)		
	Truck			Railroad			General Purpose			Trails	Power	Pipeline			
	Total	On Grade	Struc-ture	Total	On Grade	Struc-ture	Total	On Grade	Struc-ture	On Grade	On Grade	On Grade	Total	On Grade	Struc-ture
M01	721	251	469	164	67	96	721	251	469	6	32	21	1,663	629	1,034
M02	1,774	348	1,426	373	94	279	1,774	348	1,426	8	58	39	4,025	894	3,131
E02	177	140	37	70	54	16	177	140	37	5	19	13	459	369	90
E05	3,609	928	2,680	2,727	144	2,584	3,609	928	2,680	12	75	50	10,082	2,138	7,944
M07	535	411	124	121	89	33	535	411	124	8	32	21	1,252	972	280
M08	359	314	45	55	46	9	359	314	45	4	16	11	805	705	100
M09	730	90	640	941	6	934	730	90	640	1	11	8	2,420	206	2,214
M10	181	112	69	50	28	22	181	112	69	2	10	7	433	273	160
E07	568	467	101	132	104	28	568	467	101	9	37	25	1,338	1,108	230
M12	680	569	111	202	180	22	680	569	111	16	63	42	1,683	1,438	245
W04	296	152	145	84	48	36	296	152	145	4	19	13	712	387	325
M14	1,050	227	823	758	92	666	1,050	227	823	8	42	28	2,936	623	2,313
M15	92	64	27	27	22	5	92	64	27	2	8	5	226	166	60
Subtotal ($M)	10,771	4,073	6,698	5,705	976	4,730	10,771	4,073	6,698	85	422	281	28,035	9,910	18,126
Share of Cost		38%	62%		17%	83%		38%	62%					35%	65%

Appendix 8: Truck Facility Cost Estimate by Section

Truck Facility Cost Estimate by Segment

Route Segment	Segment Length (miles)	Structure (miles)	On-Grade Construction (miles)	Terrain and Land Use Type by Segment (%)						On-Grade Construction Cost ($M)	Structure Costs ($M)				Total Cost ($M)
				Urban Area			Rural Area				Major Bridges	Minor Bridges	Highway Tunnels	Interchanges	
				Level	Rolling	Mount.	Level	Rolling	Mount.						
W05	9.5	0.4	9.1	0%	0%	0%	100%	0%	0%	90.5	0.0	34.1	0.0	0.0	124.6
W04	12.5	1.6	10.9	15%	0%	0%	55%	30%	0%	151.8	22.7	111.8	0.0	10.0	296.4
W03	13.1	0.1	12.9	30%	5%	0%	25%	10%	30%	300.8	0.0	11.4	0.0	0.0	312.1
W02	7.9	0.8	7.1	0%	40%	0%	0%	60%	0%	136.5	22.7	52.3	0.0	0.0	211.5
W01	26.6	1.4	25.2	10%	20%	0%	20%	50%	0%	434.1	45.5	79.5	0.0	0.0	559.1
M15	5.4	0.3	5.0	20%	0%	0%	80%	0%	0%	64.4	0.0	27.3	0.0	0.0	91.6
M14	27.7	6.5	21.2	5%	0%	0%	95%	0%	0%	227.0	45.5	207.7	560.0	10.0	1,050.2
M13	13.0	2.5	10.5	0%	0%	0%	60%	40%	0%	130.2	22.7	107.3	160.0	10.0	430.2
M12	42.0	1.1	40.9	5%	5%	0%	65%	20%	5%	568.8	68.2	43.2	0.0	0.0	680.2
M11	23.0	4.0	18.9	10%	10%	0%	30%	25%	25%	393.9	45.5	292.3	0.0	0.0	731.6
M10	7.0	0.5	6.4	0%	30%	0%	15%	55%	0%	112.4	45.5	13.6	0.0	10.0	181.5
M09	7.6	4.1	3.5	0%	0%	0%	0%	50%	50%	89.9	22.7	9.1	608.0	0.0	729.7
M08	10.9	0.5	10.5	0%	0%	0%	0%	30%	70%	314.0	22.7	22.7	0.0	0.0	359.5
M07	21.3	1.1	20.2	25%	0%	0%	10%	50%	15%	411.1	68.2	45.5	0.0	10.0	534.8
M06	14.8	0.4	14.3	0%	0%	0%	90%	10%	0%	151.9	22.7	18.2	0.0	10.0	202.8
M05	38.2	1.3	36.9	10%	25%	0%	25%	40%	0%	638.9	68.2	54.5	0.0	10.0	771.6
M04	1.6	0.1	1.5	0%	0%	0%	100%	0%	0%	14.9	0.0	6.8	0.0	0.0	21.8
M03	7.8	0.5	7.3	0%	0%	0%	100%	0%	0%	73.5	22.7	22.7	0.0	0.0	118.9
M02	38.5	17.0	21.5	35%	5%	0%	50%	10%	0%	347.7	159.1	1,256.8	0.0	10.0	1,773.6
M01	21.1	5.7	15.3	25%	10%	0%	40%	25%	0%	251.4	0.0	459.1	0.0	10.0	720.5
E07	24.6	0.9	23.7	5%	10%	0%	25%	40%	20%	466.8	45.5	45.5	0.0	10.0	567.7
E06	22.0	3.3	18.7	0%	20%	10%	0%	25%	45%	609.3	90.9	200.9	0.0	0.0	901.1
E05	50.0	17.3	32.7	0%	5%	5%	0%	45%	45%	928.2	45.5	75.0	2,560.0	0.0	3,608.7
E04	29.2	6.6	22.5	0%	0%	0%	45%	15%	40%	480.3	113.6	36.4	832.0	0.0	1,462.3
E03	9.5	0.3	9.2	0%	0%	0%	100%	0%	0%	92.2	0.0	20.5	0.0	10.0	122.7
E02	12.5	0.2	12.3	10%	0%	0%	90%	0%	0%	139.7	22.7	4.5	0.0	10.0	177.0
E01	34.7	0.7	34.0	10%	5%	0%	30%	45%	10%	591.7	45.5	22.7	0.0	0.0	659.9

Appendix 9: Railroad Facility Cost Estimate by Section

Railroad Facility Cost Estimate by Segment

Route Segment	Segment Length (miles)	Structure (miles)	On-Grade Construction (miles)	Terrain and Land Use Type by Segment (%)						On-Grade Construction Cost ($M)	Structure Costs ($M)				Total Cost ($M)
				Urban Area			Rural Area				Major Bridges	Minor Bridges	RR Tunnels	Interchanges	
				Level	Rolling	Mount.	Level	Rolling	Mount.						
W05	9.5	0.4	9.1	0%	0%	0%	100%	0%	0%	39.8	0.0	6.4	0.0	0.0	46.2
W04	12.5	1.6	10.9	15%	0%	0%	55%	30%	0%	48.1	4.7	21.0	0.0	10.0	83.8
W03	13.1	0.1	12.9	30%	5%	0%	25%	10%	30%	56.8	0.0	2.1	0.0	0.0	58.9
W02	7.9	0.8	7.1	0%	40%	0%	0%	60%	0%	31.3	4.7	9.8	0.0	0.0	45.8
W01	26.6	1.4	25.2	10%	20%	0%	20%	50%	0%	111.0	9.5	14.9	0.0	0.0	135.4
M15	5.4	0.3	5.0	20%	0%	0%	80%	0%	0%	22.1	0.0	5.1	0.0	0.0	27.2
M14	27.7	6.8	20.9	5%	0%	0%	95%	0%	0%	92.0	9.5	38.9	608.0	10.0	758.4
M13	13.0	9.5	3.5	0%	0%	0%	60%	40%	0%	15.4	4.7	20.1	1,280.0	10.0	1,330.2
M12	42.0	1.1	40.9	5%	5%	0%	65%	20%	5%	180.1	14.2	8.1	0.0	0.0	202.4
M11	23.0	4.0	18.9	10%	10%	0%	30%	25%	25%	83.3	9.5	54.8	0.0	0.0	147.6
M10	7.0	0.5	6.4	0%	30%	0%	15%	55%	0%	28.3	9.5	2.6	0.0	10.0	50.3
M09	7.6	6.1	1.5	0%	0%	0%	0%	50%	50%	6.4	4.7	1.7	928.0	0.0	940.9
M08	10.9	0.5	10.5	0%	0%	0%	0%	30%	70%	46.1	4.7	4.3	0.0	0.0	55.0
M07	21.3	1.1	20.2	25%	0%	0%	10%	50%	15%	88.7	14.2	8.5	0.0	10.0	121.4
M06	14.8	0.4	14.3	0%	0%	0%	90%	10%	0%	63.1	4.7	3.4	0.0	10.0	81.2
M05	38.2	1.3	36.9	10%	25%	0%	25%	40%	0%	162.5	14.2	10.2	0.0	10.0	196.9
M04	1.6	0.1	1.5	0%	0%	0%	100%	0%	0%	6.6	0.0	1.3	0.0	0.0	7.9
M03	7.8	0.5	7.3	0%	0%	0%	100%	0%	0%	32.3	4.7	4.3	0.0	0.0	41.3
M02	38.5	17.0	21.5	35%	5%	0%	50%	10%	0%	94.4	33.1	235.7	0.0	10.0	373.2
M01	21.1	5.7	15.3	25%	10%	0%	40%	25%	0%	67.5	0.0	86.1	0.0	10.0	163.5
E07	24.6	0.9	23.7	5%	10%	0%	25%	40%	20%	104.2	9.5	8.5	0.0	10.0	132.2
E06	22.0	3.3	18.7	0%	20%	10%	0%	25%	45%	82.2	18.9	37.7	0.0	0.0	138.9
E05	50.0	17.3	32.7	0%	5%	5%	0%	45%	45%	143.8	9.5	14.1	2,560.0	0.0	2,727.3
E04	29.2	7.1	22.0	0%	0%	0%	45%	15%	40%	97.0	23.7	6.8	912.0	0.0	1,039.5
E03	9.5	0.3	9.2	0%	0%	0%	100%	0%	0%	40.6	0.0	3.8	0.0	10.0	54.4
E02	12.5	0.2	12.3	10%	0%	0%	90%	0%	0%	53.9	4.7	0.9	0.0	10.0	69.5
E01	34.7	0.7	34.0	10%	5%	0%	30%	45%	10%	149.6	9.5	4.3	0.0	0.0	163.4

Appendix 10: General Purpose Facility Cost Estimate by Section

General Purpose Cost Estimate by Segment

Route Segment	Segment Length (miles)	Structure (miles)	On-Grade Construction (miles)	Terrain and Land Use Type by Segment (%)						On-Grade Construction Cost ($M)	Structure Costs ($M)				Total Cost ($M)
				Urban Area			Rural Area				Major Bridges	Minor Bridges	Highway Tunnels	Interchanges	
				Level	Rolling	Mount.	Level	Rolling	Mount.						
W05	9.5	0.4	9.1	0%	0%	0%	100%	0%	0%	90.5	0.0	34.1	0.0	0.0	124.6
W04	12.5	1.6	10.9	15%	0%	0%	55%	30%	0%	151.8	22.7	111.8	0.0	10.0	296.4
W03	13.1	0.1	12.9	30%	5%	0%	25%	10%	30%	300.8	0.0	11.4	0.0	0.0	312.1
W02	7.9	0.8	7.1	0%	40%	0%	0%	60%	0%	136.5	22.7	52.3	0.0	0.0	211.5
W01	26.6	1.4	25.2	10%	20%	0%	20%	50%	0%	434.1	45.5	79.5	0.0	0.0	559.1
M15	5.4	0.3	5.0	20%	0%	0%	80%	0%	0%	64.4	0.0	27.3	0.0	0.0	91.6
M14	27.7	6.5	21.2	5%	0%	0%	95%	0%	0%	227.0	45.5	207.7	560.0	10.0	1,050.2
M13	13.0	2.5	10.5	0%	0%	0%	60%	40%	0%	130.2	22.7	107.3	160.0	10.0	430.2
M12	42.0	1.1	40.9	5%	5%	0%	65%	20%	5%	568.8	68.2	43.2	0.0	0.0	680.2
M11	23.0	4.0	18.9	10%	10%	0%	30%	25%	25%	393.9	45.5	292.3	0.0	0.0	731.6
M10	7.0	0.5	6.4	0%	30%	0%	15%	55%	0%	112.4	45.5	13.6	0.0	10.0	181.5
M09	7.6	4.1	3.5	0%	0%	0%	0%	50%	50%	89.9	22.7	9.1	608.0	0.0	729.7
M08	10.9	0.5	10.5	0%	0%	0%	0%	30%	70%	314.0	22.7	22.7	0.0	0.0	359.5
M07	21.3	1.1	20.2	25%	0%	0%	10%	50%	15%	411.1	68.2	45.5	0.0	10.0	534.8
M06	14.8	0.4	14.3	0%	0%	0%	90%	10%	0%	151.9	22.7	18.2	0.0	10.0	202.8
M05	38.2	1.3	36.9	10%	25%	0%	25%	40%	0%	638.9	68.2	54.5	0.0	10.0	771.6
M04	1.6	0.1	1.5	0%	0%	0%	100%	0%	0%	14.9	0.0	6.8	0.0	0.0	21.8
M03	7.8	0.5	7.3	0%	0%	0%	100%	0%	0%	73.5	22.7	22.7	0.0	0.0	118.9
M02	38.5	17.0	21.5	35%	5%	0%	50%	10%	0%	347.7	159.1	1,256.8	0.0	10.0	1,773.6
M01	21.1	5.7	15.3	25%	10%	0%	40%	25%	0%	251.4	0.0	459.1	0.0	10.0	720.5
E07	24.6	0.9	23.7	5%	10%	0%	25%	40%	20%	466.8	45.5	45.5	0.0	10.0	567.7
E06	22.0	3.3	18.7	0%	20%	10%	0%	25%	45%	609.3	90.9	200.9	0.0	0.0	901.1
E05	50.0	17.3	32.7	0%	5%	5%	0%	45%	45%	928.2	45.5	75.0	2,560.0	0.0	3,608.7
E04	29.2	6.6	22.5	0%	0%	0%	45%	15%	40%	480.3	113.6	36.4	832.0	0.0	1,462.3
E03	9.5	0.3	9.2	0%	0%	0%	100%	0%	0%	92.2	0.0	20.5	0.0	10.0	122.7
E02	12.5	0.2	12.3	10%	0%	0%	90%	0%	0%	139.7	22.7	4.5	0.0	10.0	177.0
E01	34.7	0.7	34.0	10%	5%	0%	30%	45%	10%	591.7	45.5	22.7	0.0	0.0	659.9

Appendix 11: Power Facility Cost Estimate by Section

Power Facility Cost Estimate by Segment

Route Segment	Segment Length (miles)	Structure (miles)	On-Grade Construction (miles)	Terrain and Land Use Type by Segment (%) Urban Area			Rural Area			On-Grade Construction Cost ($M)	Total Construction Cost ($M)
				Level	Rolling	Mount.	Level	Rolling	Mount.		
W05	9.5	0.4	9.1	0%	0%	0%	100%	0%	0%	14.2	14.2
W04	12.5	1.6	10.9	15%	0%	0%	55%	30%	0%	18.8	18.8
W03	13.1	0.1	12.9	30%	5%	0%	25%	10%	30%	19.6	19.6
W02	7.9	0.8	7.1	0%	40%	0%	0%	60%	0%	11.9	11.9
W01	26.6	1.4	25.2	10%	20%	0%	20%	50%	0%	39.9	39.9
M15	5.4	0.3	5.0	20%	0%	0%	80%	0%	0%	8.1	8.1
M14	27.7	6.5	21.2	5%	0%	0%	95%	0%	0%	41.5	41.5
M13	13.0	2.5	10.5	0%	0%	0%	60%	40%	0%	19.5	19.5
M12	42.0	1.1	40.9	5%	5%	0%	65%	20%	5%	63.0	63.0
M11	23.0	4.0	18.9	10%	10%	0%	30%	25%	25%	34.5	34.5
M10	7.0	0.5	6.4	0%	30%	0%	15%	55%	0%	10.5	10.5
M09	7.6	4.1	3.5	0%	0%	0%	0%	50%	50%	11.3	11.3
M08	10.9	0.5	10.5	0%	0%	0%	0%	30%	70%	16.4	16.4
M07	21.3	1.1	20.2	25%	0%	0%	10%	50%	15%	31.9	31.9
M06	14.8	0.4	14.3	0%	0%	0%	90%	10%	0%	22.1	22.1
M05	38.2	1.3	36.9	10%	25%	0%	25%	40%	0%	57.3	57.3
M04	1.6	0.1	1.5	0%	0%	0%	100%	0%	0%	2.4	2.4
M03	7.8	0.5	7.3	0%	0%	0%	100%	0%	0%	11.7	11.7
M02	38.5	17.0	21.5	35%	5%	0%	50%	10%	0%	57.8	57.8
M01	21.1	5.7	15.3	25%	10%	0%	40%	25%	0%	31.6	31.6
E07	24.6	0.9	23.7	5%	10%	0%	25%	40%	20%	37.0	37.0
E06	22.0	3.3	18.7	0%	20%	10%	0%	25%	45%	32.9	32.9
E05	50.0	17.3	32.7	0%	5%	5%	0%	45%	45%	75.0	75.0
E04	29.2	6.6	22.5	0%	0%	0%	45%	15%	40%	43.7	43.7
E03	9.5	0.3	9.2	0%	0%	0%	100%	0%	0%	14.2	14.2
E02	12.5	0.2	12.3	10%	0%	0%	90%	0%	0%	18.8	18.8
E01	34.7	0.7	34.0	10%	5%	0%	30%	45%	10%	52.0	52.0

Appendix 12: Trail Facility Cost Estimate by Section

Trail Facility Cost Estimate by Segment

Route Segment	Milepost		Segment Length (miles)	Structure (miles)	On-Grade Construction (miles)	Terrain and Land Use Type by Segment (%)						On-Grade Construction Cost ($M)	Total Construction Cost ($M)
						Urban Area			Rural Area				
	Start	End				Level	Rolling	Mount.	Level	Rolling	Mount.		
W05	274.4	283.9	9.5	0.4	9.1	0%	0%	0%	100%	0%	0%	3.4	3.4
W04	233.7	246.2	12.5	1.6	10.9	15%	0%	0%	55%	30%	0%	4.2	4.2
W03	151.1	164.2	13.1	0.1	12.9	30%	5%	0%	25%	10%	30%	4.9	4.9
W02	143.2	151.1	7.9	0.8	7.1	0%	40%	0%	0%	60%	0%	2.7	2.7
W01	121.9	148.5	26.6	1.4	25.2	10%	20%	0%	20%	50%	0%	9.6	9.6
M15	274.4	279.8	5.4	0.3	5.0	20%	0%	0%	80%	0%	0%	1.9	1.9
M14	246.7	274.4	27.7	6.5	21.2	5%	0%	0%	95%	0%	0%	8.1	8.1
M13	233.7	246.7	13.0	2.5	10.5	0%	0%	0%	60%	40%	0%	4.0	4.0
M12	191.6	233.7	42.0	1.1	40.9	5%	5%	0%	65%	20%	5%	15.6	15.6
M11	168.7	191.6	23.0	4.0	18.9	10%	10%	0%	30%	25%	25%	7.2	7.2
M10	161.7	168.7	7.0	0.5	6.4	0%	30%	0%	15%	55%	0%	2.4	2.4
M09	154.1	161.7	7.6	4.1	3.5	0%	0%	0%	0%	50%	50%	1.3	1.3
M08	143.2	154.1	10.9	0.5	10.5	0%	0%	0%	0%	30%	70%	4.0	4.0
M07	121.9	143.2	21.3	1.1	20.2	25%	0%	0%	10%	50%	15%	7.7	7.7
M06	107.2	121.9	14.8	0.4	14.3	0%	0%	0%	90%	10%	0%	5.4	5.4
M05	069.0	107.2	38.2	1.3	36.9	10%	25%	0%	25%	40%	0%	14.0	14.0
M04	067.4	069.0	1.6	0.1	1.5	0%	0%	0%	100%	0%	0%	0.6	0.6
M03	059.6	067.4	7.8	0.5	7.3	0%	0%	0%	100%	0%	0%	2.8	2.8
M02	021.1	059.6	38.5	17.0	21.5	35%	5%	0%	50%	10%	0%	8.2	8.2
M01	000.0	021.1	21.1	5.7	15.3	25%	10%	0%	40%	25%	0%	5.8	5.8
E07	168.7	193.3	24.6	0.9	23.7	5%	10%	0%	25%	40%	20%	9.0	9.0
E06	154.1	176.1	22.0	3.3	18.7	0%	20%	10%	0%	25%	45%	7.1	7.1
E05	072.1	122.1	50.0	17.3	32.7	0%	5%	5%	0%	45%	45%	12.4	12.4
E04	069.0	098.1	29.2	6.6	22.5	0%	0%	0%	45%	15%	40%	8.6	8.6
E03	067.4	076.9	9.5	0.3	9.2	0%	0%	0%	100%	0%	0%	3.5	3.5
E02	059.6	072.1	12.5	0.2	12.3	10%	0%	0%	90%	0%	0%	4.7	4.7
E01	000.0	034.7	34.7	0.7	34.0	10%	5%	0%	30%	45%	10%	12.9	12.9

Appendix 13: Pipeline Facility Cost Estimate by Section

Pipeline Facility Cost Estimate by Segment

Route Segment	Milepost		Segment Length (miles)	Structure (miles)	On-Grade Construction (miles)	Terrain and Land Use Type by Segment (%)						On-Grade Construction Cost ($M)	Total Construction Cost ($M)
						Urban Area			Rural Area				
	Start	End				Level	Rolling	Mount.	Level	Rolling	Mount.		
W05	274.4	283.9	9.5	0.4	9.1	0%	0%	0%	100%	0%	0%	9.5	9.5
W04	233.7	246.2	12.5	1.6	10.9	15%	0%	0%	55%	30%	0%	12.5	12.5
W03	151.1	164.2	13.1	0.1	12.9	30%	5%	0%	25%	10%	30%	13.1	13.1
W02	143.2	151.1	7.9	0.8	7.1	0%	40%	0%	0%	60%	0%	7.9	7.9
W01	121.9	148.5	26.6	1.4	25.2	10%	20%	0%	20%	50%	0%	26.6	26.6
M15	274.4	279.8	5.4	0.3	5.0	20%	0%	0%	80%	0%	0%	5.4	5.4
M14	246.7	274.4	27.7	6.5	21.2	5%	0%	0%	95%	0%	0%	27.7	27.7
M13	233.7	246.7	13.0	2.5	10.5	0%	0%	0%	60%	40%	0%	13.0	13.0
M12	191.6	233.7	42.0	1.1	40.9	5%	5%	0%	65%	20%	5%	42.0	42.0
M11	168.7	191.6	23.0	4.0	18.9	10%	10%	0%	30%	25%	25%	23.0	23.0
M10	161.7	168.7	7.0	0.5	6.4	0%	30%	0%	15%	55%	0%	7.0	7.0
M09	154.1	161.7	7.6	4.1	3.5	0%	0%	0%	0%	50%	50%	7.6	7.6
M08	143.2	154.1	10.9	0.5	10.5	0%	0%	0%	0%	30%	70%	10.9	10.9
M07	121.9	143.2	21.3	1.1	20.2	25%	0%	0%	10%	50%	15%	21.3	21.3
M06	107.2	121.9	14.8	0.4	14.3	0%	0%	0%	90%	10%	0%	14.8	14.8
M05	069.0	107.2	38.2	1.3	36.9	10%	25%	0%	25%	40%	0%	38.2	38.2
M04	067.4	069.0	1.6	0.1	1.5	0%	0%	0%	100%	0%	0%	1.6	1.6
M03	059.6	067.4	7.8	0.5	7.3	0%	0%	0%	100%	0%	0%	7.8	7.8
M02	021.1	059.6	38.5	17.0	21.5	35%	5%	0%	50%	10%	0%	38.5	38.5
M01	000.0	021.1	21.1	5.7	15.3	25%	10%	0%	40%	25%	0%	21.1	21.1
E07	168.7	193.3	24.6	0.9	23.7	5%	10%	0%	25%	40%	20%	24.6	24.6
E06	154.1	176.1	22.0	3.3	18.7	0%	20%	10%	0%	25%	45%	22.0	22.0
E05	072.1	122.1	50.0	17.3	32.7	0%	5%	5%	0%	45%	45%	50.0	50.0
E04	069.0	098.1	29.2	6.6	22.5	0%	0%	0%	45%	15%	40%	29.2	29.2
E03	067.4	076.9	9.5	0.3	9.2	0%	0%	0%	100%	0%	0%	9.5	9.5
E02	059.6	072.1	12.5	0.2	12.3	10%	0%	0%	90%	0%	0%	12.5	12.5
E01	000.0	034.7	34.7	0.7	34.0	10%	5%	0%	30%	45%	10%	34.7	34.7

Appendix 14: Segment Length Measures

Length Measures by Segment

Segment	Total Length (miles)	Length by Terrain Type			Tunnels by Mode		Bridges by Mode	
		Level (miles)	Rolling (miles)	Mountainous (miles)	Highway (miles)	Railroad (miles)	Highway (miles)	Railroad (miles)
W05	9.5	9.5	0.0	0.0	0.0	0.0	0.4	0.4
W04	12.5	8.8	3.8	0.0	0.0	0.0	1.6	1.6
W03	13.1	7.2	2.0	3.9	0.0	0.0	0.1	0.1
W02	7.9	0.0	7.9	0.0	0.0	0.0	0.8	0.8
W01	26.6	8.0	18.6	0.0	0.0	0.0	1.4	1.4
M15	5.4	5.4	0.0	0.0	0.0	0.0	0.3	0.3
M14	27.7	27.7	0.0	0.0	3.5	3.8	3.0	3.0
M13	13.0	7.8	5.2	0.0	1.0	8.0	1.5	1.5
M12	42.0	29.4	10.5	2.1	0.0	0.0	1.1	1.1
M11	23.0	9.2	8.0	5.7	0.0	0.0	4.0	4.0
M10	7.0	1.0	5.9	0.0	0.0	0.0	0.5	0.5
M09	7.6	0.0	3.8	3.8	3.8	5.8	0.3	0.3
M08	10.9	0.0	3.3	7.7	0.0	0.0	0.5	0.5
M07	21.3	7.5	10.6	3.2	0.0	0.0	1.1	1.1
M06	14.8	13.3	1.5	0.0	0.0	0.0	0.4	0.4
M05	38.2	13.4	24.8	0.0	0.0	0.0	1.3	1.3
M04	1.6	1.6	0.0	0.0	0.0	0.0	0.1	0.1
M03	7.8	7.8	0.0	0.0	0.0	0.0	0.5	0.5
M02	38.5	32.7	5.8	0.0	0.0	0.0	17.0	17.0
M01	21.1	13.7	7.4	0.0	0.0	0.0	5.7	5.7
E07	24.6	7.4	12.3	4.9	0.0	0.0	0.9	0.9
E06	22.0	0.0	9.9	12.1	0.0	0.0	3.3	3.3
E05	50.0	0.0	25.0	25.0	16.0	16.0	1.3	1.3
E04	29.2	13.1	4.4	11.7	5.2	5.7	1.4	1.4
E03	9.5	9.5	0.0	0.0	0.0	0.0	0.3	0.3
E02	12.5	12.5	0.0	0.0	0.0	0.0	0.2	0.2
E01	34.7	13.9	17.3	3.5	0.0	0.0	0.7	0.7

Appendix 15: E-W Connector Cost Estimates

Connector Cost Estimates

County	Improvements to connectors (in Millions)		
	Mode	**Description**	**Cost**
Whatcom	Highway	New 2-lane arterial	$109.3
	Rail	Single Track	$29.0
	Pipeline		$39.1
	Total Cost		**$138.2**
Skagit	Highway	Improve SR 20	$152.8
	Pipeline		$24.8
	Total Cost		**$177.6**
Snohomish	Highway	Improve SR 2	$406.0
	Pipeline		$24.8
	Total Cost		**$430.7**
King	Highway	Improve I-90	$198.3
	Total Cost		**$198.3**
Pierce	Highway	Improve SR 410	$31.7
	Pipeline		$34.5
	Rail		$45.8
	Total Cost		**$111.9**
Thurston	Highway	New 2-lane arterial	$68.8
	Pipeline		$12.4
	Total Cost		$81.3
All Counties	**Total Cost**		**$1,138.1**

CHAPTER SIX
Feasibility of a User Financed WCC

INTRODUCTION

The previous chapter (5) concludes that the WCC, due to the price tag for its development, can really only be pursued if the users of the corridor can finance the development and maintenance of the corridor, as well as to partially or fully reimburse government for its costs associated with developing the corridor. This chapter evaluates the potential for capturing funding from the future users of the corridor.

The Need for Funding

It is important to consider this corridor in relation to the significant funding challenge presently faced by the State of Washington. A key issue clearly articulated by many agencies and jurisdictions (responsible for transportation investment along this corridor) is once again brought to bear by this study; That is, this study further emphasizes that any major transportation project intended to resolve multimodal needs along the I-5 corridor will likely require resources that far exceed existing levels.

This broader policy issue is not the focus of this study, but at least warrants mention in this report. The focus of this Study is to determine whether there is the potential for users to pay for the development of the WCC, as defined by legislation.

FACTORS THAT FEED INTO DETERMINING PRIVATE SECTOR INTEREST

The WCC as proposed by the Washington State Legislature is a corridor built and operated entirely by private concerns. Accordingly, feasibility must be assessed from the perspective of the private sector, particularly from the perspective of potential developers of the corridor. Only projects that are very likely to succeed financially will be undertaken by private entities. Since private entities can deploy their resources (time and money) in many different ways, they owe it to their investors and employees to deploy those resources for the greatest monetary return.

The ultimate question determining financial feasibility is whether the revenues expected to be generated by the facility are sufficient to pay the capital and on-going operating costs of the facility, plus a reasonable return on investment on any equity invested. However, a project must be completed before it can generate revenues. Before investing in a project, a developer must be convinced that construction completion is highly likely. Thus pre-construction and construction risk must also be evaluated. These three elements (pre-construction issues, construction risk and financial feasibility) are addressed in turn below.

Pre-Construction Issues

For a private developer to be interested in a project, certain conditions must exist.

Sponsor Commitment – Usually, a developer assesses the priority of the project to the sponsor (in this case, the State), and the interests of the various parties who are required to act (or not act) in order for the project to succeed. A developer is unlikely to proceed if support for the project is tenuous. However, there are a number of ways that support for the project can be indicated:

1. With legislation that specifically authorizes the project and removes any pre-existing statutory hurdles.
2. Through creation of an entity charged with development of the project.
3. Through availability of funds for pre-development activities, such as those made available through the Texas Mobility Fund.

Broader support can be indicated through a public process in which consensus about the need for the project is achieved. Finally, right-of-way acquisition and the completion of the environmental process are the ultimate indicators to a private entity of public support for a project.

Sponsor Process – A developer is unlikely to compete for an opportunity to undertake the project if they feel that the selection process is biased against them. In order to truly have a competitive process with more that one potential developer bidding, a sponsor must run a fair and open bidding process. A project developer also needs "certainty in outcome," or the confidence that the sponsor will follow its own process to a fair conclusion.

Timing - The timing of a proposed project – when construction is expected to start and be completed, and when revenues are expected to begin – is important information for developers. Most development teams are headed by construction firms that expect to make most (if not all) of their money on constructing the project. Thus, if there are two different projects offering similar returns, the developer will most likely choose the project that starts earlier due to the time value of money. Further, the developer will assess the risk associated with the construction start date. A project that is more likely to be delayed will be less attractive to developers.

There are many hurdles to be overcome before a project ever enters the construction phase. Generally, private developers will not commit capital to a project before these hurdles have been passed.

Right-of-way - A project cannot be built until virtually all right-of-way is secured, or until alternatives exist for parcels that are in question. Developers typically do not participate in right-of-way acquisition. Public entities have the power of eminent domain, which provides much more certainty for acquisition. In addition, it may be undesirable from a public policy perspective for a private entity to own the right-of-way. Ownership would enable the developer to direct future development of the property to serve its own goals and objectives, which may or may not be consistent with public good.

The Alameda Corridor Transportation Authority freight rail project illustrates how right-of-way acquisition can accelerate project completion. At the end of 1994, three railroads agreed to sell most of the property required for the construction of the Corridor to the Port of Los Angeles and Long Beach. The sale was completed pursuant to a memorandum of understanding committing the railroads to pay the Ports for the use of the Corridor after completion. In this case, property was

actually transferred out of private hands to public control to facilitate project development. The property acquisition was instrumental in moving the project toward financing, construction, and operation.

Environmental - This is one of the most critical elements of pre-construction risk. Preparation of environmental documents and obtaining necessary environmental approval is costly and time-consuming. If the approval is disputed, a project can be mired in costly legal battles for long periods of time, or even derailed entirely. History has shown that developers are unlikely to involve themselves until the environmental process is complete. Again, this is an area that is better handled by the public sector.

The San Joaquin Hills Transportation Corridor is a good example of the importance of public control of the environmental process. Even though a Record of Decision on the final Environmental Impact Statement was recorded in July 1992, several lawsuits were still filed to challenge the environmental permitting process. However, based on previous court decisions on the project, and an assessment of the maximum time required to conclude the legal process, financing proceeded. Proceeds of the issue (capitalized interest) was set aside to ensure that interest would be paid to bondholders during the legal process. Construction outside the disputed areas was able to proceed, thus accelerating project completion.

Utility Relocation - This is another area of project risk for a developer. Utility relocation risk can be managed by a developer if there is access to good information about the utilities in question. In most cases, this would require the sponsor to provide a warranty that the information provided is accurate.

The Alameda Corridor Transportation Authority project serves as an example of successful allocation of utility relocation risks. At the time of financing, approximately 650 relocations or removals were anticipated along the length of the 20-mile corridor. The Authority strove to minimize risk of delay by early identification of facilities, and by negotiating agreements with most of the owners of major facilities located in the North End and Mid-Corridor segments of the project prior to financing. Similar agreements for facilities in the South End segment were under negotiation at the time of financing. For to the Mid-Corridor segment, many of the Authority's obligations under the agreements were passed to the design-build contractor, who had limited access to a time extension or a price increase under the terms of the design-build contract.

Construction Risk

Clearly, if the project cannot be constructed, there will be no revenue and the project will not be successful from the point of view of a private developer. If the project takes longer to build or costs more to build than the developer anticipated, then the financial return will not be as favorable as expected. Some of the risks that a developer evaluates include the following:

- **Site conditions.** A significant cause of delay and cost increase is surface and subsurface conditions that are different that anticipated. Potential developers need access to, or the ability to conduct, extensive analysis on subsurface conditions.
- **Utilities.** As described above, utility relocations can have major implications for cost and schedule, particularly due to the coordination that is required between the developer and the utilities. The availability of accurate information will reduce this risk and make a project more attractive to a developer.

- **Permits.** As discussed above, environmental permits must be obtained before private participation can be obtained. However, there are usually other local permits that must be obtained. The developer must assess whether there are any significant obstacles to obtaining these permits.
- **Labor.** Labor costs make up a significant portion of the cost of any major transportation project. A steady supply of skilled labor is thus essential to the completion. This risk can be mitigated with a master labor agreement.
- **Raw materials.** Raw materials cost is the other significant cost of a major transportation project. A developer would assess the risks related to availability and cost of the necessary materials. For example, the costs of both concrete and steel have skyrocketed in response to high levels of demand in China. An example of the impact of raw materials cost are the bids recently received for the self-anchored suspension (SAS) portion of the new east span of the San Francisco-Oakland Bay Bridge. The engineers' estimated cost was $700 million, while the single bid received contemplated a cost of $1.8 billion (using domestic steel under "Buy America" rules) or $1.4 billion (with no source restrictions).

Contractor Bonding - Another separate but related issue is contractor bonding. Sources for payment and performance bonds are significantly fewer that just a few years ago. This is a topic that must be considered by both the sponsor (in considering what to require in the way of bonds), and for the contractor in determining how much the project will cost to construct. The new east span of the Bay Bridge serves as an example of the impact of contractor bonding requirements on project cost and schedule. The September 11, 2001, terrorist attacks had a significant impact on the capital of the property and casualty insurance companies that are the surety bond providers' parent companies. While much of this capital has been replaced, insurance companies have become highly selective in the use of capital. In addition, the surety providers no longer determine risk based on historical loss experience, but rather based on bond amount, duration and likelihood of full forfeiture. The combination of these factors has reduced the availability of and price competition for surety bonds, particularly for projects over $500 million. In response to this development, Caltrans increased the number and decreased the size of separate contracts on the Bay Bridge seismic retrofit project in an attempt to attract more bids and achieve a lower project cost.

Financial Feasibility

Once the pre-construction and construction risks have been assessed and mitigated to the extent possible, a question still remains regarding the financial viability of the project: will the forecast revenues exceed the debt service and operation and maintenance costs of the facility? Financial feasibility is assessed in the following way.

Revenues - First, all existing and potential sources of revenue are identified. In the case of the Commerce Corridor, these revenues could include:

- Tolls (collected from cars and/or trucks),
- Fees for transmission of gas or electricity, and
- Lease revenues from other co-located utilities (broadband, cable, etc).

An independent revenue forecast from a qualified firm would be required. Usually such a forecast would include multiple scenarios such as expected use, high and low usage. The forecast might take into consideration economic growth expected in this region, and to the south and north; volume of trade expected across the Canadian border; development along or near the proposed Corridor; and fuel prices.

Operations and Maintenance - Assuming that maintenance on the project would be paid for from the revenues generated by the project, these costs would also be forecast by a qualified firm. One important component of O&M costs on this type of project is insurance. If the facility is damaged or destroyed, it must be replaced or bonds must be able to repaid from insurance proceeds.

Debt Service - Bonds would most likely be issued to fund the cost of all or a portion of the project. The bonds would bear interest at a fixed or variable rate (like a home mortgage) until the principal is repaid. The amount of bonds to be issued depends on several factors including: the cost of the project, the amount of equity (if any) put into the project, the amount of money that must be set aside to pay interest to bondholders prior to project completion and revenue generation (capitalized interest), debt service and other reserves required to be funded and costs related to issuing the bonds (bond insurance, rating agency fees, underwriters' spread, legal counsel, etc). The interest rate on the bonds also depends on several factors, including: the credit quality of the issue, the final maturity on the bonds, whether the rate is fixed or variable, the general level of interest rates when the bonds are issued, and whether the bonds are taxable or tax-exempt. Tax-exempt bonds bear a lower rate of interest (and therefore improve project feasibility) because the holder of the bonds doesn't pay Federal (or state, in many cases) income tax on the interest earned. There are many rules governing the issuance of tax-exempt bonds, but in most cases a project must be publicly-owned to enjoy the benefits of tax-exemption.

Debt Service Coverage - Generally, it is not sufficient for revenues to be equal to debt service and O&M costs. There must be some extra revenue or ("coverage") to provide a cushion for unforeseen event and inaccurate projections. The coverage factor can range from 25% of debt service (1.25x debt service coverage) to 100% of debt service (2x coverage).

IDENTIFICATION OF POTENTIAL USERS

Another factor that private sector developers consider is the level of certainty of attracting potential users to pay for the service offered by project. In general, developers will choose to invest in projects that appeal to a large target market of users willing to pay for the service. Previous documents produced by this Study (particularly *Chapter 2*) identify two sets of potential users of the WCC:

Utilities sector

- Power industry – 500 kilovolt transmission line.
- Natural gas industry - High pressure transmission line.
- Petroleum industry - Refined petroleum products.
- Telecommunication industry - Analog and digital communications.

Transportation

- Truckers - Exclusive commercial vehicle four-lane roadway.
- Freight rail carriers - Double track, shared with passenger rail.
- Automotive users - Four lane roadway with weight limits.
- Passenger rail - Double track, shared with freight rail.
- Non-motorized - Shared use path and separate equestrian trail.

In the following pages, we have evaluated the potential for each of these components to participate in the development of the corridor.

WILL THE ENERGY SECTOR PARTICPATE IN THE DEVELOPMENT OF THE CORRIDOR?

At present time, the interests of the utility industries are not consistent with a long-range project like the WCC. They would not participate in such a project if it was moved forward.

This conclusion is based upon four fundamental factors:

1. **Distribution Patterns** - Uncertainty in the long term direction and pattern of distribution and transportation of energy in the region and the nation;
2. **Differing Planning Horizons** - The long term planning horizon for the energy industry is around 5 years (up to 10 years at most), which is not consistent with the long term outlook for this WCC project;
3. **Location of the Corridor** – Discussion with utility industries indicate that any expansion will most likely occur in the eastern portion of the state, outside of the purview of this study. The location of the WCC is not consistent with the location of future major corridors that the industry anticipates will occur;
4. **Risk for the Public Sector** - 60-80% of the costs associated with the development of the energy component consist of right-of-way acquisition. It is this assembly of right-of-way that is thought to be a legitimate role for government participation if the corridor were to be developed. However, the risk associated with leading the largest share of the cost, even if government were to be fully reimbursed for the ROW (even at a windfall), is too great, particularly in a time when government resources are already under considerable pressure.

Uncertainty of Long Term Energy Distribution Patterns

Based on a recent report, energy (natural gas) demand continues to grow at approximately 2 to 3% annually[1], and is expected to continue growing at the same rate. The demand exists within the state of Washington, particularly within the population centers along the western coast of the Puget Sound. This market, however, is far overshadowed by the demand from California and the rest of the Southwest. The premise for including energy as a potential component of the Washington Commerce Corridor is that the mainline N-S distribution capacity to serve these markets is both inadequate and antiquated, and that the energy distribution sector would need to add additional mainline capacity[2]. The WCC would serve as the location for adding this additional capacity, in a dedicated, secure corridor, removed from urban centers, and in conjunction with the development of additional transportation facilities.

While this report does not rule out the likelihood that the energy distribution industry may add additional N-S capacity, there is no concrete evidence that the sector has plans to make significant N-S investments. There are several factors that add uncertainty to the direction of distribution capacity:

[1] Source: Foothills Energy Corridor Study; Van Ness Feldman, P.C, September 2004.
[2] Industry interviews revealed that there is "sufficient capacity" through 2008.

1. **Changes in Market Dynamics** – Due to volatile market dynamics, distribution patterns are generally short term, not long term. The energy industry produces a commodity on very low margins, and therefore must adjust raw material sources quickly in response to changing market dynamics. Changes in market dynamics greatly influence the distribution pattern for energy. For example, in the 1990's, over 70% of Puget Sound's natural gas was Canadian, but by the year 2000, gas from the Rockies was cheaper, and the distribution pattern changed to favor natural gas from the Rockies.[3] As of this writing that trend is again beginning to reverse itself.
2. **Competing Distribution Methods** – The distribution sector is evaluating alternative distribution methods that would compete with the traditional corridor based methods. For example, the natural gas distribution sector is investigating shipping natural gas in a liquid form on barge vessels to serve markets N-S along the coast, and the transporting the LNG inland by "lateral pipelines", reducing the need for major N-S mainline capacity. The electrical power generation industry is projecting the use of smaller generation plants closer to the power consuming markets, thereby reducing the need for mainline N-S power distribution capacity[4]. While our research has no solid evidence that either of these trends may actually revolutionize distribution patterns, the existence of these trends further diminish the solid case for a major N-S corridor.
3. **Desire to "Make Do"** – Faced with increased ROW costs, construction and materials costs, and increased public resistance toward the development of energy facilities, specifically the "Not In My Back Yard" (NIMBY) stance by many communities and citizens throughout the state, as well as a wider range of legal and political opportunities for slowing down and even blocking major projects, the energy sector has found ways to optimize the capacity of the existing system. Much of their capital improvement plans are targeted at "normal repairs and upgrades[5]". The sector's desire to avoid significant public confrontation further adds to the uncertainty for N-S mainline capacity. Note that this point may be the basis for the public sector to lead the environmental clearance and ROW acquisition process, and selling the ROW to the private sector (see the section titled "Risk for the Public Sector").

Differing Planning Horizons

As explained earlier, distribution patterns are short term, not long term due to volatile market dynamics. While the industry expects to be delivering gas for the next fifty years, the leading distributors for the current energy types/uses cannot predict the success of other competing energy uses, or the effect of the other energy uses on their own business. Therefore, the planning horizon for the current industry leaders is short term (5-10 years), relative to the 20 to 50 year outlook for this project. It is anticipated that, even under the most aggressive schedule, it will take more than 5 years for the WCC to actually designate and approve for construction any energy and transportation facilities.

The premise for this study is that the corridor will ultimately be demanded and paid for, in part, by the private sector energy distributors over the next 20-50 years. However, the industry itself does not have the ability and confidence to accurately predict its own dynamics beyond the next five

[3] Source: Based on interviews with major gas distribution companies, April 2004.
[4] Source: Ibid.
[5] Source: Ibid

years. This mismatch in planning horizons further diminishes the feasibility of the WCC, as it is currently conceived.

Location of the Corridor

The current alignment of the WCC, as dictated by the legislature, is to serve as a N-S corridor to by-pass the populated urban areas along the coast, while remaining west of the Cascades, also connecting to potential energy corridors in Canada and through Oregon. However, the consensus within the industry is that future N-S energy distribution, particularly of an interstate and international nature, will likely occur to the east of the current WCC alignment, if at all in Washington State[6]. This consensus is primarily based around the promise of increased petroleum and natural gas production in Canada and Alaska, and the shipment of the product to markets in the US and Canada. Given the concentration of population and industry around the Great Lakes and the East Coast (Canada and US), as well as the emerging Southeast US, it is anticipated that mainline N-S distribution capacity will tend towards the east, with secondary distribution to the west coast branching off main N-S alignments.

Risk for the Public Sector

The points made thus far could arguably provide the basis for the public sector setting aside ROW for the energy components of the WCC, regardless of the uncertain outlook for the energy industry. There are several factors that provide a strong case for such a scenario:

1. **Seemingly Insatiable Demand for Energy** – The continued demand for energy seems to be an argument on its own for developing the WCC. A sustained 2-3% annual growth will surely exceed current capacity.
2. **Smart Growth Practices** – Given the sporadic and unpredictable nature of the energy industry, there is no telling where the next gas line, or oil line or power line will be built. It is conceivable, that without advanced energy corridor planning by government, the development of future facilities will lead to conflicts between urban planning and infrastructure development. A single planned corridor that can accommodate all energy uses will likely lead to fewer development conflicts than multiple single use corridors spread throughout the Puget Sound region.[7]
3. **Synergies** – Synergies from co-developing multiple infrastructure uses within a single corridor could lead to lower development costs, improved efficiencies and streamlined approvals.

These factors provide a solid basis for arguing that government should play a leading role in developing the corridor, assembling the ROW and leading a streamlined permitting process. In addition to the public benefits from this approach (government leading the planning and development of the WCC), the prospect that government would be fully or partially reimbursed by the users of the corridor further strengthens the case.

Typically, the upfront costs borne by the government represent the smaller share of the overall costs. The lower the upfront costs, the lower the government's exposure to the financial risk. However, 60-80% of the costs associated with the development of the energy component of the

[6] Source: Ibid

[7] Source: Foothills Energy Corridor Study; Van Ness Feldman, P.C, September 2004.

corridor are estimated to be right-of-way costs[8]. The relative risk associated with fronting the largest share of the cost, even if government were to be fully reimbursed for the ROW (even at a windfall), is too great, particularly in a time when government resources are limited, and particularly based on the unpredictable nature of the energy sector.

Conclusion

There is little evidence that the private energy sector would be willing to lead the development of the WCC energy component. In addition, there is an extremely high level of risk associated with the public sector assuming the lead role in setting aside sufficient ROW. Therefore, on a speculative basis, the energy component of the WCC does not present a highly feasible option at this time. However, the Foothills Energy Corridor Study[9] makes several policy level recommendations for planning the development of future energy corridors in the state of Washington which should be taken into consideration by policy makers. The most significant of these is the need for a single entity responsible for the development of a statewide energy infrastructure strategy and its implementation.

WILL THE PRIVATE SECTOR PARTICPATE IN THE DEVELOPMENT OF THE TRANSPORTATION COMPOMENTS OF THE CORRIDOR?

The approach toward evaluating and discussing the role of the private sector in the development of the transportation components of the WCC is different than the approach used to determine the feasibility of the energy components of the corridor. The difference stems from the historical role of the government in developing transportation and energy infrastructure. Government has historically played a greater role on the transportation side, and less on the energy side. However, the private sector is playing an increasing role in leading the development of transportation infrastructure, specifically where user fees and tolls are sufficient to service the debt associated with developing transportation projects. Therefore, the key issue to resolve for this project is whether there is sufficient evidence that the users of the various transportation components will generate sufficient revenue to support the development of the transportation components of the WCC.

Passenger Rail Service

The development of passenger rail services is a priority in Washington state and the Puget Sound Region. The greatest demand for passenger rail service is N-S in nature like the WCC corridor would provide. There are already existing intercity rail services that serve the region, including:

- Regular AMTRAK and the new AMTRAK "Cascades" service.
- "Sounder" service, the new and expanding commuter rail service provided by Sound Transit, and presently serving the corridor from Tacoma to Everett.

There are plans for improving passenger rail service within the region, including:

- Extending Sound Transit's commuter service south to Lakewood and increasing both the frequency and number of trains over the entire service area.

[8] *Chapter 5* - Construction and Right-of-Way Costs.
[9] Van Ness Feldman, August 2004

- Expanding the amount of AMTRAK "Cascades" service.
- The preliminary evaluation of other service north of Everett, east from the Seattle area, and even service parallel to existing ST north-south commuter rail.
- Completion of the first phase and expansion of the second phase of ST LRT service.

There is no shortage in plans and visions for improving passenger rail service in the region, including a plan for passenger rail service along the overall WCC alignment. In fact, much of the reasoning for this WCC Feasibility study was based on a report produced by the Washington State Association of Railway Passengers that builds the case for developing a rail and energy corridor along an alignment of existing railway infrastructure west of the Cascades[10].

However, passenger rail service does not contribute to the financial feasibility of the WCC as is currently defined. This is primarily based on the fact that passenger rail service is almost exclusively publicly subsidized. Average fare box recovery for passenger rail service in the US ranges between 30% and 60%[11], the rest of which is subsidized. As a local example, the AMTRAK Cascades service in Washington has a 40% farebox recovery. As a result, the private sector does not typically contribute significant financial resources towards the development of passenger rail service, nor does the private sector typically receive user fees or toll revenue from passenger rail service, expect where private sector contributes in ROW contributions, provides in-kind services, or receive revenues for trackage rights. And while there are private sector entities that operate rail services on behalf of public agencies, or control the routing of trains according to schedules, private sector involvement is not as the leading investor and financial sponsor. This is almost exclusively a government role.

Therefore, despite the strong evidence that N-S passenger rail service will likely be developed in the region, it would appear to add little to the financial feasibility of the WCC as it is currently defined.

Freight Rail Service

Freight rail service is almost exclusively a private sector business. Given that significant portions of the WCC follow existing freight rail infrastructure, we evaluated the feasibility of the private sector playing a role in developing the freight rail component of the WCC.

The Rail Freight Industry Players – There are two major rail freight carriers in the region, the Burlington Northern Santa Fe (BNSF) Railway Company and the Union Pacific (UP) Railway Company. Both companies serve markets to the north, south and east of the Puget Sound region. As a result, both companies have facilities that run N-S, primarily along the coast, as well as east towards major rail markets in the Midwest and the east coast.

Private Sector Driven Performance Requirements – These companies are responsible for the development of and investment in their own rail infrastructure and rolling stock, as well as the operations of the services. Both companies must meet the financial goals laid forth by investors

[10] Source: "The Cascade Foothills Corridor: A Commerce Corridor For Western Washington" The Washington Association of Railroad Passengers, October 2002.

[11] For 2002 the American Public Transit Association reports that for all Commuter Rail systems, 48% of operating expenses were covered by the fare box, 58% for Heavy Rail systems (e.g.. subways) and 29% for Light Rail systems.

and management. In addition, both serve customers with specific service requirements. Each railroad must meet the demands of their customers, or risk losing the business to the competitor or to the competing truck mode.

Investment Plans are More Market Driven Than Public Driven – Because of the competitive nature of the industry, railroad carriers focus most of their investment into the areas that help them best serve their customers' needs.

Rail Freight Markets are Predominantly East – The largest markets for freight rail traffic to/from the Puget Sound region are to the east. The two largest container ports generate the bulk of freight rail traffic, specifically intermodal container traffic. In fact, up to 70% of the port traffic through Tacoma and Seattle is intermodal. This traffic is carried to/from markets to the east, particularly the Midwest and Northeast on key east/west main lines.

Private Freight Investments are Focused on the East West Lines – The major investment plans of the two major railroads focus primarily on east/west mainlines, that serve their largest customer base and business lines. Barring any major change, these customers will continue to be the priority for the freight lines. Improvement in north/south capacity is a low priority for the railroads, with the exception of the north/south segments through the congested urban centers between Tacoma and Everett. The congestion related issues for the freight railroad along these urban segments are most prevalent near the intermodal yards and ports they serve. Any mainline capacity issues along these urban segments are mostly related to balancing freight capacity with intercity passenger services.

North/South Rail Capacity is Largely a Public Priority - This fact is evidenced by the approximately $300 million investment by the public sector (Sound Transit) into a public/private cooperation with the BNSF to improve capacity on their mainline from Seattle north to Everett in an effort to increase commuter passenger services to the north Puget Sound urban centers.

The Private Railroads are Not a Feasible Option for the WCC - Given these factors, it is clear that private railroad investment is not a feasible option to drive the development of the WCC.

Long Term Opportunities – As an aside, our analysis does point to two opportunities for the private railroads that the WCC could serve, specifically the need for improving capacity along the urban segments, and opportunities for staging freight inland, away from the ports and intermodal centers.

1. **Improving Capacity along the Urban Segments** – As is stated earlier, improving N-S passenger rail service is a very high public priority in the region. The current investment strategy for improving intercity passenger service is to utilize existing freight rail capacity. The WCC alignment runs along a mix of existing railroad infrastructure and old abandoned right-of-way to the east of the existing high priority freight lines through the urban centers. A long term strategy of shifting N-S freight rail traffic eastward along the WCC alignment would free up capacity along the freight lines through the urban centers and thereby improve the opportunity for passenger service. However this strategy is not a private sector driven strategy. It would require significant public investment to upgrade the railroad facilities along the WCC alignment, particularly from Tacoma north to the northern most east-wet BNSF line (Stevens Pass line) and to build an east-west connection on the southern end (Tacoma) of this freight by-pass.

2. **Inland Staging Center** – There is a desire by some of the ports and railroads in the Puget Sound to identify an inland freight staging point. This staging point will provide an interface between truck and rail, provide enough acreage for the development of major warehouse and cross-dock facilities, and will stage both international container traffic and domestic traffic, providing opportunities for trans-loading traffic. The ideal location would be at or near the major rail and highway corridors. The WCC might be an ideal method by which to help locate an inland staging area, because of its approach to setting aside major portions of ROW, its intersect between truck freight and rail freight, and its linkage to the major interstate corridors.[12]. It is important to note that the private sector is actively seeking a location for such a major load center, and the current focus is along the existing N-S urban/coastal rail lines. Once such a facility is developed, it will have a significant impact on land use that may take decades to play out.

Although this long term public policy alternative is not the focus of this Study, it at least warrants mention in this report. The focus of the Study, however, is determining whether there is the potential for users to pay for the development of the WCC, as defined by legislation. As stated earlier, the freight rail industry is not a feasible option for leading the development of the WCC, or contributing major resources towards its development, at this time.

Car Tolls

Tolls have been used to fund major road construction projects virtually from the onset of the growth in popularity of the automobile. Although not used wholesale to finance the entire national system, tolls have been used when public agencies do not have the resources to finance the facilities. Moreover, toll roads are typically developed as public/private ventures where the private sector is asked to play a variety of roles. A more detailed discussion of the roles that the private sector plays in the development of toll roads is provided in *Chapter 4 - Legal and Institutional Analysis* produced by this study.

Naturally, car tolls are also being viewed as an opportunity for financing the WCC. However, there are three major factors that present obstacles to car tolls financing the development of the WCC.

1. **Short Travel Patterns not Consistent with a Long Haul Corridor** – The financial feasibility of a car toll road is based on the amount of traffic it can attract, particularly from more congested or circuitous alternative routes against which it offers a significant enough advantage to warrant paying a toll. The densest traffic along the entire I-5 corridor is between Tacoma and Seattle, as well as south toward Olympia and north toward Everett. These are also the most congested segments. These corridor segments combined are shorter than the WCC as a whole. In addition, the bulk of the traffic along the congested segments is localized traffic, and does not travel over the entire route. In other words, the trips along these congested segments are short and are not consistent with the long haul nature of the WCC. The WCC is intended to have a limited number of access points along its entire length. The number of access points that would be made available to auto travelers along the densest segments (Tacoma to Seattle) would likely only be two. The bulk of trip patterns between these two points are well documented and understood to be

[12] Note that this report does not imply that the WCC would guarantee the success of an inland load center. The success of a load center is based on many factors, the bulk of which are market and operational driven factors. The WCC could offer an opportunity to bring all of these market and operational factors together.

shorter, requiring a far greater number of access points. Therefore, these local trips will likely not use the WCC. Since the local trips represent the largest share of the target traffic for the WCC, the feasibility of a car toll for the WCC concept, as it is currently defined, is at risk.

2. **The WCC is Too Far East Around the Major Urban and Suburban Centers** – The WCC is intended to by-pass the major urban centers, based on a desire to minimize community impacts. However, this approach actually undermines the feasibility of car tolls on the WCC. The bulk of the auto trips along the I-5 (that would be the primary target for diversion to the WCC,) are actually between the major urban and suburban areas. For these trips, using the WCC would be a circuitous alternative to the existing routes. Based on previous and ongoing work by WSDOT[13] the bulk of I-5 trips tend to use N-S routes that favor the western half of Snohomish, King and Pierce counties.
3. **Existing and Approved Transportation Investment Plans will Impact the WCC** – The agencies and jurisdictions (at all levels) along the I-5 corridor all have published plans to improve transportation service along the I-5 corridor. The 5 mile-wide WCC covers roughly 2,297 square miles through 6 Metropolitan Planning Organizations (MPO's). As the primary conduit for federal transportation funds, MPO's are uniquely positioned to guide transportation investment in their region. In addition, MPO's usually interface directly with the public, ensuring that their plans have already considered significant public input and are typically supported by the counties and communities they represent. In addition, the WCC travels through 6 counties, and hundreds of cities and towns, all of which have their own plans and funding to improve transportation service along the I-5. It is difficult to predict whether all of these plans will actually be fully funded, or to what degree they would improve service along I-5. However, the prospect of improved service along the I-5, particularly along the urban core where the bulk of the automotive traffic exists, may have a negative impact on the financial feasibility of car tolls along the WCC.

Having concluded that the WCC, as currently defined, is not a viable option for car tolls, it is important to stress that this conclusion is not a wholesale statement against the feasibility of toll based financing in the Puget Sound. This subject does warrant further analysis under a different scenario, particularly in the context of systems demand management. The use of pricing as a tool for systems demand management is a policy option that warrants serious investigation. This policy aside is not the focus of this Study, but at least warrants mention in this report. The focus of the Study, however, is to determine whether there is the potential for car users to pay for the development of the WCC, as defined by legislation.

[13] East King County Corridor Needs Study (CONEKC); WSDOT, Feb. 2000.

Truck Tolls

Of all the users identified thus far in this report, only the truck freight industry presents enough opportunity to warrant further analysis. The remainder of this report focuses on the analysis of the truck component of the WCC.

COULD THE TRUCKING COMPONENT OF THE CORRIDOR BE FINANCED BY PRIVATE SECTOR FUNDS?

Our analysis indicates that the trucking component of the WCC has a basis for further consideration. There are several factors that indicate the need for further evaluation. First, a preliminary evaluation of N-S truck trip patterns along the western corridor of the state indicates significant densities of N-S traffic that fit the characteristics of the WCC. Unlike the rail freight traffic patterns, the bulk of the truck traffic is N-S along the I-5 (which is not to say that E-W truck traffic, particularly along I-90, is not significant). Second, the trip characteristics are long haul in nature. In comparison to auto trips that are generally clustered around urban centers, a much larger proportionate share of truck trips are long-haul through the Puget Sound region, and would benefit from a by-pass around the region. Third, the trucking sector, as a whole, would be in support of improvements in N-S mainline capacity[14]. As compared to the energy sector, the trucking industry supports immediate and significant N-S improvements in capacity, but only for efforts that lower their transport costs along the I-5, increase asset utilization and productivity (increasing the number deliveries per day) and improve service to their customers. Fourth, preliminary revenue estimates produced by this report indicate that user based revenues could support a sizeable share of the truck-way development costs for the southern segments of the WCC.

Given the opportunity to position for Federal funds (specifically targeted at demonstration projects similar to the WCC) that would supplement the private funding, the truck component does add to the financial feasibility of the WCC, as it is currently defined. This is particularly true for the segments south of I-90, with the Chehalis to I-90 segment showing the greatest potential. However, feasibility will require some level of public subsidy.

The remainder of this report outlines the approach we used at estimating the level of potential traffic that could be diverted to the WCC, the costs associated with developing and operating the freight component, the range of potential revenue that may be generated through a user fee and the degree to which the revenue cover the costs (or don't cover the costs).

The first step is to estimate the demand for through truck traffic along the corridor.

Truck Freight Volume Development and Processing

Source of Data - Initial data for estimated annual truck trips, estimated annual freight tonnage, and estimated annual freight value was provided by Washington State University. The data was collected and tabulated as part of the Strategic Freight Transportation Analysis project, in cooperation with the Washington State Department of Transportation, the Association of Washington Cities, the Washington County Road Administration Board, the Washington State

[14] Based on industry interviews.

Association of Counties, the Freight Mobility Strategic Investment Board, and the United States Department of Transportation. Additional information about the project can be found at http://www.sfta.wsu.edu. The data is based on surveys conducted at WSDOT's truck count locations throughout the state. Therefore this data is essentially systems traffic and does not include an accurate assessment of local traffic. And because the focus of this Study is on systems traffic, this data is well suited for our analysis.

Determine Travel Patterns - Truck volume and freight flow data were tabulated into origin and destination couplets for a total of seven geographic areas, including five areas within Washington State, one area to include British Columbia and points north in Canada, and one area to include Oregon and points south into California, Arizona, and Mexico. The five geographic areas within Washington State were identified to collaborate with the study portions of the Washington Commerce Corridor project, and include North Puget Sound (Skagit and Whatcom Counties), Central Puget Sound (King, Pierce, Snohomish and Thurston Counties), Southwest Washington (Clark, Cowlitz and Lewis Counties), the Olympic Peninsula and Coastal Washington State, and Eastern Washington State. The data was summarized (where available) to show truck trips and freight volume flow to, from, and within each of the seven geographic areas.

Long Haul vs Short Haul Trips - The data provided by Washington State University was expanded by the consultant team in order to identify average annual daily truck trips and freight volumes. In order to distinguish long-haul trips from shorter distance trips (and respective tonnage and value flows), the truck and freight flow information was categorized as either between two adjacent geographic areas (titled "one-link only") or through one or more geographic areas (titled "through"). Truck trips and freight flow within each geographic area were not included.

Forecast Future Traffic – Forecasts for the Year 2010 and Year 2020 for annual total and average annual daily truck and freight flow volumes were developed by applying a growth rate of 2.5% per year to the base origin-destination data. The growth rate was determined from an analysis of the Federal Highway Administration's Freight Analysis Framework (FAF) forecast data for freight flows within Washington State. The FAF data includes tonnage and value forecasts for freight within Washington State between the Year 1998 (existing date of the study) and Year 2010, and between Year 2010 and Year 2020. The growth rate determined from the FAF forecast data was applied to the base annual origin-destination data provided by Washington State University to develop forecast Year 2010 and Year 2020 volumes to, from, and within the seven geographic areas. In order to ensure consistency with existing truck and freight flow volumes, the forecast ratios for tonnage and value to truck trips were compared to the existing ratios. The comparison of forecast ratios of tonnage and value to truck trips to existing ratios showed growth rates consistent with an annual growth of 2.5% per year. The forecast Year 2010 and Year 2020 truck trip and freight flow information was then categorized into one-link only and through volumes, in a manner identical to that applied to existing truck volume and freight flow data.

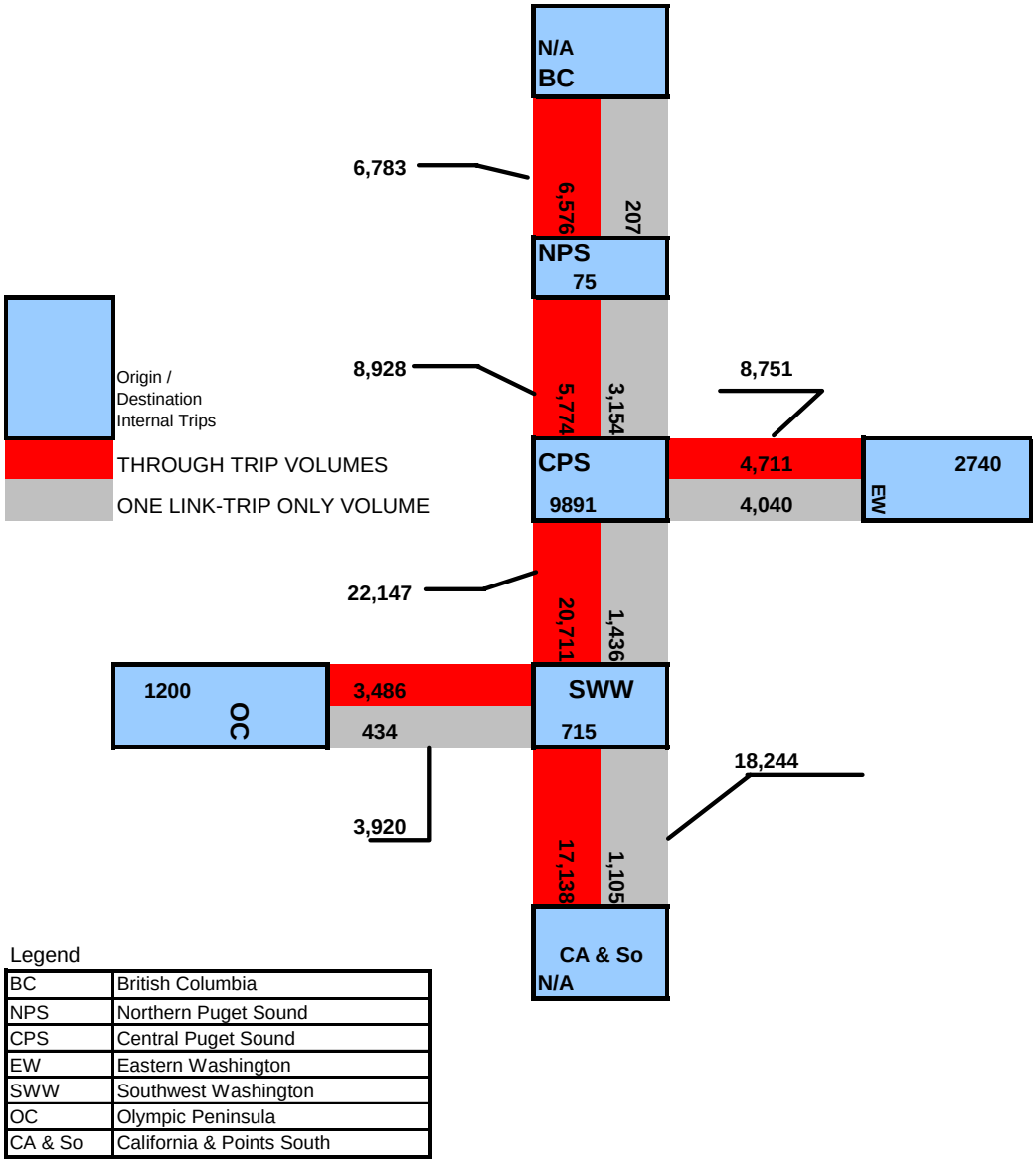
Summary of Truck Flows along the Corridor

The following exhibits (6-1 through 6-5) provide estimates of the amount of through trips on the various segments of the corridor. The estimates shown in Exhibits 6-1, 6-2 and 6-3 are estimates of the number of truck trips on an average day (24 hours), based on annualized data, referred to as Average Annual Daily Truck Trips (AADTT). Note that trips between two adjacent geographic areas are titled "one-link only" (grey band) and are not considered as trips that are likely to be

diverted to the WCC. Trips through one or more geographic areas (titled "through" in the red band) are more likely to be potentially diverted to the WCC.

Based on the truck trip data provided by the Strategic Freight Transportation Analysis project, there are sufficient through truck trips to support the development of a separate facility dedicated for trucks, particularly the segments south of I-90. On an average day, between eighteen to twenty two thousand trucks use the I-5 corridor between the central Puget Sound region and points south of the Washington/Oregon border. Of these trips, the large majority – over 90 percent - are through trips between the central Puget Sound and points south (shown as the red bands on the following three exhibits). This is compared to approximately half (50%) of the eight thousand E-W truck trips between the central Puget Sound and eastern Washington, being through trips. In other words, the N-S corridor is a far more significant truck trade corridor both in terms of sheer traffic volume and in terms of proportionate through (interstate and international) traffic. One contributing factor is NAFTA, but its influence is significantly smaller than the influence of domestic intercity traffic between the populated areas of the central Puget Sound and urban centers south. Between six and eight thousand trips occur north of the central Puget Sound region, the bulk of which are border crossing trips.

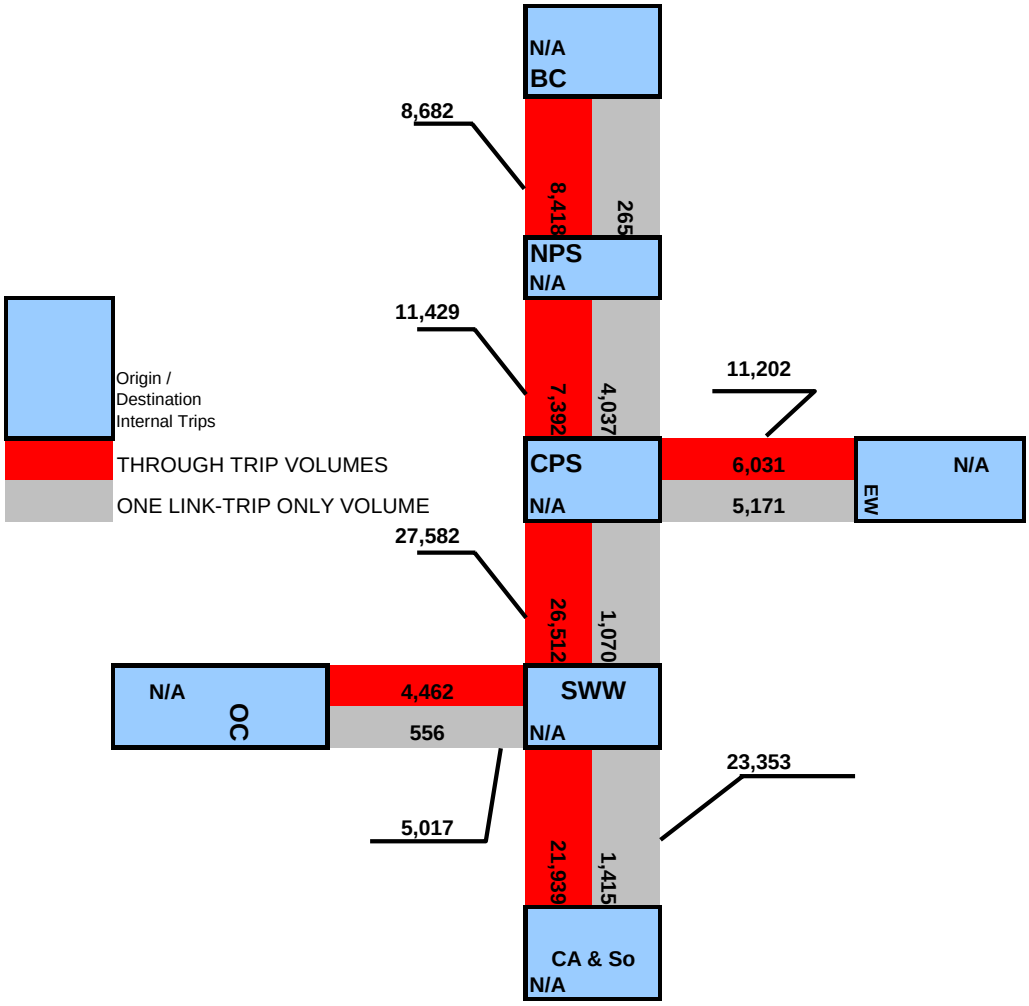
Exhibit 6-1
Distribution of Through Daily Truck Trips - Current



Legend

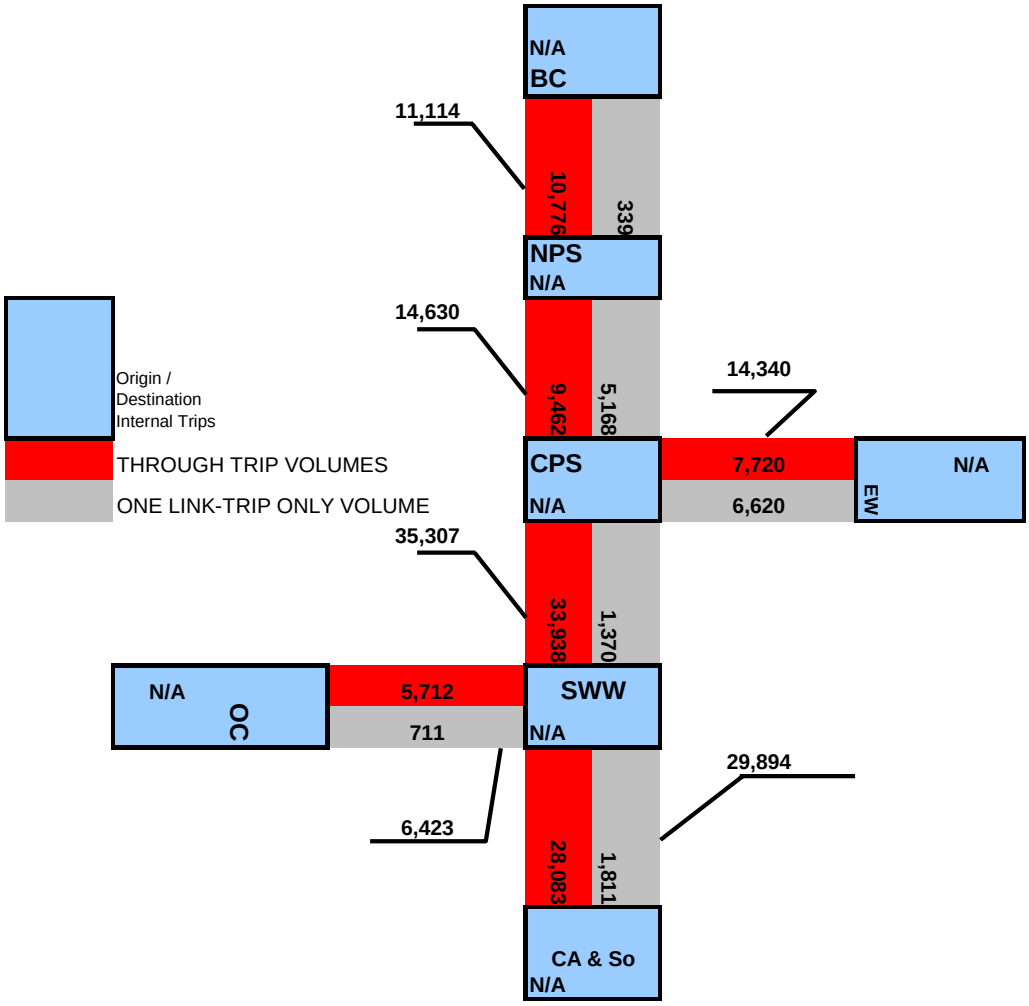
BC	British Columbia
NPS	Northern Puget Sound
CPS	Central Puget Sound
EW	Eastern Washington
SWW	Southwest Washington
OC	Olympic Peninsula
CA & So	California & Points South

Exhibit 6-2
Distribution of Through Daily Truck Trips - 2010



By the Year 2010, daily through truck trips on the I-5 corridor south of the central Puget Sound are expected to grow to between twenty two thousand AADTT and twenty six thousand AADTT, and seven to eight thousand AADTT along the segments north of the central Puget Sound.

Exhibit 6-3
Distribution of Through Daily Truck Trips - 2020



By the Year 2020 daily through truck trips along the I-5 corridor south of the central Puget Sound are expected to grow to between twenty eight thousand and thirty four thousand, and nine to eleven thousand along the segments north of the central Puget Sound.

Exhibits 6-4 and 6-5 below provide more detail including the annualized totals as well as the share of trips by origin/destination.

While the daily through volumes are significant enough to support a separate truck facility, the real basis for financial feasibility is whether the potential diverted traffic will generate sufficient revenue to cover the costs of the truck component of the WCC. The next step is to estimate the cost of developing the truck facility.

Exhibit 6-4
Detailed Truck Flow Estimates – Daily Trips

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination			
						% In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	6,783	207	3.05%	6,576	96.95%	N/A	N/A	57.87%	42.13%
NPS-CPS	8,928	3,154	35.33%	5,774	64.67%	57.59%	42.41%	28.22%	14.19%
CPS-EW	8,751	4,040	46.16%	4,711	53.84%	53.54%	46.46%	8.67%	37.79%
CPS-SWW	22,147	1,436	6.49%	20,711	93.51%	58.49%	41.51%	0.94%	40.57%
SWW-OC	3,920	434	11.07%	3,486	88.93%	75.69%	24.31%	18.40%	5.91%
SWW-CA & South	18,244	1,105	6.06%	17,138	93.94%	N/A	N/A	15.66%	84.34%

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination			
						% In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	8,682	265	3.05%	8,418	96.95%	N/A	N/A	35.99%	42.13%
NPS-CPS	11,429	4,037	35.33%	7,392	64.67%	35.71%	42.41%	28.22%	14.19%
CPS-EW	11,202	5,171	46.16%	6,031	53.84%	31.66%	46.46%	8.67%	37.79%
CPS-SWW	27,582	1,070	3.88%	26,512	96.12%	37.63%	42.67%	0.97%	41.70%
SWW-OC	5,017	556	11.07%	4,462	88.93%	53.81%	24.31%	18.40%	5.91%
SWW-CA & South	23,353	1,415	6.06%	21,939	93.94%	N/A	N/A	15.66%	62.46%

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination			
						% In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	11,114	339	3.05%	10,776	96.95%	N/A	N/A	18.89%	42.13%
NPS-CPS	14,630	5,168	35.33%	9,462	64.67%	18.61%	42.41%	28.22%	14.19%
CPS-EW	14,340	6,620	46.16%	7,720	53.84%	14.57%	46.46%	8.67%	37.79%
CPS-SWW	35,307	1,370	3.88%	33,938	96.12%	20.06%	42.67%	0.97%	41.70%
SWW-OC	6,423	711	11.07%	5,712	88.93%	36.71%	24.31%	18.40%	5.91%
SWW-CA & South	29,894	1,811	6.06%	28,083	93.94%	N/A	N/A	15.66%	45.36%

Exhibit 6-5
Detailed Truck Flow Estimates – Annual Volumes

Estimated Annual Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination			
						% In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	2,475,672	75,439	3.05%	2,400,233	96.95%	N/A	N/A	57.87%	42.13%
NPS-CPS	3,258,835	1,151,214	35.33%	2,107,621	64.67%	57.59%	42.41%	28.22%	14.19%
CPS-EW	3,194,162	1,474,545	46.16%	1,719,617	53.84%	53.54%	46.46%	8.67%	37.79%
CPS-SWW	8,083,826	524,283	6.49%	7,559,543	93.51%	58.49%	41.51%	0.94%	40.57%
SWW-OC	1,430,668	158,434	11.07%	1,272,234	88.93%	75.69%	24.31%	18.40%	5.91%
SWW-CA & South	6,658,943	403,441	6.06%	6,255,502	93.94%	N/A	N/A	15.66%	84.34%

Estimated Year 2010 Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination			
						% In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	3,169,069	96,568	3.05%	3,072,501	96.95%	N/A	N/A	57.87%	42.13%
NPS-CPS	4,171,584	1,473,651	35.33%	2,697,933	64.67%	89.85%	54.29%	28.22%	14.19%
CPS-EW	4,088,797	1,887,542	46.16%	2,201,255	53.84%	68.53%	59.47%	8.67%	37.79%
CPS-SWW	10,347,981	671,127	6.49%	9,676,854	93.51%	74.87%	53.14%	0.94%	40.57%
SWW-OC	1,831,376	202,809	11.07%	1,628,567	88.93%	96.88%	31.12%	18.40%	5.91%
SWW-CA & South	8,524,010	516,439	6.06%	8,007,571	93.94%	N/A	N/A	15.66%	84.34%

Estimated Year 2020 Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	% Through	Origin / Destination			
						% In-State	% Out-of-State	% Canada	% CA & South
BC - NPS	4,056,677	123,616	3.05%	3,933,061	96.95%	N/A	N/A	57.87%	42.13%
NPS-CPS	5,339,981	1,886,398	35.33%	3,453,582	64.67%	105.55%	49.51%	28.22%	14.19%
CPS-EW	5,234,006	2,416,214	46.16%	2,817,793	53.84%	119.04%	8.97%	8.67%	37.79%
CPS-SWW	13,246,290	859,099	6.49%	12,387,191	93.51%	124.48%	3.53%	0.94%	40.57%
SWW-OC	2,344,316	259,613	11.07%	2,084,704	88.93%	4.23%	123.78%	18.40%	5.91%
SWW-CA & South	10,911,453	661,085	6.06%	10,250,368	93.94%	N/A	N/A	15.66%	84.34%

Overview of Cost Estimates for Truck Scenarios

Based on the costing methodology outlined in the previous chapter (*Chapter 5 – Construction and ROW Costs*), a series of estimates were developed for three freight specific scenarios. The freight scenarios are slight variations of the scenarios developed in Chapter 5.

1) **4 Truck Lanes** - The first freight scenario includes a four-lane truck only facility (two lanes in each direction) for the entire corridor along the same alignment as Scenario 1 in the previous chapter (the baseline corridor alignment).
2) **2 Truck Lanes** - The second freight scenario includes a two-lane truck only facility (one lane in each direction) for the entire corridor along the same alignment as Scenario 1 in the previous chapter (the baseline corridor alignment). This scenario also includes an intermittent third passing lane alternating between directional lanes assumed to cover approximately one third of the length of the corridor.
3) **2 Truck Lanes with Rail** - The third freight scenario includes a two-lane truck only facility (same as previous scenario), but includes additional rail capacity (one rail line) for the entire corridor along the same alignment as Scenario 1 in the previous chapter (the baseline corridor). The purpose of this scenario is to test the financial feasibility of piggybacking rail investments in conjunction with the truck investments, the former paid for in part through the truck user revenues. An example of where this type of multimodal approach is being proposed elsewhere is the proposed *Stars Solution* public/private truck development project along Interstate 81 in Virginia.

Exhibit 6-6 summarizes the approximate length of each of the super segments (between major E-W connections) for the freight scenarios. The overall length of the corridor is 276 miles, which is consistent with the upper percentile length for toll facilities that charge truck tolls around the country. The length of the Chehalis to I-90 segment is consistent with the mid range length for toll facilities that charge truck tolls elsewhere.

Exhibit 6-6
Approximate Length for Each Truck Segment

	Distance (miles)		
	Alternative		
Corridor Segment	4 Truck Lanes	2 Truck Lanes	2 Truck Lanes w/ Rail
SR 20 to Canada	28	28	28
SR 2 to SR 20	55	55	55
I-90 to SR 2	32	32	32
Chehalis to I-90	102	102	102
Vancouver to Chehalis	60	60	60
Total	**276**	**276**	**276**

The following exhibits summarize the cost estimates for each of the three freight scenarios. Not surprisingly, the four truck lane scenario is the most expensive at $17 billion, followed by the two truck lanes with rail at $15.7 billion. The two lane truck scenario has the lowest price tag at $12 billion. Note that these costs are slightly different from the truck related costs outlined in Chapter

5 due to the different ROW assumptions. The net ROW consumed by the truck portion for the comprehensive multi-user corridor (Chapter 5) is slightly less than the ROW consumed for the freight only scenario outlined in this chapter (6).

Exhibit 6-7
Cost Estimates for Developing the Truck Component of the WCC
(Millions of 2003 $)

Total Costs ($Millions - 2003)			
	Alternative		
Corridor Segment	**4 Truck Lanes**	**2 Truck Lanes**	**2 Truck Lanes w/ Rail**
Rt 20 to Canada	1,445	1,128	1,968
Rt 2 to Rt 20	1,946	1,338	1,693
I-90 to Rt 2	2,015	1,527	1,713
Chehalis to I-90	6,213	4,736	5,842
Vancouver to Chehalis	4,359	2,882	3,702
Subtotal ($M)	15,978	11,612	14,919
ITS	50	50	50
Contingency	1,676	1,106	1,512
Total ($M)	**17,705**	**12,768**	**16,482**

Exhibit 6-8
Detailed Breakdown of Cost for Each Segment and Scenario (Millions of 2003 $)

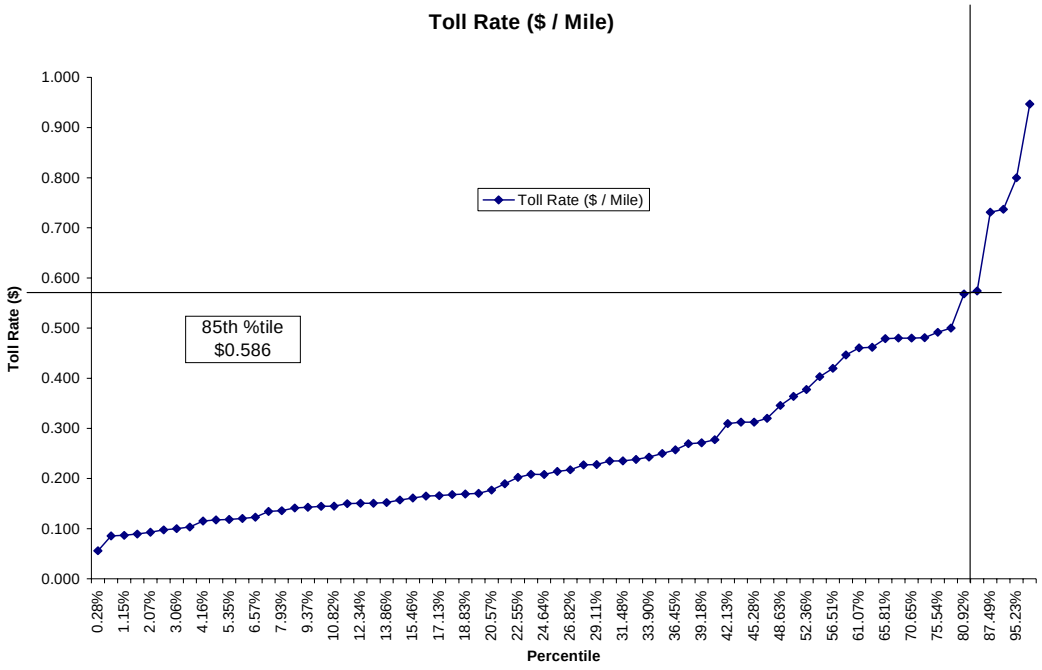
	Segment Cost			Annual Route Maintenance		
Study Segment	**4 Truck Lanes**	**2 Truck Lanes**	**2 Truck Lanes w/ Rail**	**4 Truck Lanes**	**2 Truck Lanes**	**2 Truck Lanes w/ Rail**
Rt 20 to Canada	$1,445	$1,128	$1,968			
ITS Capital Cost by Segment	*$5*	*$5*	*$7*			
Construction Contigency by Segment	*$152*	*$107*	*$200*			
Segment Subtotal	$1,601	$1,241	$2,174	$0.6	$0.7	$0.9
I-90 to Rt 20	$3,961	$2,865	$3,406			
ITS Capital Cost by Segment	*$12*	*$12*	*$11*			
Construction Contigency by Segment	*$416*	*$273*	*$345*			
Segment Subtotal	$4,389	$3,151	$3,763	$1.8	$1.8	$1.6
Chehalis to I-90	$6,213	$4,736	$5,842			
ITS Capital Cost by Segment	*$20*	*$21*	*$20*			
Construction Contigency by Segment	*$652*	*$451*	*$592*			
Segment Subtotal	$6,885	$5,208	$6,454	$2.8	$2.9	$2.8
Vancouver to Chehalis	*$4,359*	*$2,882*	*$3,702*			
ITS Capital Cost by Segment	*$14*	*$12*	*$12*			
Construction Contigency by Segment	*$457*	*$274*	*$375*			
Segment Subtotal	$4,830	$3,169	$4,090	$2.0	$1.8	$1.8
Subtotal of ITS Capital Cost			*$50*			
Subtotal of Construction Contigency			*$1,512*			
Alternative Total	**$17,705**	**$12,768**	**$16,482**	**$7.2**	**$7.2**	**$7.2**

Estimating a Potential Toll Rate Scenario

This section outlines a truck toll rate scenario for the WCC. It is important to note that the methods used herein are not at a level typically associated with investment grade studies. The revenue estimates provided by this study are preliminary. They are policy level estimates of the revenue generation potential of the WCC under a predetermined set of assumptions regarding toll rates, and truck usage and diversion rates. There are a wide range of variables that could affect the accuracy of the truck revenue estimates developed herein. By design of the scope and budget, and based on the intent of the study, the toll revenue scenario analysis methods used for this Study did not deploy industry recognized travel demand models whereby the effect of pricing on travel behavior is fully analyzed, or whereby detailed price elasticity algorithms are deployed. The revenue estimates produced herein are not statistically accurate enough to support the implementation of the WCC, without more detailed traffic and toll revenue forecast analyses, which would preferably be followed by a peer review. That said, the methods used herein are robust enough for this specific policy level study.

The basis for the toll rate ranges used for this study is an analysis of the truck toll rates used elsewhere nationally[15]. The range of rates currently deployed elsewhere were plotted out to identify the 85 percentile rate which is assumed to be the higher end rate. The 85 percentile rate was used as the maximum rate scenario for the WCC, with other rate scenarios at equal ranges below this maximum set rate. The graph below shows that the rates applied elsewhere range between $0.05 per mile to as high a $0.9 per mile.

Exhibit 6-9
Graph Showing Range of Truck Toll Rates at Other Locations



[15] Source: Wilbur Smith Associates; TFT Division.

The high end for the WCC was pegged at $0.586 per mile (the 85 percentile rate from elsewhere). From this base (high end) rate, a set of four rates were calculated, specifically at 25, 50, 75 and 100% of the base high end pegged rate. As is shown below, the rates used for the WCC truck toll revenue scenario analysis are $0.15, $0.30, $0.45 and $0.6 per mile, respectively.

Exhibit 6-10
Table with Range of Truck Toll Rates Applied to the WCC
(Based on Rates at Other Locations)

	Rate ($)
Base:	**$0.600**

%Tile	Rate ($)
100th	$0.600
75th	$0.450
50th	$0.300
25th	$0.150

Truck Diversion Rate Assumptions

Under a scenario whereby the truck component of the WCC is developed, it is assumed that some level of truck traffic would be diverted to use some combination of the WCC truck route segments. Without the use of a detailed travel demand model, it is virtually impossible to accurately estimate the number of trucks that would actually use the WCC. Therefore, for purposes of this study, a set of diversion rates are applied, specifically 25%, 50%, 75% and 100% of through trucks currently and forecasted to travel N-S along the I-5 corridor. Many of the data exhibits presented herein are shown at an assumed 50% diversion rate, whereby at least half of the through truck trips are assumed to be diverted to the WCC. However, some exhibits do show the potential toll revenue for all four diversion scenarios.

Estimating Revenue from Truck Tolls

The truck toll rates were applied to the truck volumes for each of the diversion scenarios so as to estimate the potential truck toll revenues. The following exhibits summarize the potential toll revenue for the truck component of the WCC, for each of the four toll rate scenarios, under a 50% diversion assumption. The revenue under each toll rate scenario would be higher under a higher truck diversion (to the WCC) rate, and vice versa.

With the 25 percentile toll rate of $0.15 per mile the potential annual revenue is $100 million at current truck volumes, and climbs to $170 million by 2020. As can be expected, the longer segments generate the greatest revenue. The 100 percentile toll rate of $0.60 is estimated to generate over $410 million with current truck volumes and just over $680 million by 2020.

Exhibit 6-11
Estimate of Truck Toll Revenue (Millions of 2003 $)
50% Diversion from Existing Facilities, at 25 Percentile Toll Rate

Toll Rate: 0.150 **$/mile**
% Diversion: 50% **% of truck trips remaining on non-toll facility**

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	6,783	207	3.05%	6,576	3,288	96.95%	28.3	0.15	13,977	5,101,695
I-90 to Rt 20	8,928	3,154	35.33%	5,774	2,887	64.67%	86.2	0.15	37,309	13,617,866
Chehalis to I-90	22,147	1,436	6.49%	20,711	10,356	93.51%	102.1	0.15	158,626	57,898,540
Vancouver to Chehalis	18,244	1,105	6.06%	17,138	8,569	93.94%	59.6	0.15	76,570	27,948,019
Total									286,483	104,566,120

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	8,682	265	3.05%	8,418	4,209	96.95%	28.3	0.15	17,892	6,530,601
I-90 to Rt 20	11,429	4,037	35.33%	7,392	3,696	64.67%	86.2	0.15	47,759	17,432,020
Chehalis to I-90	27,582	1,070	3.88%	26,512	13,256	96.12%	102.1	0.15	203,055	74,115,026
Vancouver to Chehalis	23,353	1,415	6.06%	21,939	10,969	93.94%	59.6	0.15	98,016	35,775,827
Total									366,722	133,853,474

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	11,114	339	3.05%	10,776	5,388	96.95%	28.3	0.15	22,903	8,359,722
I-90 to Rt 20	14,630	5,168	35.33%	9,462	4,731	64.67%	86.2	0.15	61,136	22,314,459
Chehalis to I-90	35,307	1,370	3.88%	33,938	16,969	96.12%	102.1	0.15	259,927	94,873,499
Vancouver to Chehalis	29,894	1,811	6.06%	28,083	14,042	93.94%	59.6	0.15	125,469	45,796,084
Total									469,435	171,343,764

Exhibit 6-12
Estimate of Truck Toll Revenue (Millions of 2003 $)
50% Diversion from Existing Facilities, at 50 Percentile Toll Rate

Toll Rate: 0.300 **$/mile**
% Diversion: 50% **% of truck trips remaining on non-toll facility**

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	6,783	207	3.05%	6,576	3,288	96.95%	28.3	0.3	27,954	10,203,390
I-90 to Rt 20	8,928	3,154	35.33%	5,774	2,887	64.67%	86.2	0.3	74,618	27,235,732
Chehalis to I-90	22,147	1,436	6.49%	20,711	10,356	93.51%	102.1	0.3	317,252	115,797,080
Vancouver to Chehalis	18,244	1,105	6.06%	17,138	8,569	93.94%	59.6	0.3	153,140	55,896,038
Total									572,965	209,132,241

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	8,682	265	3.05%	8,418	4,209	96.95%	28.3	0.3	35,784	13,061,202
I-90 to Rt 20	11,429	4,037	35.33%	7,392	3,696	64.67%	86.2	0.3	95,518	34,864,040
Chehalis to I-90	27,582	1,070	3.88%	26,512	13,256	96.12%	102.1	0.3	406,110	148,230,052
Vancouver to Chehalis	23,353	1,415	6.06%	21,939	10,969	93.94%	59.6	0.3	196,032	71,551,654
Total									733,444	267,706,949

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	11,114	339	3.05%	10,776	5,388	96.95%	28.3	0.3	45,807	16,719,443
I-90 to Rt 20	14,630	5,168	35.33%	9,462	4,731	64.67%	86.2	0.3	122,271	44,628,919
Chehalis to I-90	35,307	1,370	3.88%	33,938	16,969	96.12%	102.1	0.3	519,855	189,746,998
Vancouver to Chehalis	29,894	1,811	6.06%	28,083	14,042	93.94%	59.6	0.3	250,937	91,592,167
Total									938,870	342,687,528

Exhibit 6-13
Estimate of Truck Toll Revenue (Millions of 2003 $)
50% Diversion from Existing Facilities, at 75 Percentile Toll Rate

Toll Rate: 0.450 **$/mile**
% Diversion: 50% **% of truck trips remaining on non-toll facility**

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	6,783	207	3.05%	6,576	3,288	96.95%	28.3	0.45	41,932	15,305,086
I-90 to Rt 20	8,928	3,154	35.33%	5,774	2,887	64.67%	86.2	0.45	111,928	40,853,599
Chehalis to I-90	22,147	1,436	6.49%	20,711	10,356	93.51%	102.1	0.45	475,878	173,695,620
Vancouver to Chehalis	18,244	1,105	6.06%	17,138	8,569	93.94%	59.6	0.45	229,710	83,844,057
Total									859,448	313,698,361

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	8,682	265	3.05%	8,418	4,209	96.95%	28.3	0.45	53,676	19,591,804
I-90 to Rt 20	11,429	4,037	35.33%	7,392	3,696	64.67%	86.2	0.45	143,277	52,296,060
Chehalis to I-90	27,582	1,070	3.88%	26,512	13,256	96.12%	102.1	0.45	609,165	222,345,078
Vancouver to Chehalis	23,353	1,415	6.06%	21,939	10,969	93.94%	59.6	0.45	294,048	107,327,482
Total									1,100,166	401,560,423

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	11,114	339	3.05%	10,776	5,388	96.95%	28.3	0.45	68,710	25,079,165
I-90 to Rt 20	14,630	5,168	35.33%	9,462	4,731	64.67%	86.2	0.45	183,407	66,943,378
Chehalis to I-90	35,307	1,370	3.88%	33,938	16,969	96.12%	102.1	0.45	779,782	284,620,498
Vancouver to Chehalis	29,894	1,811	6.06%	28,083	14,042	93.94%	59.6	0.45	376,406	137,388,251
Total									1,408,305	514,031,292

Exhibit 6-14
Estimate of Truck Toll Revenue (Millions of 2003 $)
50% Diversion from Existing Facilities, at 100 Percentile Toll Rate

Toll Rate: 0.600 **$/mile**
% Diversion: 50% **% of truck trips remaining on non-toll facility**

Estimated Existing AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	6,783	207	3.05%	6,576	3,288	96.95%	28.3	0.6	55,909	20,406,781
I-90 to Rt 20	8,928	3,154	35.33%	5,774	2,887	64.67%	86.2	0.6	149,237	54,471,465
Chehalis to I-90	22,147	1,436	6.49%	20,711	10,356	93.51%	102.1	0.6	634,505	231,594,159
Vancouver to Chehalis	18,244	1,105	6.06%	17,138	8,569	93.94%	59.6	0.6	306,280	111,792,076
Total									1,145,930	418,264,481

Estimated Year 2010 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	8,682	265	3.05%	8,418	4,209	96.95%	28.3	0.6	71,568	26,122,405
I-90 to Rt 20	11,429	4,037	35.33%	7,392	3,696	64.67%	86.2	0.6	191,036	69,728,080
Chehalis to I-90	27,582	1,070	3.88%	26,512	13,256	96.12%	102.1	0.6	812,219	296,460,104
Vancouver to Chehalis	23,353	1,415	6.06%	21,939	10,969	93.94%	59.6	0.6	392,064	143,103,309
Total									1,466,887	535,413,898

Estimated Year 2020 AADT (Truck) Volumes by Segment

Link	Total Volume	One Link ONLY Volume	% One-Link	Through Volume	Diverted Volume	% Through	Link Distance (miles)	Toll Rate ($ / Mile)	Toll Revenue ($/day)	Yearly Revenue ($)
Rt 20 to Canada	11,114	339	3.05%	10,776	5,388	96.95%	28.3	0.6	91,613	33,438,887
I-90 to Rt 20	14,630	5,168	35.33%	9,462	4,731	64.67%	86.2	0.6	244,542	89,257,838
Chehalis to I-90	35,307	1,370	3.88%	33,938	16,969	96.12%	102.1	0.6	1,039,710	379,493,997
Vancouver to Chehalis	29,894	1,811	6.06%	28,083	14,042	93.94%	59.6	0.6	501,875	183,184,334
Total									1,877,740	685,375,055

Comparing Costs against Revenues

In order to determine whether the potential revenue streams can cover the costs associated with developing the truck elements of the corridor, the development and maintenance costs are annualized into expenditure streams that correlate with the revenue streams. Development related expenditures are assumed to occur over a 5 year period, equally distributed, through 2010. Maintenance costs are streamed evenly over a 20 year analysis period through 2030. Revenues are streamed over a 20 year period, starting in 2010. The annual expenditure and revenue streams are present valued using a 5.5% interest rate. The present value of the expenditure streams are then deducted from the present value of the revenue streams to determine the net present value (NPV). A positive NPV implies that the present value of the 20 year revenue stream is greater than the present value of the respective expenditure streams. A negative NPV implies that the revenues do not cover the costs. A positive NPV would indicate a strong basis for feasibility. A negative NPV appears to add little to the financial feasibility of the truck component of the WCC as it is currently defined.

The tables shown in Exhibits 6-15, 6-16 and 6-17 are detailed NPV pro-forma tables for each of the three truck scenarios. Note that the present value for the expenditure and the revenue will be lower than the comparable cost and revenue tables shown in earlier exhibits, due to discounting for the cost of borrowing money.

Exhibit 6-15
Comparing Costs and Revenues for 4 Truck Lanes Millions of 2003 $)
50% Diversion of Through Trucks

Period	Rt 20 to Canada					I-90 to Rt 20					Chehalis to I-90				
	Expend-itures ($)	Revenue At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	320.2					877.8					1,377.0				
2006	320.2					877.8					1,377.0				
2007	320.2					877.8					1,377.0				
2008	320.2					877.8					1,377.0				
2009	320.2					877.8					1,377.0				
2010	0.6	6.5	13.1	19.6	26.1	1.8	17.4	34.9	52.3	69.7	2.8	74.1	148.2	222.3	296.5
2011	0.6	6.7	13.4	20.1	26.9	1.8	17.9	35.8	53.8	71.7	2.8	76.2	152.4	228.6	304.8
2012	0.6	6.9	13.8	20.7	27.6	1.8	18.4	36.8	55.2	73.6	2.8	78.3	156.5	234.8	313.1
2013	0.6	7.1	14.2	21.2	28.3	1.8	18.9	37.8	56.7	75.6	2.8	80.3	160.7	241.0	321.4
2014	0.6	7.3	14.5	21.8	29.0	1.8	19.4	38.8	58.2	77.5	2.8	82.4	164.8	247.3	329.7
2015	0.6	7.4	14.9	22.3	29.8	1.8	19.9	39.7	59.6	79.5	2.8	84.5	169.0	253.5	338.0
2016	0.6	7.6	15.3	22.9	30.5	1.8	20.4	40.7	61.1	81.4	2.8	86.6	173.1	259.7	346.3
2017	0.6	7.8	15.6	23.4	31.2	1.8	20.8	41.7	62.5	83.4	2.8	88.6	177.3	265.9	354.6
2018	0.6	8.0	16.0	24.0	32.0	1.8	21.3	42.7	64.0	85.4	2.8	90.7	181.4	272.2	362.9
2019	0.6	8.2	16.4	24.5	32.7	1.8	21.8	43.7	65.5	87.3	2.8	92.8	185.6	278.4	371.2
2020	0.6	8.4	16.7	25.1	33.4	1.8	22.3	44.6	66.9	89.3	2.8	94.9	189.7	284.6	379.5
2021	0.6	8.5	17.1	25.6	34.2	1.8	22.8	45.6	68.4	91.2	2.8	96.9	193.9	290.8	387.8
2022	0.6	8.7	17.5	26.2	34.9	1.8	23.3	46.6	69.9	93.2	2.8	99.0	198.1	297.1	396.1
2023	0.6	8.9	17.8	26.7	35.6	1.8	23.8	47.6	71.3	95.1	2.8	101.1	202.2	303.3	404.4
2024	0.6	9.1	18.2	27.3	36.4	1.8	24.3	48.5	72.8	97.1	2.8	103.2	206.4	309.5	412.7
2025	0.6	9.3	18.5	27.8	37.1	1.8	24.8	49.5	74.3	99.0	2.8	105.3	210.5	315.8	421.0
2026	0.6	9.5	18.9	28.4	37.8	1.8	25.2	50.5	75.7	101.0	2.8	107.3	214.7	322.0	429.3
2027	0.6	9.6	19.3	28.9	38.6	1.8	25.7	51.5	77.2	102.9	2.8	109.4	218.8	328.2	437.6
2028	0.6	9.8	19.6	29.5	39.3	1.8	26.2	52.4	78.7	104.9	2.8	111.5	223.0	334.4	445.9
2029	0.6	10.0	20.0	30.0	40.0	1.8	26.7	53.4	80.1	106.8	2.8	113.6	227.1	340.7	454.2
2030	0.6	10.2	20.4	30.6	40.8	1.8	27.2	54.4	81.6	108.8	2.8	115.6	231.3	346.9	462.5
PV	**1,373**	**98**	**197**	**295**	**393**	**3,765**	**262**	**525**	**787**	**1,050**	**5,906**	**1,116**	**2,231**	**3,347**	**4,462**
NPV		**-1,275**	**-1,177**	**-1,078**	**-980**		**-3,503**	**-3,240**	**-2,978**	**-2,716**		**-4,791**	**-3,675**	**-2,559**	**-1,444**

Period	Vancouver to Chehalis					Entire Corridor				
	Expend-itures ($)	Revenue ($) At Various Toll				Expend-itures ($)	Revenue ($) At Various Toll Rate			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	966.0					3,540.9				
2006	966.0					3,540.9				
2007	966.0					3,540.9				
2008	966.0					3,540.9				
2009	966.0					3,540.9				
2010	2.0	35.8	71.6	107.3	143.1	7.2	133.9	267.7	401.6	535.4
2011	2.0	36.8	73.6	110.3	147.1	7.2	137.6	275.2	412.8	550.4
2012	2.0	37.8	75.6	113.3	151.1	7.2	141.4	282.7	424.1	565.4
2013	2.0	38.8	77.6	116.3	155.1	7.2	145.1	290.2	435.3	580.4
2014	2.0	39.8	79.6	119.4	159.1	7.2	148.8	297.7	446.5	595.4
2015	2.0	40.8	81.6	122.4	163.1	7.2	152.6	305.2	457.8	610.4
2016	2.0	41.8	83.6	125.4	167.2	7.2	156.3	312.7	469.0	625.4
2017	2.0	42.8	85.6	128.4	171.2	7.2	160.1	320.2	480.3	640.4
2018	2.0	43.8	87.6	131.4	175.2	7.2	163.8	327.7	491.5	655.4
2019	2.0	44.8	89.6	134.4	179.2	7.2	167.6	335.2	502.8	670.4
2020	2.0	45.8	91.6	137.4	183.2	7.2	171.3	342.7	514.0	685.4
2021	2.0	46.8	93.6	140.4	187.2	7.2	175.1	350.2	525.3	700.4
2022	2.0	47.8	95.6	143.4	191.2	7.2	178.8	357.7	536.5	715.4
2023	2.0	48.8	97.6	146.4	195.2	7.2	182.6	365.2	547.8	730.4
2024	2.0	49.8	99.6	149.4	199.2	7.2	186.3	372.7	559.0	745.4
2025	2.0	50.8	101.6	152.4	203.2	7.2	190.1	380.2	570.3	760.4
2026	2.0	51.8	103.6	155.4	207.2	7.2	193.8	387.7	581.5	775.4
2027	2.0	52.8	105.6	158.4	211.2	7.2	197.6	395.2	592.8	790.3
2028	2.0	53.8	107.6	161.4	215.2	7.2	201.3	402.7	604.0	805.3
2029	2.0	54.8	109.6	164.4	219.3	7.2	205.1	410.2	615.3	820.3
2030	2.0	55.8	111.6	167.4	223.3	7.2	208.8	417.7	626.5	835.3
PV	**4,143**	**539**	**1,077**	**1,616**	**2,154**	**15,188**	**2,015**	**4,030**	**6,044**	**8,059**
NPV		**-3,605**	**-3,066**	**-2,528**	**-1,989**		**-13,173**	**-11,159**	**-9,144**	**-7,129**

Exhibit 6-16
Comparing Costs and Revenues for 2 Truck Lanes (Millions of 2003 $)
50% Diversion of Through Trucks

Period	Rt 20 to Canada					I-90 to Rt 20					Chehalis to I-90				
	Expend-itures ($)	Revenue At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	248.1					630.2					1,041.6				
2006	248.1					630.2					1,041.6				
2007	248.1					630.2					1,041.6				
2008	248.1					630.2					1,041.6				
2009	248.1					630.2					1,041.6				
2010	0.7	6.5	13.1	19.6	26.1	1.8	17.4	34.9	52.3	69.7	2.9	74.1	148.2	222.3	296.5
2011	0.7	6.7	13.4	20.1	26.9	1.8	17.9	35.8	53.8	71.7	2.9	76.2	152.4	228.6	304.8
2012	0.7	6.9	13.8	20.7	27.6	1.8	18.4	36.8	55.2	73.6	2.9	78.3	156.5	234.8	313.1
2013	0.7	7.1	14.2	21.2	28.3	1.8	18.9	37.8	56.7	75.6	2.9	80.3	160.7	241.0	321.4
2014	0.7	7.3	14.5	21.8	29.0	1.8	19.4	38.8	58.2	77.5	2.9	82.4	164.8	247.3	329.7
2015	0.7	7.4	14.9	22.3	29.8	1.8	19.9	39.7	59.6	79.5	2.9	84.5	169.0	253.5	338.0
2016	0.7	7.6	15.3	22.9	30.5	1.8	20.4	40.7	61.1	81.4	2.9	86.6	173.1	259.7	346.3
2017	0.7	7.8	15.6	23.4	31.2	1.8	20.8	41.7	62.5	83.4	2.9	88.6	177.3	265.9	354.6
2018	0.7	8.0	16.0	24.0	32.0	1.8	21.3	42.7	64.0	85.4	2.9	90.7	181.4	272.2	362.9
2019	0.7	8.2	16.4	24.5	32.7	1.8	21.8	43.7	65.5	87.3	2.9	92.8	185.6	278.4	371.2
2020	0.7	8.4	16.7	25.1	33.4	1.8	22.3	44.6	66.9	89.3	2.9	94.9	189.7	284.6	379.5
2021	0.7	8.5	17.1	25.6	34.2	1.8	22.8	45.6	68.4	91.2	2.9	96.9	193.9	290.8	387.8
2022	0.7	8.7	17.5	26.2	34.9	1.8	23.3	46.6	69.9	93.2	2.9	99.0	198.1	297.1	396.1
2023	0.7	8.9	17.8	26.7	35.6	1.8	23.8	47.6	71.3	95.1	2.9	101.1	202.2	303.3	404.4
2024	0.7	9.1	18.2	27.3	36.4	1.8	24.3	48.5	72.8	97.1	2.9	103.2	206.4	309.5	412.7
2025	0.7	9.3	18.5	27.8	37.1	1.8	24.8	49.5	74.3	99.0	2.9	105.3	210.5	315.8	421.0
2026	0.7	9.5	18.9	28.4	37.8	1.8	25.2	50.5	75.7	101.0	2.9	107.3	214.7	322.0	429.3
2027	0.7	9.6	19.3	28.9	38.6	1.8	25.7	51.5	77.2	102.9	2.9	109.4	218.8	328.2	437.6
2028	0.7	9.8	19.6	29.5	39.3	1.8	26.2	52.4	78.7	104.9	2.9	111.5	223.0	334.4	445.9
2029	0.7	10.0	20.0	30.0	40.0	1.8	26.7	53.4	80.1	106.8	2.9	113.6	227.1	340.7	454.2
2030	0.7	10.2	20.4	30.6	40.8	1.8	27.2	54.4	81.6	108.8	2.9	115.6	231.3	346.9	462.5
PV	**1,066**	**98**	**197**	**295**	**393**	**2,708**	**262**	**525**	**787**	**1,050**	**4,475**	**1,116**	**2,231**	**3,347**	**4,462**
NPV		**-968**	**-870**	**-771**	**-673**		**-2,445**	**-2,183**	**-1,920**	**-1,658**		**-3,360**	**-2,244**	**-1,128**	**-13**

Period	Vancouver to Chehalis					Entire Corridor				
	Expend-itures ($)	Revenue ($) At Various Toll				Expend-itures ($)	Revenue ($) At Various Toll			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	633.7					2,553.6				
2006	633.7					2,553.6				
2007	633.7					2,553.6				
2008	633.7					2,553.6				
2009	633.7					2,553.6				
2010	1.8	35.8	71.6	107.3	143.1	7.2	133.9	267.7	401.6	535.4
2011	1.8	36.8	73.6	110.3	147.1	7.2	137.6	275.2	412.8	550.4
2012	1.8	37.8	75.6	113.3	151.1	7.2	141.4	282.7	424.1	565.4
2013	1.8	38.8	77.6	116.3	155.1	7.2	145.1	290.2	435.3	580.4
2014	1.8	39.8	79.6	119.4	159.1	7.2	148.8	297.7	446.5	595.4
2015	1.8	40.8	81.6	122.4	163.1	7.2	152.6	305.2	457.8	610.4
2016	1.8	41.8	83.6	125.4	167.2	7.2	156.3	312.7	469.0	625.4
2017	1.8	42.8	85.6	128.4	171.2	7.2	160.1	320.2	480.3	640.4
2018	1.8	43.8	87.6	131.4	175.2	7.2	163.8	327.7	491.5	655.4
2019	1.8	44.8	89.6	134.4	179.2	7.2	167.6	335.2	502.8	670.4
2020	1.8	45.8	91.6	137.4	183.2	7.2	171.3	342.7	514.0	685.4
2021	1.8	46.8	93.6	140.4	187.2	7.2	175.1	350.2	525.3	700.4
2022	1.8	47.8	95.6	143.4	191.2	7.2	178.8	357.7	536.5	715.4
2023	1.8	48.8	97.6	146.4	195.2	7.2	182.6	365.2	547.8	730.4
2024	1.8	49.8	99.6	149.4	199.2	7.2	186.3	372.7	559.0	745.4
2025	1.8	50.8	101.6	152.4	203.2	7.2	190.1	380.2	570.3	760.4
2026	1.8	51.8	103.6	155.4	207.2	7.2	193.8	387.7	581.5	775.4
2027	1.8	52.8	105.6	158.4	211.2	7.2	197.6	395.2	592.8	790.3
2028	1.8	53.8	107.6	161.4	215.2	7.2	201.3	402.7	604.0	805.3
2029	1.8	54.8	109.6	164.4	219.3	7.2	205.1	410.2	615.3	820.3
2030	1.8	55.8	111.6	167.4	223.3	7.2	208.8	417.7	626.5	835.3
PV	**2,723**	**539**	**1,077**	**1,616**	**2,154**	**10,972**	**2,015**	**4,030**	**6,044**	**8,059**
NPV		**-2,184**	**-1,646**	**-1,107**	**-569**		**-8,957**	**-6,942**	**-4,928**	**-2,913**

Exhibit 6-17
Comparing Costs and Revenues for 2 Truck Lanes w/ Rail (Millions of 2003 $)
50% Diversion of Through Trucks

Period	Rt 20 to Canada					I-90 to Rt 20					Chehalis to I-90				
	Expend-itures ($)	Revenue At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)				Expend-itures ($)	Revenue ($) At Various Toll Rate ($/mile)			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	434.8					752.6					1,290.9				
2006	434.8					752.6					1,290.9				
2007	434.8					752.6					1,290.9				
2008	434.8					752.6					1,290.9				
2009	434.8					752.6					1,290.9				
2010	0.9	6.5	13.1	19.6	26.1	1.6	17.4	34.9	52.3	69.7	2.8	74.1	148.2	222.3	296.5
2011	0.9	6.7	13.4	20.1	26.9	1.6	17.9	35.8	53.8	71.7	2.8	76.2	152.4	228.6	304.8
2012	0.9	6.9	13.8	20.7	27.6	1.6	18.4	36.8	55.2	73.6	2.8	78.3	156.5	234.8	313.1
2013	0.9	7.1	14.2	21.2	28.3	1.6	18.9	37.8	56.7	75.6	2.8	80.3	160.7	241.0	321.4
2014	0.9	7.3	14.5	21.8	29.0	1.6	19.4	38.8	58.2	77.5	2.8	82.4	164.8	247.3	329.7
2015	0.9	7.4	14.9	22.3	29.8	1.6	19.9	39.7	59.6	79.5	2.8	84.5	169.0	253.5	338.0
2016	0.9	7.6	15.3	22.9	30.5	1.6	20.4	40.7	61.1	81.4	2.8	86.6	173.1	259.7	346.3
2017	0.9	7.8	15.6	23.4	31.2	1.6	20.8	41.7	62.5	83.4	2.8	88.6	177.3	265.9	354.6
2018	0.9	8.0	16.0	24.0	32.0	1.6	21.3	42.7	64.0	85.4	2.8	90.7	181.4	272.2	362.9
2019	0.9	8.2	16.4	24.5	32.7	1.6	21.8	43.7	65.5	87.3	2.8	92.8	185.6	278.4	371.2
2020	0.9	8.4	16.7	25.1	33.4	1.6	22.3	44.6	66.9	89.3	2.8	94.9	189.7	284.6	379.5
2021	0.9	8.5	17.1	25.6	34.2	1.6	22.8	45.6	68.4	91.2	2.8	96.9	193.9	290.8	387.8
2022	0.9	8.7	17.5	26.2	34.9	1.6	23.3	46.6	69.9	93.2	2.8	99.0	198.1	297.1	396.1
2023	0.9	8.9	17.8	26.7	35.6	1.6	23.8	47.6	71.3	95.1	2.8	101.1	202.2	303.3	404.4
2024	0.9	9.1	18.2	27.3	36.4	1.6	24.3	48.5	72.8	97.1	2.8	103.2	206.4	309.5	412.7
2025	0.9	9.3	18.5	27.8	37.1	1.6	24.8	49.5	74.3	99.0	2.8	105.3	210.5	315.8	421.0
2026	0.9	9.5	18.9	28.4	37.8	1.6	25.2	50.5	75.7	101.0	2.8	107.3	214.7	322.0	429.3
2027	0.9	9.6	19.3	28.9	38.6	1.6	25.7	51.5	77.2	102.9	2.8	109.4	218.8	328.2	437.6
2028	0.9	9.8	19.6	29.5	39.3	1.6	26.2	52.4	78.7	104.9	2.8	111.5	223.0	334.4	445.9
2029	0.9	10.0	20.0	30.0	40.0	1.6	26.7	53.4	80.1	106.8	2.8	113.6	227.1	340.7	454.2
2030	0.9	10.2	20.4	30.6	40.8	1.6	27.2	54.4	81.6	108.8	2.8	115.6	231.3	346.9	462.5
PV	**1,866**	**98**	**197**	**295**	**393**	**3,229**	**262**	**525**	**787**	**1,050**	**5,539**	**1,116**	**2,231**	**3,347**	**4,462**
NPV		**-1,767**	**-1,669**	**-1,571**	**-1,473**		**-2,967**	**-2,704**	**-2,442**	**-2,180**		**-4,423**	**-3,308**	**-2,192**	**-1,076**

Period	Vancouver to Chehalis					Entire Corridor				
	Expend-itures ($)	Revenue ($) At Various Toll				Expend-itures ($)	Revenue ($) At Various Toll Rate			
		$0.15	$0.30	$0.45	$0.60		$0.15	$0.30	$0.45	$0.60
2005	818.0					3,296.3				
2006	818.0					3,296.3				
2007	818.0					3,296.3				
2008	818.0					3,296.3				
2009	818.0					3,296.3				
2010	1.8	35.8	71.6	107.3	143.1	7.2	133.9	267.7	401.6	535.4
2011	1.8	36.8	73.6	110.3	147.1	7.2	137.6	275.2	412.8	550.4
2012	1.8	37.8	75.6	113.3	151.1	7.2	141.4	282.7	424.1	565.4
2013	1.8	38.8	77.6	116.3	155.1	7.2	145.1	290.2	435.3	580.4
2014	1.8	39.8	79.6	119.4	159.1	7.2	148.8	297.7	446.5	595.4
2015	1.8	40.8	81.6	122.4	163.1	7.2	152.6	305.2	457.8	610.4
2016	1.8	41.8	83.6	125.4	167.2	7.2	156.3	312.7	469.0	625.4
2017	1.8	42.8	85.6	128.4	171.2	7.2	160.1	320.2	480.3	640.4
2018	1.8	43.8	87.6	131.4	175.2	7.2	163.8	327.7	491.5	655.4
2019	1.8	44.8	89.6	134.4	179.2	7.2	167.6	335.2	502.8	670.4
2020	1.8	45.8	91.6	137.4	183.2	7.2	171.3	342.7	514.0	685.4
2021	1.8	46.8	93.6	140.4	187.2	7.2	175.1	350.2	525.3	700.4
2022	1.8	47.8	95.6	143.4	191.2	7.2	178.8	357.7	536.5	715.4
2023	1.8	48.8	97.6	146.4	195.2	7.2	182.6	365.2	547.8	730.4
2024	1.8	49.8	99.6	149.4	199.2	7.2	186.3	372.7	559.0	745.4
2025	1.8	50.8	101.6	152.4	203.2	7.2	190.1	380.2	570.3	760.4
2026	1.8	51.8	103.6	155.4	207.2	7.2	193.8	387.7	581.5	775.4
2027	1.8	52.8	105.6	158.4	211.2	7.2	197.6	395.2	592.8	790.3
2028	1.8	53.8	107.6	161.4	215.2	7.2	201.3	402.7	604.0	805.3
2029	1.8	54.8	109.6	164.4	219.3	7.2	205.1	410.2	615.3	820.3
2030	1.8	55.8	111.6	167.4	223.3	7.2	208.8	417.7	626.5	835.3
PV	**3,510**	**539**	**1,077**	**1,616**	**2,154**	**14,144**	**2,015**	**4,030**	**6,044**	**8,059**
NPV		**-2,971**	**-2,433**	**-1,894**	**-1,356**		**-12,129**	**-10,114**	**-8,099**	**-6,085**

Net Present Value Feasibility Results

The results of the NPV analysis are summarized in the following exhibit.

Exhibit 6-18
Summary of Net Present Value Under all Scenarios

Feasibility of Truck-Only Lanes Assuming 25% Diversion of Through Trucks

	4 Truck-Only Lanes				2 Truck-Only Lanes				2 Truck-Only Lanes w/ Rail			
	NPV ($ Mill) at VariousToll Rates ($/mile)				NPV ($ Mill) at VariousToll Rates ($/mile)				NPV ($ Mill) at VariousToll Rates ($/mile)			
Super Section	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**
Rt 20 to Canada	-1,324	-1,275	-1,226	-1,177	-1,017	-968	-919	-870	-1,817	-1,767	-1,718	-1,669
I-90 to Rt 20	-3,634	-3,503	-3,372	-3,240	-2,576	-2,445	-2,314	-2,183	-3,098	-2,967	-2,836	-2,704
Chehalis to I-90	-5,348	-4,791	-4,233	-3,675	-3,917	-3,360	-2,802	-2,244	-4,981	-4,423	-3,865	-3,308
Vancouver to Chehalis	-3,874	-3,605	-3,336	-3,066	-2,454	-2,184	-1,915	-1,646	-3,241	-2,971	-2,702	-2,433
Entire Corridor	-14,181	-13,173	-12,166	-11,159	-9,965	-8,957	-7,950	-6,942	-13,136	-12,129	-11,122	-10,114

Feasibility of Truck-Only Lanes Assuming 50% Diversion of Through Trucks

	4 Truck-Only Lanes				2 Truck-Only Lanes				2 Truck-Only Lanes w/ Rail			
	NPV ($ Mill) at VariousToll Rates ($/mile)				NPV ($ Mill) at VariousToll Rates ($/mile)				NPV ($ Mill) at VariousToll Rates ($/mile)			
Super Section	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**
Rt 20 to Canada	-1,275	-1,177	-1,078	-980	-968	-870	-771	-673	-1,767	-1,669	-1,571	-1,473
I-90 to Rt 20	-3,503	-3,240	-2,978	-2,716	-2,445	-2,183	-1,920	-1,658	-2,967	-2,704	-2,442	-2,180
Chehalis to I-90	-4,791	-3,675	-2,559	-1,444	-3,360	-2,244	-1,128	**-13**	-4,423	-3,308	-2,192	-1,076
Vancouver to Chehalis	-3,605	-3,066	-2,528	-1,989	-2,184	-1,646	-1,107	-569	-2,971	-2,433	-1,894	-1,356
Entire Corridor	-13,173	-11,159	-9,144	-7,129	-8,957	-6,942	-4,928	-2,913	-12,129	-10,114	-8,099	-6,085

Feasibility of Truck-Only Lanes Assuming 75% Diversion of Through Trucks

	4 Truck-Only Lanes				2 Truck-Only Lanes				2 Truck-Only Lanes w/ Rail			
	NPV ($ Mill) at VariousToll Rates				NPV ($ Mill) at VariousToll				NPV ($ Mill) at VariousToll Rates			
Super Section	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**
Rt 20 to Canada	-1,226	-1,078	-931	-784	-919	-771	-624	-476	-1,718	-1,571	-1,423	-1,276
I-90 to Rt 20	-3,372	-2,978	-2,584	-2,191	-2,314	-1,920	-1,527	-1,133	-2,836	-2,442	-2,048	-1,655
Chehalis to I-90	-4,233	-2,559	-886	**787**	-2,802	-1,128	**545**	**2,218**	-3,865	-2,192	-519	**1,155**
Vancouver to Chehalis	-3,336	-2,528	-1,720	-912	-1,915	-1,107	-300	**508**	-2,702	-1,894	-1,087	-279
Entire Corridor	-12,166	-9,144	-6,122	-3,099	-7,950	-4,928	-1,905	**1,117**	-11,122	-8,099	-5,077	-2,055

Feasibility of Truck-Only Lanes Assuming 100% Diversion of Through Trucks

	4 Truck-Only Lanes				2 Truck-Only Lanes				2 Truck-Only Lanes w/ Rail			
	NPV ($ Mill) at VariousToll Rates				NPV ($ Mill) at VariousToll				NPV ($ Mill) at VariousToll Rates			
Super Section	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**	**$0.15**	**$0.30**	**$0.45**	**$0.60**
Rt 20 to Canada	-1,177	-980	-784	-587	-870	-673	-476	-280	-1,669	-1,473	-1,276	-1,079
I-90 to Rt 20	-3,240	-2,716	-2,191	-1,666	-2,183	-1,658	-1,133	-609	-2,704	-2,180	-1,655	-1,130
Chehalis to I-90	-3,675	-1,444	**787**	**3,019**	-2,244	**-13**	**2,218**	**4,450**	-3,308	-1,076	**1,155**	**3,386**
Vancouver to Chehalis	-3,066	-1,989	-912	**165**	-1,646	-569	**508**	**1,585**	-2,433	-1,356	-279	**798**
Entire Corridor	-11,159	-7,129	-3,099	930	-6,942	-2,913	**1,117**	**5,146**	-10,114	-6,085	-2,055	**1,975**

The results can be summarized as follows:

- With a 25 percent diversion scenario, and under the best of circumstances, the project developer would be at a financial deficit of between $7 billion and $11 billion, and would recover between 25% and 40% of the project outlays. Under the least favorable of

circumstances, the project developer would recover between 7% and 20% of the project outlays. Limiting investments to the most cost effective segments do not yield positive results either.

- With a 50 percent diversion scenario, and under the best of circumstances, the project developer would be at a financial deficit of between $3 billion and $7 billion, and would recover between 50% and 80% of the project outlays. Under the least favorable of circumstances, the project developer would recover between 13% and 20% of the project outlays. Focusing on the segment between Chehalis and I-90 could potentially produce a positive financial outcome, but only marginally, and under the best of circumstances.

- With a 75 percent diversion scenario, and under the best of circumstances, the project developer would be at a financial deficit of between $1.5 billion and $3 billion, and would recover between 80% and 90% of the project outlays, except for the **2 truck lane approach**, where the results are positive – a 110% recovery of costs and an approximate $1 billion surplus. Under the least favorable of circumstances, the project developer would recover between 20% and 30% of the project outlays. All three truck lane approaches (4 lane, 2 lane and 2 lane with rail) could provide a positive outcome under the best circumstance. However, focusing on 2 truck lanes along the segment between Chehalis and I-90 provides the best opportunity for success, and positive returns may be gained with a toll rate set as low as $0.41 per mile.

- A 100 percent diversion scenario is not likely to occur without strict truck routing policies and firm policing thereof, or a uniform revenue collection approach that is applied to all trips along the overall corridor, much like the revenue collection method used for the Alameda Corridor. Under the best of circumstances, the project developer would be at a financial surplus of between $1 billion and $5 billion, and would recover between 106% and 160% of the project outlays. Under the least favorable of circumstances, the project developer would recover between 26% and 40% of the project outlays. All three truck lane approaches (4 lane, 2 lane and 2 lane with rail) could provide a positive outcome under the best circumstance. However, focusing on 2 truck lanes along the segment between Chehalis and I-90 provides the best opportunity for success, and positive returns may be gained with a toll rate set as low as $0.29 per mile.

Conclusion

Based on this analysis, there are several conclusions regarding the financial feasibility of the truck component of the WCC:

1) **The minimum feasible diversion rate is 50 percent.** For the truck component of the WCC to start fully paying for itself, at least half of the current and forecasted through truck traffic along the corridor would need to be attracted to the WCC. In order for this to happen, the alternative truck WCC route would need to offer some combination of transport cost savings and productivity gains that would compensate for a significant share of the cost of the toll, or exceed the cost of the toll.

2) **The 2-lane option offers the best opportunity for success.** The lower project development outlays related to this approach enhance the financial feasibility of the project. However, with limited passing opportunities, this approach does present operational challenges for traffic. These issues will need to be resolved with improved engineering and vehicle technologies.

3) **The segment between Chehalis and I-90 offers the best opportunity for success.** This segment has the highest volumes of through truck trips and hence performs best from a revenue potential standpoint. In addition, the segment between Chehalis and the Oregon border has similar volumes and could potentially provide similar revenue opportunities.

4) **The rail add-on to the 2-lane alternative diminishes the financial feasibility.** There are significant public benefits to adding rail capacity along the WCC, including improved capacity for passenger service along the coastal rail corridor. However, this approach adds significant cost to the project and undermines the financial feasibility of the truck component of the WCC. The rail option can only improve financial feasibility if additional revenues are sought from the rail users (of the corridor) or through public subsidy.

5) **The project will likely need some combination of public subsidy.** The feasibility of a user financed truck component to the WCC is marginally feasible and will need some combination of subsidy to improve its feasibility beyond marginal. Subsidy could be in the form of contributions that lower the upfront cost, such as ROW donations, or direct capital infusion including Federal grant funding by qualifying as a nationally significant demonstration project, or credit based backing to help share the risk of securing project related debt financing, or government commitments to cover any shortfall in revenue.

CHAPTER SEVEN
PUBLIC COMMENT

INTRODUCTION

This feasibility study concerns an area of almost 2,297 square miles that stretches from Vancouver, Washington in the South to Sumas, Washington in the North. Nine state counties lie in this alignment, as well as numerous cities, towns and villages. Millions of people live within the scope of the study, and numerous more work or recreate within its bounds.

Because of the great number of people who would be affected by any proposed Washington Commerce Corridor, it was deemed necessary to include a public involvement element in this feasibility study. The public involvement process included two parts:

1. Ongoing public comment received, logged, and answered by WSDOT and the consultant team;
2. Three public comment sessions held as joint information sharing/public response sessions

Public response was significant for both parts of the feedback process. WSDOT and the consultant team received hundreds of phone calls and emails documenting personal reaction to the project. Though every comment was unique, it is possible to group them into major themes. This chapter summarizes the responses, notes how WSDOT and the consultant team responded to the comments, and introduces the major themes brought up by public comment.

ONGOING PUBLIC COMMENT

As of the time of writing this report, roughly 200 comments had been received, answered and recorded by WSDOT and the consultant team. These comments can be grouped into three "umbrella" categories:

1. Information gathering or general query
2. Negative feedback regarding the WCC
3. Positive feedback regarding the WCC

A summary of the major themes for each category are detailed below.

Information Gathering Contacts

Logistical Questions/Comments

Roughly 10% of all phone and email contacts were from people interested in finding out more about the WCC. These comments came at all stages of the project, beginning in early March and lasting through mid December. Some of these comments were logistical in nature, inquiring about the status of the project or the nature of the public meeting. For example:

3/17/04: Citizen made contact with consultant team requesting that a representative from the consultant team attend a citizen meeting in Deming on April 21.
Response: Consultant agreed and attended meeting.

7/16/04: Citizen contacted consultant team requesting that additional meetings be held.
Response: Consultant explained reasoning behind only holding a few meetings but agreed to mention comment to WSDOT and the rest of the Steering Committee.

Requests/Clarifications of Materials

Other comments falling into this category included clarifications of material or request for additional materials. For example:

7/29/04: Citizen contacted consultant looking for a more detailed alignment map.
Response: Consultant explained that there is no more detailed map since this is a feasibility study and not a proposed project. It is deliberately vague since many options are being evaluated.

8/5/04: Citizen contacted consultant requesting more information about the planned displacement assessment/compensation plan for those people living very close to the SR 9 corridor under risk of being moved.
Response: Consultant explained that it is far too early to have formulated a plan of action for this, since we are in the feasibility stages of the WCC and it may not ever become a project. In addition, the alignment could shift so that it is no longer along SR 9.

Negative Comments Received Regarding the WCC

Almost 85% of comments received were negative in nature, urging WSDOT to not proceed with the WCC concept. However, most of these comments do not address the efficacy of the corridor or its uses, but instead are focused on the opposition of citizens to any such project running through their communities. In addition, the majority of the comments came from the communities in the Northern part of the state surrounding SR 9. The major themes of the comments are listed and described below:

- Environmental destruction;
- Increased sprawl/development;
- Increased traffic and no congestion relief;
- Expensive public investment;
- Perceived lack of public participation process;
- Perceived lack of proper environmental review process;
- Possible relocation of people and communities or other interruption of community life; and
- Loss of personal property through eminent domain.

The groupings that comments tended to fall into are detailed further below. Please note that many comments included more than one of the above topics.

Environmental Destruction/Harm

Many of the public comments focused on the environmental degradation that would be caused by the WCC project. Many spoke to the pristine farmland and beautiful natural areas that would be permanently altered if a project like this were to succeed. Others mentioned impacts to wildlife, in particular migratory animals and freshwater salmon. Even more people thought of the environmental degradation that would come from increased traffic and car travel, and subsequent air and noise pollution concerns. Some comments and the response from the consultant team are listed below.

7/13/04: Citizen explains that people chose to live in this area because of the natural beauty and interesting ecosystems. Urges that the WCC does not destroy this.
Response: WSDOT explains that this is a feasibility study and not a project, that it is examining many different alignments and transportation modes. Also invites citizen to look at website and invites to next public meeting.

7/15/04: Concerned citizen writes that the project will destroy natural beauty along the Nooksack river, as well as destroy many small farms and communities.
Response: WSDOT explains that this is a feasibility study and not a project, that it is examining many different alignments and transportation modes. Also invites citizen to look at website and invites to next public meeting.

8/8/04: Citizen writes that the Pacific Northwest is known for its amazing natural resources, and that to propose a plan that could alter and disrupt these resources in unacceptable.
Response: WSDOT explains that this is a feasibility study and not a project, that it is examining many different alignments and transportation modes. Also invites citizen to look at website and invites to next public meeting.

9/2/04: Citizen questions why a full Environmental Impact Statement (EIS) is not being performed for this project. Questions whether WSDOT is fulfilling its legal requirements.
Response: WSDOT explains that an EIS would be required if the WCC were to become an actual project. An EIS is a very detailed and expensive process, and is only beneficial to projects with a refined scope and very set alignment. The WCC has neither.

Community Harm and Social Dislocation

Many of the comments focused on how the WCC would impact/destroy small communities in the Cascade foothills. These comments were almost exclusively from the rural communities of Northern Washington State such as Deming, Sedro-Woolley, Acme, Bellingham and Whatcom County. Some of the comments are described in detail below:

7/10/04: Citizen writes to WSDOT that "a project like this would devastate the small communities in its path, and this idyllic environment, and its peace and quiet, would forever be lost."
Response: WSDOT explained that this is still in the feasibility phase, so all comments are welcomed. Pointed our public meetings and website for further information.

7/11/04: Two citizens send letter to WSDOT and Consultant detailing their concern at the effects of this project on the "social capital" of rural northern Washington State. They urge the team to consider the effects brought on by noise, pollution, loss of family homes, dislocation, community fragmentation, and a loss of a valuable way of life.

7/14/04: WSDOT receives comment of "Let's leave the rural that we have left, alone."
Response: WSDOT explained that this is still in the feasibility phase, so all comments are welcomed. Pointed our public meetings and website for further information.

Wasted Public Funds/ Transportation Dollars

Comments relating to the monetary expenditure on the WCC were again mostly focused on the Highway portion. Though many people supported the efforts of WSDOT to look towards future infrastructure needs, many disliked the inclusion of a highway in the study. The following points were repeatedly made throughout the duration of the study:

- Building more highways only seems to generate more traffic and more congestion and doesn't solve mobility needs;
- Transportation money is very limited and should be used to solve more pressing needs like 520 and the Alaskan Way Viaduct; and
- Intermodal solutions such as rail should be topmost priority of WSDOT and the state legislature.

7/12/04: Citizen writes that the project is a waste of time and money, and that Washington State should focus on increasing rail service and other forms of public transportation.
Response: WSDOT reminded citizen that this is a preliminary feasibility study covering many modes. Also gave website link for more information and invited to next citizen meeting.

7/14/04: Citizen writes that this is the third or fourth time that I-605 has been studied. It is time to stop wasting money on this "no-go" project.
Response: WSDOT reminds citizen that this is not the I-605, it is a different study examining many modes. Gave link to WCC website and invited to next citizen meeting.

7/16/04: Citizen writes that "I am certainly disappointed that public funds have been allocated to "study" this massive new road development. In this time of strapped budgets, ...it is particularly inappropriate to spend money on a dream that can so easily be linked to so many negative consequences."

Unwanted Growth, Sprawl, and GMA Violation

Some people voiced concern that the WCC project would violate Washington State's efforts to control, manage, and plan growth. The location of much of the project outside of the Urban Growth Boundary was not well received by many people. In addition, the freeway component of the WCC was repeatedly dismissed as contrary to progressive planning principles.

7/12/04: Citizen writes that there should be no new freeways and no new WCC. He states that "it would violate all efforts and land use planning and the GMA".

Response: WSDOT reminded citizen that this is a preliminary feasibility study covering many modes. Also gave website link for more information and invited to next citizen meeting.

7/12/04: Citizen writes that a highway would just increase sprawl and "California type growth" in Washington State.
Response: WSDOT reminded citizen that this is a preliminary feasibility study covering many modes. Also gave website link for more information and invited to next citizen meeting.

Public Participation Process Concerns

Some people voiced concern over the perceived lack of a public participation process or the lack of public involvement into the WCC Feasibility study process. For example:

7/15/04: Consultant team received email stating that citizen is "very disappointed" with the public participation process. He only saw 1 day notice for the meeting of 7/16/04, and it appears to be the only one.
Response: Consultant replies that there are three scheduled public participation programs, and agrees to put citizen on mailing list for the next one. Also reminds citizen that feedback is accepted, at any time, from WSDOT or the consultant team.

7/16/04: Citizen contacts WSDOT curious as to why there are no additional meetings planned and if it is possible to request one.
Response: WSDOT replies that three meetings at different localities were agreed upon by the state legislature and should be acceptable for a feasibility study. Also reminds citizen that feedback is accepted, at any time, from WSDOT or the consultant team.

Positive Comments Received Regarding the WCC

Roughly 5% of the comments received by WSDOT or the consultant team were positive and eager to see the WCC become a project. For the most part, this support came from people frustrated with mobility in the region, who see the WCC as an attempt to alleviate congestion and increase mobility. For example:

7/13/04: WSDOT received phone call from citizen saying that the WCC is "the greatest thing that he's ever heard of." He names off all of the states that use toll roads and wonders why Washington has none.

7/15/04: WSDOT receives support email from citizen saying that he "wholeheartedly" supports the project, as there is a need for N-S capacity. He also states that the Portland to Seattle traffic is miserable, and this would help to alleviate it.

PUBLIC MEETING COMPONENT

In addition to the ongoing public comments, the public was also given the opportunity to speak at three different public meetings throughout the project:

1. **July 16th Bellevue, WA**
2. **November 10th Bellingham, WA**
3. **November 23rd Chehalis, WA**

All three meetings had the same format: a presentation to show progress/results from the consultant team or WSDOT followed by a public comment period. Very little time was given to respond to public comment, so as to increase the time available for public comment. A summary of comments from each of the three meetings is listed below.

July 16th Bellevue Meeting
Ramada Inn, Bellevue
9:30am-12:30pm

This advisory forum and public comment period was held in order to keep stakeholders informed of study purpose and progress. The theme of the forum was to remind the public of the conceptual nature of the study and the extended study timeframe of 20-50 years. The forum began with consultant presentations and a Northwest Regional Panel discussion. It then moved into a public comment period. In total, 32 citizens registered to testify, most of them from the Northern Washington Communities of Whatcom and Skagit County. Comments were limited to three minutes to allow everyone to speak.

Public Comments Summarized

For the most part, comments given at this forum were not supportive of the WCC idea. In addition, concerns roughly echoed those received in the ongoing public comment period summarized above. Voiced concerns included the following:

- **The financial feasibility of this project and if it would become a taxpayer burden**
  - Toll roads historically do not work
  - Several other projects similar to this have been built and have underperformed
  - State bond rating would suffer

- **The environmental degradation caused by construction and operation of the WCC**
  - Loss of habitat for endangered species including salmon species
  - Loss of pristine wilderness areas and natural beauty
  - Effect of WCC on clean drinking water
  - Effect of paving over beautiful land and delicate ecosystems
  - Watershed impacts
    - Cedar River Watershed
    - South Fork of the Nooksack River
    - Sammish River

  - Creation of a barrier to migration for some species
  - Would destroy vital recreational land for city dwellers- a rare remaining natural place.
- **The WCC does not seem to be in line with Washington State's GMA and other land use/planning efforts**
  - Much of it is outside of the Urban Growth Area
  - Would accelerate sprawl and fragmented urban growth

- **The impact of the WCC on property owners**
  - What would be the process for repayment of displaced property owners?
  - Can Eminent domain be used since this would be a privately financed project?
  - Public needs to be kept current on WCC planning since it affects the long-range plans of multiple agencies, school districts, cities, towns, etc.

- **Drain of transportation money and time**
  - Detracts time and money away from real problems like the 520 bridge and Alaskan Way Viaduct replacement
  - Not good time for such feasibility studies considering the federal and state transportation funding crisis

- **Public process shortcomings**
  - Not enough meetings
  - Not held right at the beginning of the process
  - Not reaching out to all stakeholders, just a few
  - Distrust that comments are being considered/heard
  - Why does there appear to be a disconnect between the study and local planning goals?

- **Freeways as an outdated transportation solution**
  - Need to look to sustainable multimodal solutions like rail
  - It has been repeatedly proven that more freeways just bring more traffic and more congestions
  - Do not want Washington State to turn into California
  - Why build more considering the impending oil shortage/crisis?

- **Destruction of communities and rural lifestyle**
  - People live in this area in order to preserve a rare rural lifestyle. This would destroy it.
  - Would fragment communities that have stood for a long time
  - Would cause social isolation, loss of community, depression, etc.
  - Citizens will proudly say "Not in My Backyard" because their backyard happens to be a unique and gorgeous area.
  - Want their children to be able to live the same rural lifestyle as they are enjoying
  - Not every community needs to look like Bellevue or Seattle. This project would accelerate this process

Several supportive comments were also aired, including the following:

- Recognition that this study is attempting to address mobility needs in the future and should be given the opportunity to do so. Without mobility and freight movement this area will suffer.
- Recognition of the multi-modal component of the WCC, and how it includes rail, utilities, etc.

November 10th Bellingham Meeting
Bellingham County Courthouse
6:00 – 8:00pm

This advisory forum and public comment period was held in order to update the public on the initial findings of the feasibility study. The meeting began with WSDOT presenting the major finding, that the WCC as conceived is not feasible. The meeting then went into a public comment period. 29 people registered to give a testimony. Concerns and comments are summarized below.

Public Comments Summarized

- **Concern over highway component of the project**
  - Need to consider more multimodal and sustainable solutions.
  - Highways are outdated and do not solve congestion problems.
  - Focus should switch to land use changes, not building roads to connect communities that are far apart.

- **Concern over the study recommendations**
  - Environmental process should not be streamlined.
  - TM's seem to lay out a framework to "push through" projects like the WCC.
  - Public/Private partnerships are inherently tricky and can compromise the best interest of the public. They should only be entered into with utmost caution.

- **Concern over "costs" as calculated in the study**
  - True definition of "cost" needs to be broadened to include social costs and costs of loss of rural lifestyle.
  - Costs should also include wetland/ecosystem mitigation costs, which are significant.
  - Rail cost estimates appear to be inflated. Other people have calculated different costs.
  - The WCC costs do not include rest areas, insurance, tunnel ventilation, or other very expensive components.
  - Costs for building the WCC could be twice as high as estimated in the study, making the debt payments unsustainable.

- **Concern over shortcomings of study and preconceived beliefs of the consultant team**

  - WSA entered study believing that growth is good and altered the TM's to reflect this belief.
  - WSA does not seem to recognize the value of rural lifestyles/communities
  - The TM's are full of environmental oversights and miscalculations.
  - TM's do not mention:
    - Nooksack tribe
    - Many rivers
    - Endangered Species Act
    - Salmon
    - Wetlands reclamations efforts

- **Concern over public process**
  - Distrust that public was not included earlier
  - Not happy with the language used to address community. Phrases such as "potential community impacts" are actually "real community issues".
  - Distrust that this project is actually "dead". Many feel that they need to remain vigilant.
  - Request for improved, non-hierarchical communication process.

November 23rd Chehalis Meeting
Lewis County Courthouse
6:00 – 8:00pm

This advisory forum and public comment period was held in order to update the public on the initial findings of the feasibility study. The meeting began with WSDOT presenting the major finding, that the WCC as conceived is not feasible. The meeting then went into a public comment period. 11 people registered to give a testimony. Concerns and comments are summarized below.

Public Comments Summarized

- **Concerns over the proposal for further study of a Chehalis to I-90 tolled truck facility**
  - Cost per mile toll estimate is far too high and would put strain on an already strained business.
  - Trucking can no longer be the "cash cow" of the state. It is already an industry in crisis.
  - Urge more in-depth cost analysis before any tolled truck facility is considered.
  - Questions over if truckers will still have to pay tax on fuel since gas tax already goes to building roads. If they are already paying a toll then they shouldn't have to pay gas taxes as well.
  - Tolling would inflate the cost of living and costs of business. It would also seriously hurt the abilities of truckers to make a living and provide for their families.
  - Must make sure that our suggestions facilitate growth, rather than hinder it.

- **Concern over the freeway component of the WCC**

- Freeways are an outdated solution. Rail and other multimodal solutions need to be examined instead.
- The WCC would have serious environmental implications in the northern part of WA State.
- Highways do not work to alleviate congestion.

- **Concern over the study findings**
  - Environmental process should not be streamlined, it is already barely sufficient to protect critical wildlife and ecosystems.
  - Concern that the cost for the rail portion was overestimated. Real costs would be far more feasible. Urges WSDT and legislature to not forget about rail.
  - Private/ Public partnerships may not look out for the best needs of the people. They should be entered into very carefully, and must make sure to include robust public interaction.