

Freight Investment Study

December Study Update

prepared for

Washington State Joint Transportation Committee

prepared by

Cambridge Systematics, Inc.

draft final report

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draft

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December Study Update

Several recent studies such as the Freight Element of the Washington Transportation Plan, the Statewide Rail Capacity and Needs Study, and the Governor's Port Initiative have noted the importance of goods movement to the Washington economy. These studies have also noted growing unfunded capacity needs.

Funding freight transportation infrastructure can be both easier and more complicated than transportation projects intended to benefit the general public exclusively:

- Easier because in these times of declining revenues for transportation and rapidly escalating costs, freight infrastructure improvements have more potential access to private sector funding than public projects. Private industry will benefit and may therefore assessed user fees corresponding to their benefit.
- More complicated because there are virtually no freight improvements that do not generate public benefits and/or require mitigation of impacts on the community. Furthermore, much of the public benefit often flows to the national economy while all of the impacts fall on local communities. These nonexclusive benefits and local impacts create the need for a complicated funding portfolio that requires that many and diverse stakeholders come to the table.

As of now, the Federal government, while recognizing the importance of the national freight transportation system, has provided little dedicated funding and most of these funds have gone to earmarked projects. Private industry has lobbied the State Legislature to direct more public funding towards projects with freight benefits, but has strongly resisted supporting new or increased fees or taxes related to fund freight related transportation projects.

In 2007, the Washington State Senate considered Senate Bill 5207 that would have created a freight congestion relief account for the purpose of improving freight rail systems and state highways used as freight corridors. The account would have been funded through a fee of \$50 for each container¹ entering Washington State's ports.

Strong opposition from private industry and the ports to this proposal led the Legislature to undertake a comprehensive look at funding freight investments before imposition of a new fee. Substitute Senate Bill 5207 removed the fee provision and instead directed the Joint Transportation Committee (JTC) to

¹ The legislation defined a container as a TEU (twenty-foot equivalent).

study container fees, port-related user fees and other funding mechanisms as a means to fund freight infrastructure improvements.

This *Freight Investment Study* is the result of SSB 5207. Its purpose is to assess a range of freight funding sources while taking into account the perspective of the state legislature, represented by the Joint Transportation Committee Policy Group, and a group of freight industry stakeholders². It seeks to address a number of questions, some of which have been presented previously, and other which are presented here for the first time.

New Material - December 2008

The following study questions were addressed through technical reports that have not yet been presented to the JTC. Draft versions are included in this document. Final versions will be included in the final report to be submitted to the JTC in January, 2009.

- **Section 1.0 - How would a new freight funding source be administered?** This section describes a number of options to administer a project selection and grant administration process and lists existing project selection processes in Washington State that could be modified to administer the new program. This section represents Task 9 of the study.
- **Section 2.0 - How could the freight industry's share of projects be determined?** If a new freight user fee were imposed to fund a program of freight projects, it would be necessary to determine how the freight share of project costs would be determined. According to the principle of "nexus," freight stakeholders and government agencies would pay in proportion to the project benefits they receive. This section provides examples of how the freight share of project benefits can be calculated for certain types of projects - specifically, large highway projects or bundles of smaller road projects in the Puget Sound region. This section represents Task 7 of the study.
- **Section 3 - What would be the economic impacts of the new tax or fee?** This section discusses in general terms the economic impacts of imposing new taxes or fees. It represents Task 5 of the study.

Presented Prior to December 2008

The following study questions have been addressed through documents already submitted to the JTC. These previously published reports are not included here

² Including representatives of container ports, trucking, railroads, international and national shipping, organized labor, the import/export community, the Freight Mobility Strategic Investment Board, the Washington State Department of Transportation (WSDOT), and others.

but will be included in the final report to be submitted to the JTC in January, 2009.

- **What are the freight funding sources used in Washington State and elsewhere?** This question was addressed through the Tasks 1 to 4 report³ prepared for the study. It examines existing and potential Federal, state, and local government freight-related project funding incentives; analyzes current taxes and fees paid by the freight industry; highlights freight funding examples from other states and nations; and considers options for redirecting or leveraging existing taxes and fees in Washington State for freight-related transportation improvements.
- **How would imposition of a container fee impact Washington State's competitiveness?** As noted above, the Freight Investment Study was initiated by a bill that would have imposed a \$50 fee for shipping containers imported into Washington State. The original bill raised concerns that container fees might impact the competitiveness of Washington's ports. Therefore, one of the central tasks of the study was to investigate the impacts of container fees. The results of the analysis were presented to the JTC as Task 6 of the study⁴.
- **What other freight user fee funding sources could be used in Washington State?** The Freight Investment Study was never intended to focus exclusively on container fees. The Task 8 report⁵ presented a broader range of user fee options that could be used to fund freight infrastructure. It lists a wide range of freight user fees (including container fees) and discusses their potential yield, degree of connection to freight projects, and any administrative or implementation issues.

The final report, to be completed in January 2009, will include all work tasks and appendices. For this Draft Final Report, only the three sections that have not been presented to date are included (described above in New Material - December 2008).

³ The Draft Tasks 1 to 4 report may be accessed at: <http://www.leg.wa.gov/documents/LTC/jtc/Freight/20070926%20Cambridge%20Draft%20Working%20Paper%20Tasks%201-4.pdf>. An updated version will be attached to the final report.

⁴ The Task 6 report (Analysis of the impact of container fees) may be accessed at: http://www.leg.wa.gov/documents/LTC/jtc/Freight/Leachman_Report.pdf. A version will be attached to the final report.

⁵ The Draft Task 8 report (Analysis of Freight User Fee Funding Sources) may be accessed at: http://www.leg.wa.gov/documents/LTC/jtc/Freight/DR2_Task8_Sept08_100608.pdf. An updated version will be attached to the final report.

1.0 Freight Funding Administration Alternatives

1.1 INTRODUCTION

One purpose of the Freight Investment Study is to investigate possible new sources of funds to support freight investment in Washington State, especially freight user fees. The study scope also calls for investigation of how a new source of freight funding would be administered, whether through a special project recommendation panel, the State Legislature, an existing agency, or some other entity.

Before presenting the results of this investigation, readers may better understand the alternatives if provided with a brief history of the legislative actions leading up to this study. The following are key milestones in the Legislature's effort to oversee investments in the State's freight infrastructure:

- **1998** - The State Freight Mobility Strategic Investment Board (FMSIB), was created to advocate for freight mobility needs for all modes and without regard to jurisdiction or ownership.
- **2005** - Two accounts, each funded at slightly over \$3 million per year, were established to help finance road and multimodal projects related to freight mobility.
- **2006** - The Joint Transportation Committee (JTC) Long-Term Transportation Financing Study identified alternative, medium-term financing options, including container charges, to address transportation funding needs.
- **2007** - Senate Bill 5207, as introduced, imposed a fee on freight containers passing through a port to help finance freight corridor improvements. The bill evolved through the legislative process to ultimately:
 - Require this study of alternatives for financing freight improvements,
 - Involve the participation of a group of stakeholders, and
 - Require an evaluation of the structure and responsibility for a future project recommendation body.
- **2007** - Substitute Senate Bill 5207 created the Freight Congestion Relief Account in the Washington State Treasury; however, no revenue sources were identified to fund that account.
- **2007** - The Puget Sound Regional Council (PSRC) sponsored the Regional Freight Mobility Roundtable, bringing together Federal, state, and local

agencies and private sector to address improvement of regional freight movement.

- **2007** - The State Transportation Commission completed a Statewide Rail Capacity and System Needs Study that recommended additional freight rail capacity, as well as State administration of freight programs.
- **2007** - The Transportation Budget, ESHB 1094, appropriated funds to the JTC to administer the Freight Investment study. The legislation specifically directed the JTC to involve a panel of stakeholders and to require the evaluation of the structure and responsibility for a future project recommendation body. The stakeholder panel included members of all existing agencies and administrative bodies with some responsibility for freight investment. In addition, the Stakeholder Group included private industry representatives who advocated that their members have seats at the table.

Given this context, this section (which addresses Task 9 of the study scope of work) presents administrative issues that would likely be encountered and recommends some alternative administrative characteristics, such as who should be responsible for project selection, their responsibilities, and ground rules for project selection to assure a viable nexus to the tax/fee.

This section also discusses how the structure of the administrative process might be impacted by different sources of revenue. Administration of a new container fee, for example, might look different from a process designed to administer funds from an increase in statewide truck weight fees.

Depending on the type of fee selected, it may not be necessary to create a new project recommendation panel. Washington State has several existing bodies that could be modified to handle the additional responsibility of administering funds from a new revenue source.

The section includes the following subsections:

- General considerations in the selection of a project recommendation panel;
- Presentation of existing bodies with some responsibility for administering freight funds, including the makeup and role of the panel, process for selecting projects, degree to which freight stakeholders are represented, and the amount of funding administered; and
- Consideration of how existing bodies could be modified, or new bodies created, in the event that new funds become available.

1.2 GENERAL CONSIDERATIONS IN THE STRUCTURING OF A FREIGHT PROJECT RECOMMENDATION PANEL

Guiding Principles

After conducting a number of dialogues with members of the Policy and Stakeholder Groups, the consultant team has distilled the concerns and expectations into several guiding principles that most stakeholders seem to advocate should be followed to protect state and private interests and to ensure equity and efficiency:

- **Public interest must be safeguarded** – This will require the panel to include sufficient and appropriate public-sector membership to ensure safeguarding of the public interest. Some freight projects, for example, are intended to mitigate the impact of goods movement on neighborhoods. State and regional governments should be represented if the purpose of the panel is to develop freight projects of regional or statewide significance.
- **Composition of panel should be appropriate to tax and fee type** – The type of tax or fee implemented has an impact on the need for a project recommendation panel and the composition of the panel. For example, if roadway tolls are selected as the most appropriate funding source, a special project selection panel may not be necessary, because tolls revenues are typically invested in the tolled facility. If new container fees are implemented, the stakeholders who bear the burden of paying these fees will likely request greater representation of how they are spent. This linkage between the fee type and the project recommendation panel is explored in more detail in subsequent sections.
- **Composition of panel should reflect the incidence of the fee⁶** – The incidence of the fee is a more nuanced version of the first principle (above). Stakeholders who bear the ultimate burden of the fee will likely be the first to request a voice in how the funds are spent. Table 1.1 shows the major types of fees recommended for consideration by the Policy Group, where the fee would likely be collected and who would ultimately be likely to pay it.

⁶ *Tax incidence* is an economic term for the division of a tax burden between buyers and sellers. Tax incidence is related to the price elasticity of supply and demand. When supply is more elastic than demand, the tax burden falls on the buyers. If demand is more elastic than supply, producers will bear the cost of the tax. Container fees, for example, may be collected in such a way that the beneficial cargo owners (BCOs), such as Wal-Mart or Target, pay the tax. But they may be able to pass on some or all of the cost of the tax to consumers by raising retail prices.

Table 1.1 Impacts of Fee Types

Fee Type	Fee Payees	Mechanism of collection	Likely location of Collection
Vehicle or fuel related fees (e.g., combined licensing fee, special fuels tax)	Trucking companies	There is a state level process in place for collecting vehicle and fuel related fees.	Statewide
Port related charges (e.g., container fee; bulk cargo fee)	Trucking companies or Beneficial Cargo Owners (as in LA/Long Beach)	No process in place; Port would likely collect the fee at the Port gates from trucking companies or would develop a means to charge cargo owners directly.	At the Port
Rail car fees	Railroads	No process in place; the railroad and the state would need to develop a mechanism of collection.	On specific facilities
Road tolls	Trucking companies	State process in place for collecting toll revenues.	On specific facilities

- **Composition of panel should reflect funding contributions** – To maintain fairness, membership on the panel should be weighted to reflect approximate funding shares or contributions by each party, recognizing that funding shares may vary by project. This linkage between membership and contribution, or what may be called *nexus*, has two possible tiers of enforcement. The first tier would grant membership to stakeholders who pay for projects and allocate each with one vote. This principle is applied in the FMSIB, which requires that all participants in the freight project selection process “bring their checkbooks to the table.” A second tier would allocate votes according to the amount each member contributes to a particular project, or a dollar-weighted allocation of votes.

Often, final funding shares must be negotiated between the parties. Ideally, the negotiators would have access to high quality information comparing the degree to which candidate projects benefit the freight and public sectors. In practice, reliable quantitative analysis of project benefits is feasible for large-scale projects or bundles of smaller projects. For individual small projects, detailed analysis may not detect the benefits or allocate them among stakeholders.

- **Efficiencies can be gained by making use of existing institutions** – There are several existing bodies in Washington State that deal with the prioritization of transportation projects. In some cases, existing institutions could handle administration of a new tax or fee with minor modifications to the structure of the project recommendation panel.

Membership of a Freight Project Recommendation Panel

Membership in a freight project recommendation panel would vary based upon the type of tax or fee being administered. Nevertheless, there are categories of groups that would likely need to be considered for membership due to their responsibility to pay or collect the tax or fee; their potential to benefit from the transportation improvements; or their responsibility to safeguard the public interest. Table 1.2 below lists these groups, possible roles, and the mechanisms through which they would benefit from association with the panel.

If a large number of groups are interested in membership, it may be desirable to create a large advisory panel to accommodate them. The advisory panel would then inform the decisions of a smaller executive board.

The next section describes existing freight-related transportation project recommendation bodies or institutions in Washington State. The subsequent section discusses how existing bodies could be modified to handle administration of a new funding source.

Table 1.2 Types of Groups To Be Considered for Membership in a Freight Project Recommendation Panel

	Examples	Reasons for membership
Freight transportation industry representatives	Trucking companies, shipping companies, railroads	<ul style="list-style-type: none"> Responsible for paying user fees (directly or indirectly) Unique knowledge of freight industry transportation needs
Freight cargo owners	Target, Wal-Mart, Home Depot	<ul style="list-style-type: none"> Responsible for paying user fees (directly or indirectly) Unique knowledge of freight industry transportation needs
Ports	Port of Seattle, Port of Tacoma, Port Terminal Operators	<ul style="list-style-type: none"> May be responsible for collecting user fees (if fees are port related) Unique ability to identify Port access improvement needs
Local	Public works staff at cities or counties, local elected officials	<ul style="list-style-type: none"> May help collect user fees (if collected at the local level) Responsible for contributing public funds to projects Responsible for protect the public interest in areas where improvements are to be made May be involved in project implementation Assure consideration of freight impact mitigation projects
State government	Washington State Department of Transportation (WSDOT), Washington State Legislature	<ul style="list-style-type: none"> May help collect user fees (if collected at the state level) Responsible for contributing public funds to projects Responsible for protecting the public interest in areas where improvements are to be made May be involved in project implementation for projects on state highways

1.3 EXISTING PROJECT RECOMMENDATION BODIES

Understanding the current role of existing project recommendation bodies is a necessary first step in determining if they could be modified to handle administration of a revenue stream dedicated to freight investments, or whether a new panel would need to be created for that purpose. Existing bodies include the following

- Freight Mobility Strategic Investment Board (freight projects only).
- WSDOT and the Washington State Legislature. WSDOT regions recommend transportation projects to be funded by the legislature. Many of these projects have freight benefits though they may not be referred to as freight projects.
- WSDOT Freight Rail Assistance Program (rail projects only).
- Transportation Investment Board Urban Corridors Program (freight and nonfreight projects).
- The Freight Action Strategy Team or *FAST* partnership (freight projects only).

Note that all of these bodies, except WSDOT, are focused primarily on implementing small, locally based projects.

Freight Mobility Strategic Investment Board

The Freight Mobility Strategic Investment Board (FMSIB) is an independent Washington State agency that allocates state funding to freight improvement projects.

- **Amount and type of funding** - FMSIB receives about \$6 million a year in state transportation funds. One-half of the funding comes from fuel taxes (a statutory transfer from the Transportation Partnership Account); and one-half comes from vehicle weight fees (statutory transfer from the Multimodal Account)⁷.
- **Size and scale of projects** - The majority of FMSIB grants are for projects implemented at the local level (the sponsor is either a city, county, port, or WSDOT); and are relatively small in scale (total project needs in the tens of millions). The average grant amount provided by FMSIB in the past has been about \$2.5 million⁸. However, FMSIB occasionally contributes larger amounts to high-cost projects of regional and statewide significance. For example,

⁷ Source: Washington State Transportation Resource Manual, 2007.

⁸ Based on all FMSIB projects completed prior to August 2008.

FMSIB is planning to contribute \$50 million to the SR 509 improvement project, which has a total cost of over \$1 billion.⁹

- **Makeup of project selection panel** – The FMSIB Board is comprised of twelve representatives appointed by the Governor. The Board includes representatives from WSDOT, four representatives from local governments (currently the Cities of Yakima and Pasco, Pierce, and Snohomish Counties), representatives of the Ports of Seattle and Pasco, one representative from the Governor’s office, and four freight industry representatives (currently Hogland Transfer Company, Puget Sound Steamship Operators Association, and two from the Burlington Santa Fe (BNSF) Railway).
- **Project selection process** – FMSIB scores candidate projects according to several criteria. FMSIB criteria take into account the perceived benefits of freight versus public benefit in determining the level of funding it will provide to a project. Local project sponsors are then provided with the grant money to implement the project.

WSDOT/ State Legislature

WSDOT has a broad mandate to maintain and improve the state highway system. That role includes identifying projects with freight benefit and recommending them to the legislature for funding.

The projects selected by the legislature are not always singled out as freight projects, since they have public benefits as well; however, WSDOT has always considered benefits to freight as a factor in project selection. In a recent analysis of currently programmed highway projects, it determined that more than 300 of the projects in the “Nickel” Transportation Funding Package and 35 of those in the Transportation Partnership Package have medium or high freight benefits¹⁰.

- **Amount and type of funding** – Once projects are selected by the legislature, they receive funding from one of the State’s general highway accounts, the Nickel Account, and the Transportation Partnership Account¹¹. The accounts are funded primarily through the state fuel tax and motor vehicle-related licenses, permits, and fees. Some of the fees that feed these accounts are

⁹ Source: FMSIB unfunded or partially funded project lists, as shown in the WSDOT Freight Mobility Joint Report on Washington State Freight Highway and Rail Projects, September 2008.

¹⁰Source: WSDOT Freight Mobility Joint Report on Washington State Freight Highway and Rail Projects, September 2008.

¹¹Although most funding for freight projects has come from general sources, some revenues have been dedicated to freight improvement in the past – for example, the I-3 fund for Economic Initiatives focused on improving freight mobility.

freight related (e.g., the combined licensing and weight fee paid by truck owners), but they are comingled with other funding sources.

- **Size and scale of projects being funded** - Of the programmed Nickel and Transportation Partnership projects identified by WSDOT as having medium or high freight benefits, state funding amounts ranged from a few million to hundreds of millions of dollars.
- **Makeup of project selection panel** - The final project selection panel for freight-related (and all other) highway projects is the state legislature and governor. WSDOT informs the decisions of the legislature by identifying and prioritizing freight projects. Members of the freight industry are not directly represented in the decisions of the legislature, but have significant influence through a collection of lobbyist interests, and have indirect input into WSDOT's project identification and prioritization process. For instance, WSDOT recently conducted interviews with freight shippers and carriers to determine their most pressing transportation needs. Interview results are being incorporated into the State's Highway System Plan¹², which will ultimately inform the legislative project selection process.
- **Project selection process** - WSDOT freight project proposals fit into the process used for all projects in the Department's overall project prioritization and construction program. The steps include identifying needs and deficiencies, exploration of solutions, and comparison of the costs and benefits of possible solutions to determine their priority. There is no differentiation between the freight and nonfreight share of project costs.

WSDOT Freight Rail Assistance Program

WSDOT Freight Rail Assistance Program (FRAP) provides grants to support rail projects where the rail location or the project concerned is of strategic importance to the state as well as the local community. WSDOT also runs a Rail Infrastructure Bank that provides loans to improve rail lines. The loan program is not discussed in detail here.

- **Amount and type of funding** - The FRAP provides about \$2.5 million in loans and grants per biennium¹³.
- **Size and scale of projects being funded** - FRAP funds are directed toward rail projects, where it is difficult to gain a contribution and where the rail

¹²Development of the Highway System Plan (HSP) is one of the first steps in WSDOT's prioritization process. It involves canvassing all of the highway deficiencies and suggesting solutions to the deficiencies. The most important projects in the HSP ultimately reach the legislature for review and selection.

¹³ Source: WSDOT Freight Office web site:
<http://www.wsdot.wa.gov/Freight/Rail/GrantandLoanPrograms.htm>.

location or the project concerned is of strategic importance to the State, as well as the local community. Although the FRAP funds are intended to be used on larger rail projects, the FRAP funding share tends to be relatively small in the hundreds of thousands of dollars.

- **Makeup of project selection panel** – Projects are selected by the WSDOT Freight office and then sent to the Governor and legislature for approval.
- **Project selection process** – Projects are prioritized according to several criteria, including the financial viability of the proposal, cost/benefit analysis of project benefits, economic development benefits, safety improvements, rail corridor preservation, reduction of delay on the statewide railroad system, geographic balance, reduce impacts to roads, environmental benefits, and other factors. WSDOT prioritizes the applications using criteria developed by the Department, and sends a prioritized list of projects to the Governor’s office for determination about which projects to submit to the legislature. The legislature will consider the project recommendations and decide which projects to fund in the upcoming budget.
- **Negotiation of funding responsibility** – The State’s funding share is determined through the project selection process and is constrained by available funds. There is not a project-by-project negotiation of funding shares.

Transportation Improvement Board Urban Corridors Program

The Washington State Legislature created the Transportation Improvement Board (TIB) to foster state investment in quality local transportation projects. TIB is an independent state agency that distributes street construction and maintenance grants to 320 cities and urban counties throughout Washington State. Grant funding comes from revenue generated by 0.3 cents of the statewide gas tax.

TIB administers several funding programs with an annual \$112 million budget. The program most focused on freight mobility is its Urban Corridor Program (UCP). The purpose of the program is to improve the mobility of people and goods in Washington State by supporting economic development and environmentally responsive solutions to statewide transportation needs. The UCP is not dedicated exclusively to “freight” projects; rather, freight mobility is one of several considerations in the project scoring process.

- **Amount and type of funding** – In 2009, the UCP provided a total of \$25.9 million to city and county sponsors throughout the State of Washington. Funds come from a 0.3-cent set aside of the state fuel tax.

- **Size and scale of projects being funded** – In 2008, the average grant amount was \$3 million¹⁴. Although projects are funded throughout the State, over one-half the funding in 2009 was concentrated in the Puget Sound region.
- **Makeup of project selection panel** – The Board is composed of six city members, six county members, two WSDOT officials, two transit representatives, a private-sector representative (not currently from the freight industry), a member representing the ports (currently from the Port of Vancouver), a Governor appointee, a member representing nonmotorized transportation, and a member representing special needs transportation.
- **Project selection process** – Projects are selected for the UCP based on a 100-point scoring system and five major types of criteria: safety, sustainability, local support, economic development, and mobility. Some of the “mobility” criteria are directly freight related (e.g., 0 to 3 points are received if the project is on a designated truck route; 0 to 5 points are awarded if the project creates or improves freight facility access), and others are indirectly related (improvement of roadway level of service earns up to 10 points). TIB projects often receive funds from several sources beyond the TIB. TIB funds projects based on their rank and available funding.

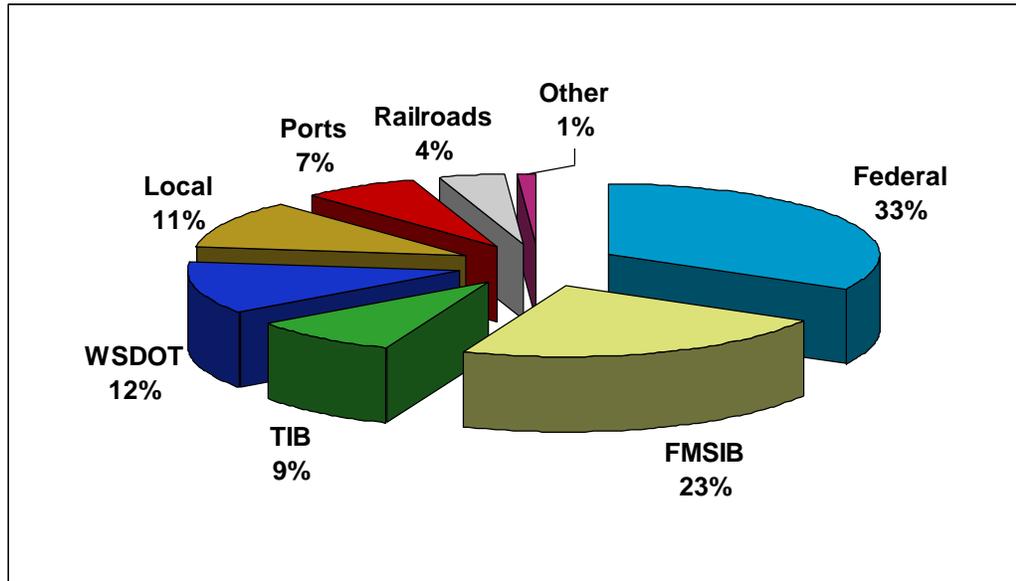
Freight Action Strategy Team (FAST Corridor)

The Freight Action Strategy Team (FAST Corridor) is not an organization, but rather a partnership interested in improving freight movement in the Everett-Seattle-Tacoma Corridor. The partnership originated as a method to increase funding participation by the Federal government in local freight improvement projects, and has become a national model for organizing and promoting local freight improvement projects. FAST is administered by the PSRC through funding provided by percentile contributions of FAST Federal funding.

- **Amount and type of funding** – FAST collectively seeks Federal funding for projects based on its prioritized list and consensus of the members. There is no dedicated funding stream that supports FAST; it serves as a “pass through” for Federal project earmarks. Figure 1.1 below shows the proportion of FAST funding by source.

¹⁴In 2008, the nine projects totaling \$27.3 million were selected for funding through the UCP.

Figure 1.1 FAST Funding by Source



Source: PSRC – Innovative Finance, a Project Selection Case Study, Panel Remarks, June 2006.

- **Size and scale of projects being funded** – FAST projects are primarily locally based projects with total costs of \$30 million to \$40 million¹⁵. The average amount of Federal funds (earmarks) allocated per project is \$3.7 million (1998 to 2008).
- **Makeup of project selection panel** – The FAST partnership is made up of 26 local cities, counties, ports, Federal, state, and regional transportation agencies, railroads and trucking interests.
- **Project selection process** – The FAST partnership identified specific project selection and prioritization processes for each of the two phases. The first phase concentrated on rail-related projects and the second focused on truck related projects. Member organizations work together to identify strategic priorities and help get them funded.

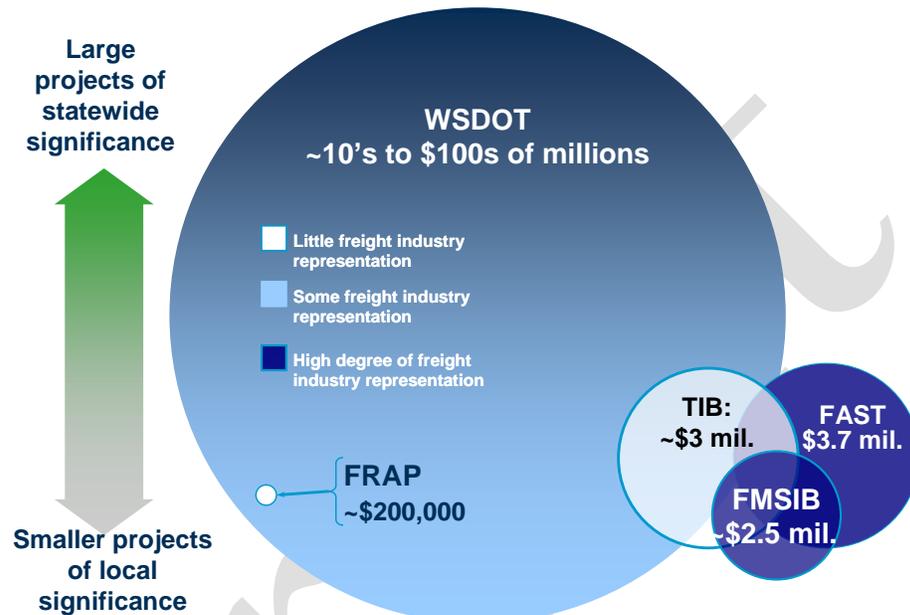
Summary and Comparison

The project recommendation bodies mentioned above each play a particular role and have an area of focus. Figure 1.2 below graphically compares FMSIB, TIB, WSDOT, FRAP, and FAST in terms of the average funding amounts they provide; the scope and scale of projects; and the degree to which they

¹⁵Source: WSDOT. Average total project size for FAST Phase I projects was \$39 million (2007 data); average size of Phase II projects was \$35 million (2007 data). Average project award (from Federal earmarks) 1999 to 2008 was \$3.7 million.

incorporate freight industry representatives into the project prioritization process.

Figure 1.2 WSDOT, FMSIB, TIB, FAST and FRAP
Comparison of Average Grant Amounts, Types of Projects, and Degree of Freight Representation



Notes: Figure shows average grant amounts provided per project by WSDOT (for currently programmed projects with medium and high freight benefits); TIB (for November 2008 projects in the Urban Corridors Program); and by FMSIB (completed projects). The FAST Corridor coalition does not provide grants, but does allocate Federal earmarks among projects; the average Federal earmark amount per project (1998 to 2008) was \$3.7 million. FMSIB's board includes four private-sector freight industry representatives and two ports; WSDOT includes freight industry input in its project prioritization process; TIB's board does not include freight industry representation other than from the Port of Vancouver. FAST includes representation from railroads, trucking companies, and ports.

Implications of Fee Type for Structure of Recommendation Panel

The type of user fee selected to fund freight improvement directly impacts the structure of the project recommendation panel. This section reviews the user fees identified in Task 8 of this study and discusses how their selection would impact the structure of the project recommendation panel. It also discusses how, in some cases, existing bodies could be altered to allow administration of the new funds. The alteration might involve changing the composition of the panel to better represent key freight or public sector stakeholders; or changing the project selection process to allow more rigorous analysis of the costs and benefits of major projects.

The types of user fees discussed in Task 8 include the following:

- Rail or roadway tolls;
- Port-related charges (e.g., container fee or bulk cargo fee); and
- Existing or new truck freight-related fees (combined licensing fee, special fuels tax, motor vehicle excise tax, truck vehicle miles traveled (VMT) fee, and truck weight-distance charge).

Roadway Tolls

In Washington State, toll revenues have historically been limited to use on the tolled facility alone. Therefore, no project recommendation panel would be necessary to determine how to spend toll revenues.

Freight stakeholders could instead play a role in the identification of facility improvements that could be funded with tolls and that would benefit the freight industry. This already takes place to some extent. WSDOT, for example, conducted extensive interviews with freight stakeholders to identify projects for its Highway System Plan¹⁶, some of which will be funded with tolls.

Railway Tolls

Tolls on railroads are rare in the United States due to the fact that freight railroads usually own their track and have no reason to toll themselves.

A rationale for tolling may arise in cases where multiple railroads share a rail corridor (similar to the Alameda Corridor in Los Angeles described in Task 8), or where a railroad borrows public capital to repair a facility and repays the public sector gradually by tolling itself (similar to the case of the Shellpot Bridge described in Task 8).

These examples illustrate that if rail tolling occurs, it would likely be for the purpose of improving a specific facility, not to generate an ongoing revenue stream for use on multiple projects. Railroads are private companies that compete with one another; they would have limited reason to provide ongoing revenues to support projects that might benefit their competitors. Therefore a project recommendation panel would not likely be necessary in the case of rail tolling. It would be more appropriate for the state or another entity to work with railroads to identify opportunities for improving shared infrastructure, and to obtain funding commitments from the railroads on a project-by-project basis.

¹⁶Source: WSDOT Freight Mobility Joint Report on Washington State Freight Highway and Rail Projects, September 2008.

Port Charges

Through the OffPeak program in the Ports Los Angeles and Long Beach, the Ports (working through a nonprofit entity), collect and administer container fee revenues.¹⁷ Washington State's ports might also play a key role in the collection of any new port user charges, and could also have the responsibility for forming and leading the project recommendation panel charged with administering the funds.

It would be appropriate for a new project recommendation panel formed by the ports to contain adequate representation from the port user groups responsible for paying the fee (e.g., trucking, shipping, and rail companies) and the public agencies that would help implement projects and provide the public sector's share of project costs. All these groups would share in the identification of transportation improvement needs.

For example, if a container fee were collected at the Ports of Seattle and Tacoma for the purpose of funding local and regional port access improvements, the project recommendation panel might include the following:

- The Ports of Seattle and Tacoma;
- Shipping, rail, and trucking companies that serve the Ports;
- Major importers (and exporters, if they also pay the fee) (e.g., Target);
- The port cities of Seattle and Tacoma, represented by staff of city transportation/public works departments or by liaison to local freight committees (the City of Seattle has a Freight Advisory Committee);
- Local cities impacted by freight movements; and
- WSDOT.

The relative representation of these groups would vary depending on their expected average share of project costs and the incidence of the fee (see general principles above).

An alternative to forming a new project recommendation panel would be to modify one of the existing bodies described previously. Table 1.3 below lists some of the modifications that would help ensure adequate representation of parties.

¹⁷The members of the West Coast Marine Terminal Operator Agreement (WCMTOA) have contracted by the Port of Los Angeles and Port of Long Beach to collect the Clean Truck Fee (CTF) required by the ports as part of their Clean Trucks Program. To comply with the requirement to collect the CTF, the terminal operators have established a new company called PortCheck Inc. PortCheck will operate similarly to PierPASS Inc., which was established by WCMTOA in 2005 to create and operate the OffPeak program at the Los Angeles and Long Beach ports. PierPASS collects the Traffic Mitigation Fee that funds the five weekly OffPeak shifts on nights and Saturdays.

Table 1.3 Existing Project Recommendation Bodies
Suggestions for Modification if Charged With Adminstrating Port User Fee Revenues

Suggested Changes to Allow Administration of Port User Fee Revenues	
Freight Mobility Strategic Investment Board	<ul style="list-style-type: none"> • Designate members representing ports (Port of Seattle is already represented). • Designate one or more members representing major importers or BCOs (e.g., Costco, Target) who are major port users. • Designate one or more of the city members representing cities impacted by port freight movements. • Modify the project selection process to allow rigorous, quantitative cost/benefit analysis of major projects (e.g., those above a certain cost threshold, such as >\$100 million). FMSIB's projects are currently small enough not to warrant detailed cost benefit analysis.
Transportation Investment Board	<ul style="list-style-type: none"> • Freight industry stakeholders are not currently represented on the TIB board, so TIB board would to include adequate representation of freight stakeholders. Alternatively, a freight project panel within the TIB could be created which would include freight stakeholders. • To enhance focus on freight, it may be appropriate to increase the weighting of freight-specific considerations in TIB's project selection process. Alternatively, a separate program could be developed (apart from the UCP) that would focus selection criteria only on freight considerations.
FAST Corridor	<ul style="list-style-type: none"> • FAST has the appropriate representation to represent freight interests and is housed in the PSRC. To take on the task of administering the fee revenues, FAST would need to be institutionalized and modified into a more formal structure. An objective project selection and recommendation process would need to be developed and supported by quantitative analysis where justified.

An alternative to creating or modifying a project recommendation body would be to allow the legislature to direct container fees to a special account for use on projects that it selects. This was the original proposal for the revenues that would have come from the container fee proposed in SB 5207, which would have been directed to a "Freight Congestion Relief Account" to fund a pre-selected set of projects.

Truck-Related Fees

It is current practice for the State to pool revenues from truck-related fees and taxes into its general account that fund WSDOT's biennial budget expenditures. This budget is prepared by internal WSDOT staff and submitted to the Transportation Commission and State Legislature. Priorities for the trucking industry are not represented by truckers as members of a special panel. If existing truck-related fees are increased or new fees implemented, the Legislature may choose to program the fees as it does currently, without dedicating the funds to a special account or giving a special panel oversight.

Alternatively, the Legislature could give all or a portion of the funds to one of the existing project recommendation panels described previously (e.g. FAST, FMSIB, TIB). Trucking interests are currently represented in FAST and FMSIB, but are not represented on the TIB.

1.4 SUMMARY

The steps required to administer a new freight-related source of funds depend on the nature of the funding source. Roadway or railroad tolls dedicated to re-pay debt for the facility's construction and fund its maintenance and operation would not require the creation of a new panel. If port related charges are to be implemented in a manner consistent with what has occurred in Los Angeles/Long Beach, a project recommendation panel would be appropriate and probably necessary. Alternatively, the legislature could act as the project recommendation body by dedicating the revenues to a special account, as was planned for the original container fee revenues proposed under SB 5207. The legislature could also direct the revenues towards an existing project recommendation panel (e.g. FAST, FMSIB, TIB).

New (or increases to existing) truck-related fees would be collected by the state and could be used in a manner consistent with current practice, which is to fund a mix of projects that benefit a range of user groups, including freight. Alternatively, the state could direct the additional revenues to increase the capacity of an existing project recommendation body, such as FAST, FMSIB, or TIB.

Key considerations are:

- (1) **The degree to which the legislature desires to maintain the nexus between the source of the fee revenues and the projects that result.** Nexus involves striking a balance between the amount of revenue contributed with the amount benefits received. In addition, nexus involves a proportionate say in the selection of projects. If railroads, for example, contribute 80 percent of the funding to this project selection panel, they will demand 80 percent of control. Throughout the Freight Investment Study, one of the most ardently stated concerns from the private sector stakeholders was the possibility of exclusive public agency control over programming freight sector funds to transportation improvements that did not benefit freight proportionally.
- (2) **The degree to which stakeholder concerns can be adequately represented through traditional project planning and programming processes.** Freight issues are currently considered in WSDOT's planning and programming process, but this process does not explicitly include representation from the freight industry. Therefore, private stakeholders may insist on having direct participation in the use of new fee revenues to ensure their concerns are addressed.

2.0 Benefit-Cost Analysis

2.1 INTRODUCTION

“Who should pay and how much?” is a frequent question in freight project finance. According to the principle of funding nexus (also known as the user pays principle), freight stakeholders and government agencies would pay in proportion to the project benefits they receive, such as travel time reductions and travel time reliability improvements.

In practice, current methodologies require sophisticated models and extensive data to determine who benefits from a project. One of the main obstacles to the quantification of freight project benefits is the lack of robust freight data and analysis tools. The available data can show the volume of freight flows by commodity type between counties, but it does not reliably show which roadway corridors are being used by which industries. There are reasonably reliable analytic tools capable of quantifying the benefits of specific projects, but they are only available in the Puget Sound metropolitan area¹⁸.

Furthermore, estimating the full extent and long-term of benefits remains beyond the state-of-the-practice methods. For example, the removal of highway bottlenecks that cause severe, recurrent congestion for truckers accessing the Ports of Seattle or Tacoma will generate travel time savings in the short term that may be quantified and monetized with the existing analytic tools. But these first-order benefits may lead to firms streamlining their logistics and relocating more of their operations to the state. These medium term adaptations can produce second-order benefits that may significantly exceed the first order benefits.

Given these limitations, it is not surprising that there have been few attempts in Washington State or nationally to quantify freight project benefits and to apportion funding responsibility accordingly. Responsibility for funding projects is usually negotiated amongst the groups who believe they stand to benefit, but the negotiations are informed by largely qualitative information.

Nevertheless, the *Freight Investment Study* sought to demonstrate how the negotiation of funding responsibility can be made more objective for certain types of projects – specifically, large highway projects or bundles of smaller road projects in the Puget Sound region using the available analytic tools and data.

¹⁸ These limitations are well-recognized and work is underway to overcome them. For example, the Freight Systems Division of the Washington Department of Transportation continuously works to improve the quality of data and analysis tools. The Statewide Freight Data Analytic Program and the Statewide Rail Benefit/Cost Methodology are current examples.

For these types of projects, it is possible to estimate the share of first-order project benefits accruing to different vehicle types: passengers, light commercial vehicles, medium trucks, and heavy trucks. These vehicle types can be used as simple proxies for the public (which can be broken out by trip purpose) and a first cut at three categories within the freight sectors. Light- commercial vehicles, for example, include two axle trucks and taxicabs. The former include final delivery of small parcels (UPS, FedEx). While the heavy trucks category includes container movements, it comprises more than just port related traffic. It would be possible to isolate a subset of the heavy truck activity related to trips that have the Ports as either an origin or destination.¹⁹

The selection of these project types is an artifact of the strength and availability of analysis tools and data. The Puget Sound Regional Council (PSRC) region possesses Washington State's most robust tools for analyzing transportation project benefits - its regional travel demand model and associated cost-benefit analysis tool. These tools can estimate and disaggregate the benefits of large highway projects or packages of smaller projects.

Although there are many worthy freight projects outside the PSRC region, the tools available for estimating their benefits are far more limited or non-existent. Similarly, there are limited tools for analyzing the benefits of rail projects. Data on rail movements can only be obtained with the cooperation of railroads, which may not wish to release it. The simulation models used to estimate benefits for rail are expensive and require copious amounts of proprietary data.

For these reasons, this study focused on demonstrating the methodology for estimating and disaggregating the benefits of freight improvements of three road projects (or groups of projects) in the PSRC region:

- The I-5/SR 509 Corridor Completion Project, a highway extension and improvement in the Puget Sound region near the Seattle-Tacoma airport;
- The SR 167 Extension Project, a highway extension and improvement project in the Puget Sound Region;
- A set of 15 smaller road projects, including widenings, interchange improvements, and grade separations. These projects are too small to be analyzed in isolation; the impacts of individual projects would not be detected by the Puget Sound Regional Council travel demand model. Since they are similar in scope and scale, projects were grouped together for analysis.

¹⁹ This isolation of port-related heavy truck trips (i.e., select-link analysis) was not undertaken because the entire share of heavy truck benefits was already small compared to the passenger benefits.

These projects were also selected for analysis because they have been previously identified as being of importance for the freight industry²⁰ and are faced with significant funding shortfalls.

The cost-benefit analysis presented below for each project shows benefits for medium and heavy trucks, which constitutes the freight sector, and benefits for passenger vehicles and light commercial, which comprises the public sector. These shares of project benefits are then used to demonstrate how funding responsibility may be allocated. By illustrating this process, future discussions of freight funding responsibility can be better informed.

2.2 METHODOLOGY

The project benefits presented below were computed by staff of the PSRC through its regional travel demand model and associated benefit cost analysis tool.

Benefit cost analysis is a form of social accounting that seeks to monetize all of the impacts associated with an investment so they can be compared to its costs. A full description of the theory of benefit cost analysis and the assumptions used for this study will be contained in an appendix that will accompany the final version of this report.

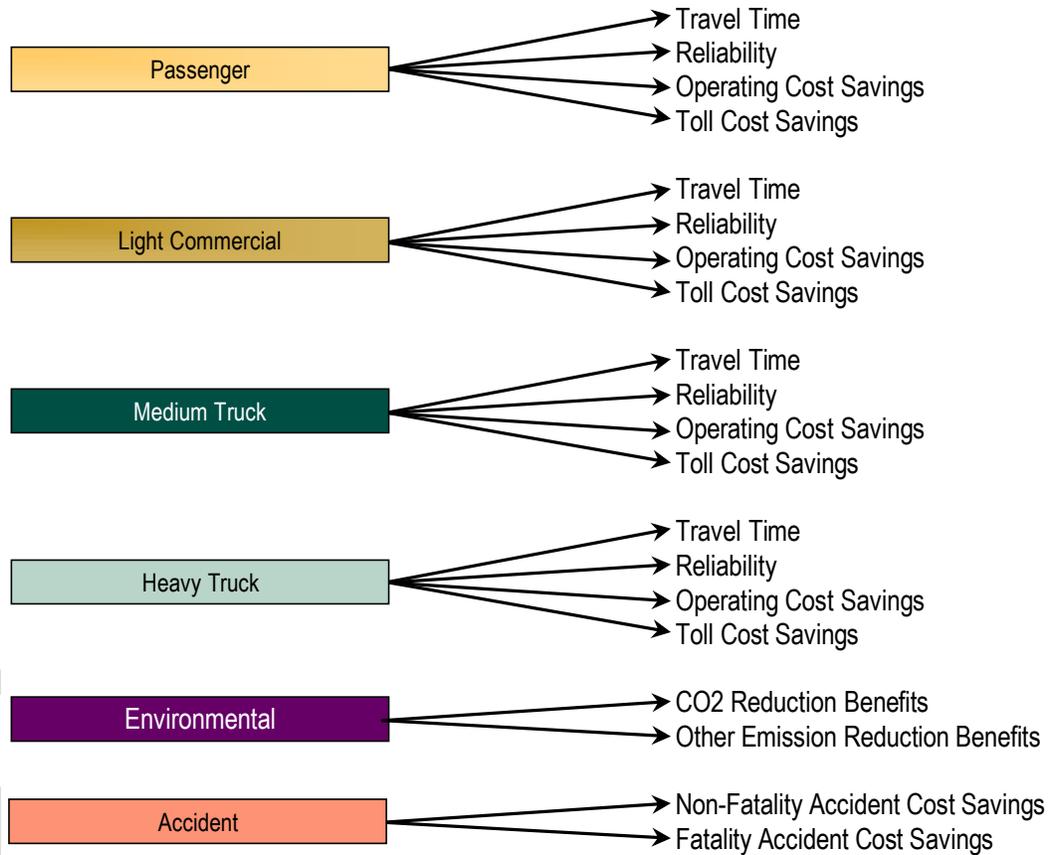
The starting point for any analysis of transportation investments must involve a systematic means of estimating the project's effects on traffic and travel demand. The PSRC BCA tool was designed to make use of comprehensive databanks produced by the PSRC regional travel demand forecasting models. A project is characterized in the travel models' transportation networks for one or more analysis years, the models are run for both a build case (a network where the project has been implemented) and a base case (a network where the project has not been implemented).

The PSRC BCA tool generates estimates of user benefits (travel time savings, travel reliability benefits, vehicle operating cost savings, and accident risk reduction benefits, and vehicle emission reduction savings) directly from mathematical transformations (consumer surplus calculations) of the differences between the build and base cases. Specifically, the tool computes eight different types of transportation project benefits for each scenario, shown in Figure 2.1 below. Travel time, reliability, operating cost savings, and toll cost savings benefit are grouped by type of system user – passenger vehicle, light commercial, medium truck, and heavy truck.

²⁰ To identify projects of importance, the priority freight project lists of the Freight Mobility Strategic Investment Board, the Washington State legislature, the FAST corridor, and the Regional Blueprint for Progress document (only projects listed as having freight benefit), were compared.

Note that the “benefits” may be both positive or negative, as would be the case if travel times were to increase as a result of some intended action. This is potentially confusing terminology, as a negative benefit seems like an oxymoron. By convention, the results of the investment are captured as benefits (whether good or bad), while the costs of the investment are limited to the actual costs (capital, operating, etc.) associated with implementing the project or policy.

Figure 2.1 Types of Benefits



The monetized benefits of each of the three projects (SR 509, SR 167, and FAST-FMSIB corridor projects) are presented below.

2.3 I-5/SR 509 CORRIDOR COMPLETION

Project Description²¹

The SR 509 corridor project would complete the missing link between I-5 and the Sea-Tac Airport, providing a critical north-south corridor alternative to I-5 through Seattle and South King County.

The project includes the following elements, as listed on the WSDOT web site:

- Three miles of new freeway;
- New 509 interchange access at S. 200th Street, the proposed Sea-Tac Airport South Access roadway, and SeaTac's new 24th/28th Avenue S. corridor; and
- New lanes on I-5 between S. 210th and S. 272nd Street vicinity, including new connections and interchange reconstruction at SR 516.

The SR 509 project has been listed as a priority freight project by the Washington State Legislature in its legislative budget, the Freight Mobility Strategic Investment Board, the Washington State Transportation Plan, and the Regional Blueprint Plan.²²

Overall Project Benefits²³

The SR 509 is expected to provide travel time reductions, improved travel time reliability, and improved accessibility benefits, including the following:

- Provide direct route for freight and general traffic movements:
 - To Puget Sound Ports; and
 - To industrial areas of Seattle and South King County.
- Allow up to 9,000 trucks per day to bypass I-5, SR 99, and local streets.
- Provide southern access to Sea-Tac International Airport.
- below shows overall percentage travel time reduction):
 - Total public benefit of travel reduction: \$100 million per year.

²¹Project description information taken from the WSDOT SR 509 Project web site: <http://www.wsdot.wa.gov/projects/i5/sr509freightcongestionrelief/>.

²²The Regional Blueprint document laid out a program of high priority transportation projects that would have been funded by a 0.1 cent sales tax and a 0.8 percent Motor Vehicle Excise tax in Pierce, King, and Snohomish Counties. The measure did not obtain voter approval. If it had passed, it would have provided \$798 million (2006 dollars) in funding for the 509 project.

²³Source: WSDOT project web site: <http://www.wsdot.wa.gov/projects/i5/sr509freightcongestionrelief/>.

Figure 2.2 I-5/SR 509 Corridor Completion Project Map

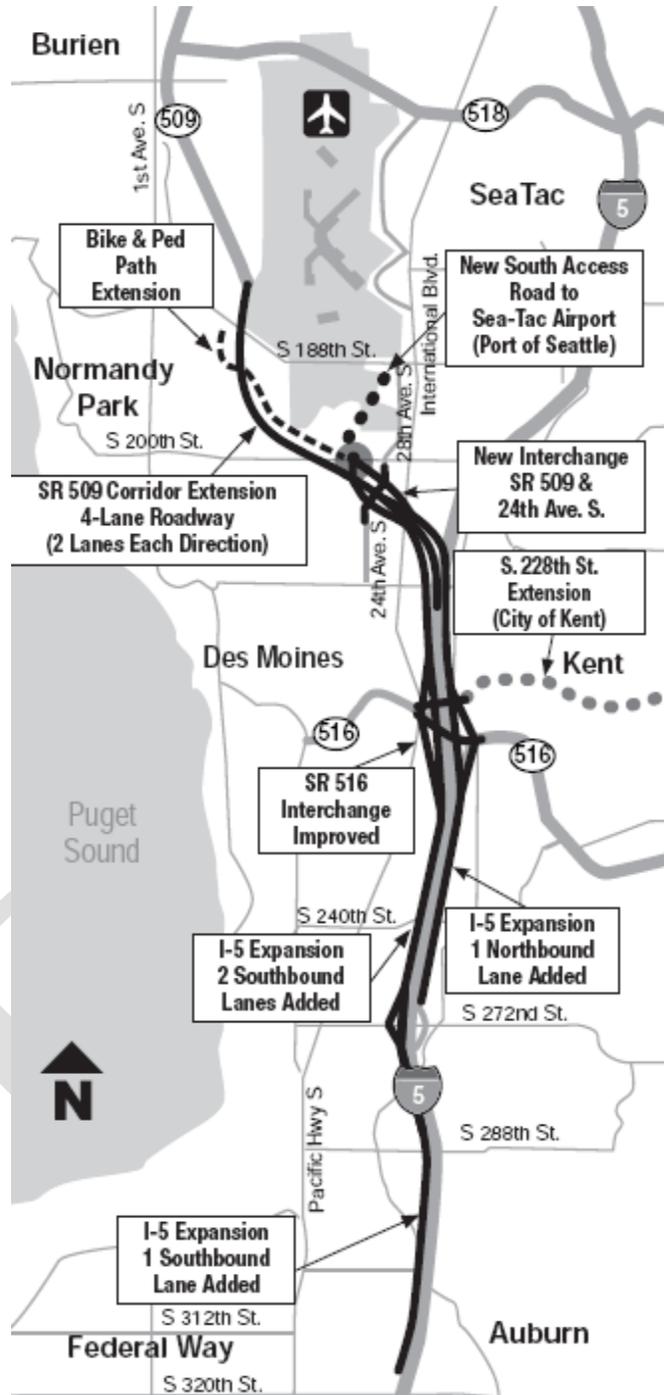
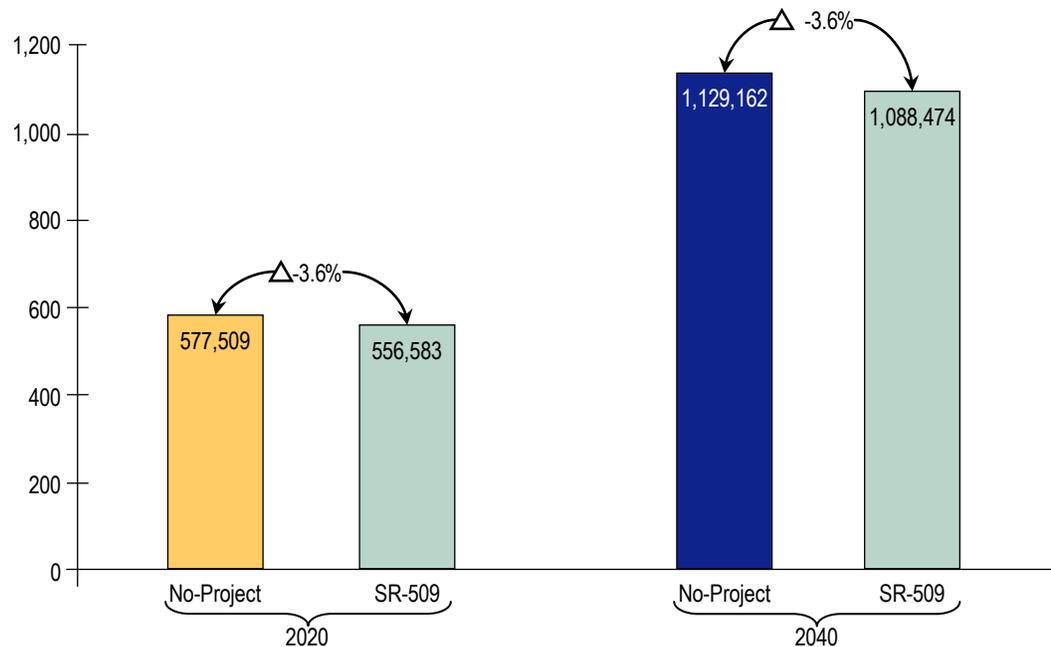


Figure 2.3 Performance of SR 509 in 2020 and 2040
Average Daily Vehicle-Hours of Delay



The modest improvements of 3.6 percent shown in Figure 2.3 are calculated for the entire region and are not isolated to the SR 509 corridor. A change of that magnitude for the aggregate delay through the region is a significant improvement. The benefit calculations would not be changed had a more isolated measurement of benefits been available, and the considerable effort needed to isolate the corridor level measurement was not within the scope of this study.

Comparison of Truck and Passenger Vehicle Benefits

Four types of benefits (travel time; reliability; operating cost; and toll cost) were calculated and compared for passenger vehicles and for light, medium, and heavy trucks.

Overall, passenger vehicles received the majority (57 percent) of project benefits. Light commercial vehicles received the next greatest share (20 percent), followed by medium trucks (16 percent) and heavy trucks (7 percent).

Travel time reduction provided the greatest benefit, estimated at \$5.76 billion of current dollars. Of this, passenger vehicles received 59 percent, light commercial vehicles received 19 percent, medium trucks received 15 percent, and heavy trucks received 7 percent. Reliability improvements also provided significant benefits, estimated at \$532 million total. In this case, however, heavy trucks received the majority of the benefits (75 percent), medium trucks received

15 percent, light commercial vehicles received 11 percent, and passenger vehicles did not receive any of the benefit.

Figure 2.4 and Figure 2.5 below compare the amounts and types of benefits in greater detail.

Figure 2.4 I-5/SR 509 Corridor Completion
Project Benefits (in Millions of Current Dollars, 2021 to 2050)

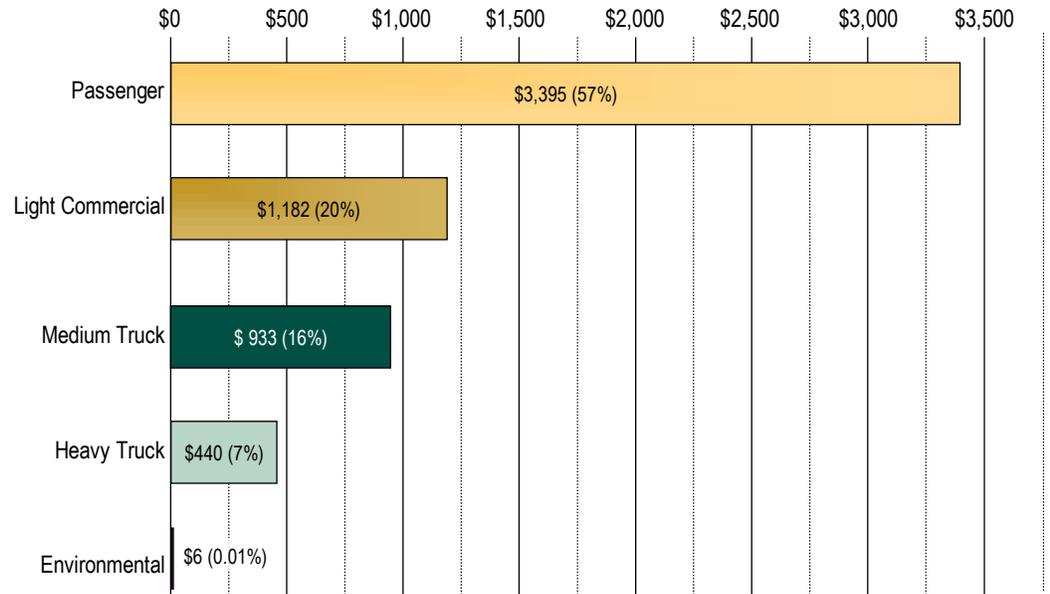
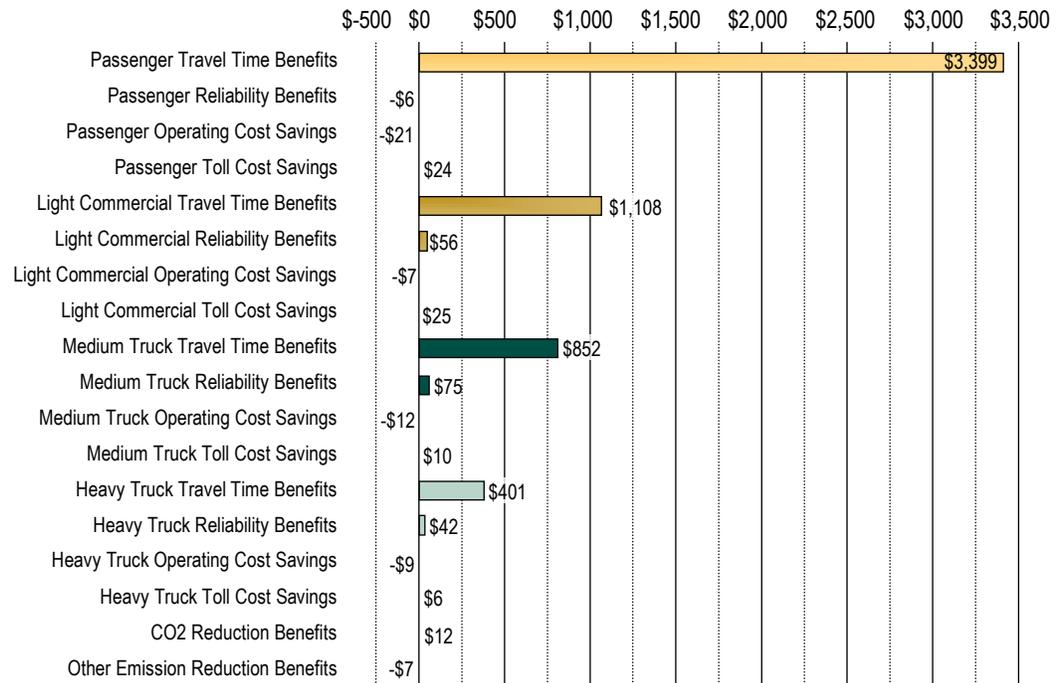


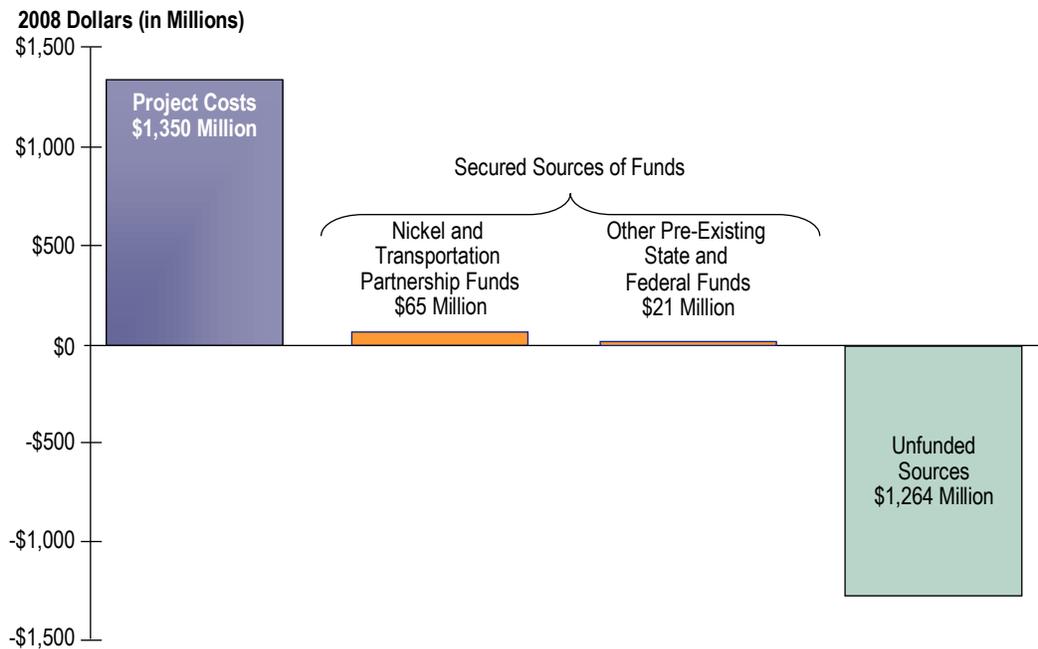
Figure 2.5 I-5/SR 509 Corridor Completion
Detailed Project Benefits (in Million of Current Dollars, 2021 to 2050)



Possible Funding Arrangement

The SR 509 project is estimated to cost \$1.35 billion. The project is largely unfunded at the current time. About \$86 million in state and Federal funding has been secured, but a funding shortfall of \$1.26 billion remains. Figure 2.6 shows the project finances as they currently stand.

Figure 2.6 I-5/SR 509 Corridor Completion
Project Financials (in Millions of 2008 Dollars)



Source: WSDOT.

If responsibility for paying project costs is to be strictly proportional to the share of benefits received, then:

- Passenger vehicles should pay 57 percent of the project costs, or \$770 million. An estimated \$48 million of this has already been dedicated to the project²⁴.
- Commercial vehicles should pay 20 percent of the project costs, or \$270 million. An estimated \$17 million of this has already been dedicated to the project.
- Medium trucks should pay 16 percent of project costs, or \$216 million. An estimated \$14 million of this has already been dedicated to the project.
- Heavy trucks should pay 7 percent of project costs, or \$95 million. An estimated \$6 million of this has already been dedicated to the project.

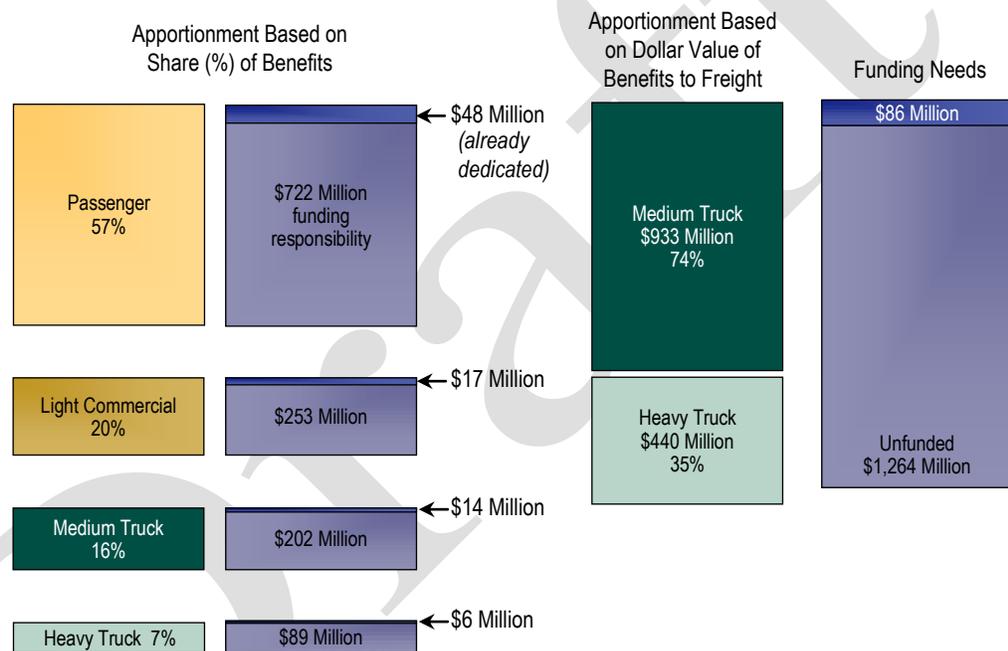
Another possibility would be to determine the freight share based on the dollar value of benefits received. Under this method of proportioning funding responsibility, medium truck user groups would be responsible for \$833 million

²⁴ The amount of dedicated funding by user group is unknown, since funds come from a variety of sources. Dedicated funding by user group was estimated based on the proportion of benefits received.

in funding, while heavy truck user groups would be responsible for \$440 million in funding. Some justification for this alternative method lies in the notion that trucks are more limited in their route choices than passenger vehicles, since trucks movements are regulated by local, state, and Federal governments. Consequently, trucks benefit more from improvements in the limited routes available to them than do passenger vehicles.

- Figure 2.7 graphically compares the two methods of apportioning funding responsibility.

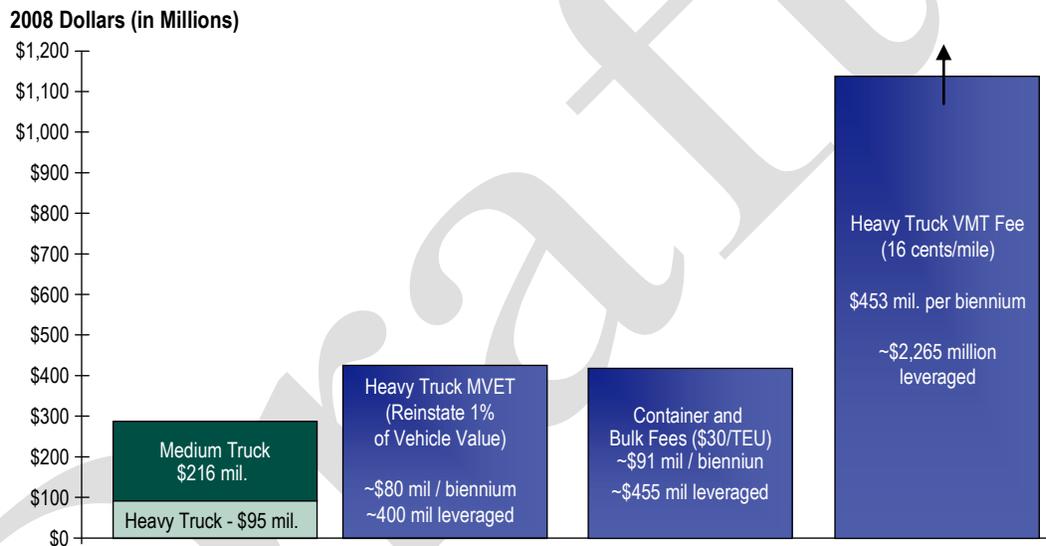
Figure 2.7 I-5/SR 509 Corridor Completion
Possible Funding Scenarios



- The freight (medium and heavy truck) combined share of \$311 million (using the proportional method) could be raised through imposition of one or more user fees. Possible user fees might include the following:
 - A Motor Vehicle Excise Tax (MVET) imposed on commercial trucks. For example, a one percent MVET on commercial trucks would raise approximately \$80 million in a biennium, or enough to nearly cover the freight share of project costs.
 - Container and bulk cargo fees. For example, a \$30 container fee could raise about \$91 a biennium, enough to cover the truck project share within about eight years.

- A heavy truck VMT fee. For example, a VMT fee of 0.16 cents per mile would raise about \$453 a biennium, well over the freight share of project costs.
- If these amounts were leveraged by selling bonds, about 10 times the annual revenue could be raised at one time.
- Note that the funding levels listed above are for illustrative purposes only. The levels are within the range of existing or historical levies in Washington State or elsewhere.

Figure 2.8 I-5/SR 509 Corridor Completion
Possible Funding Scenario



Note: MVET estimate based on historical MVET revenues inflated 5 percent a year (slightly less than historic rate of MVET revenue increase) to the current biennium. Heavy truck share of MVET revenues is estimated based on data in MVET study conducted by WSDOT. Container fee revenues based on 2007 import container volumes into Puget Sound ports.

It is important to note that even if the freight funding share could be raised through imposition of a freight user fee, the majority (more than 50 percent) of project costs would remain unfunded. Those funds would need to be raised through imposition of a tax or fee on passenger or light commercial vehicles.

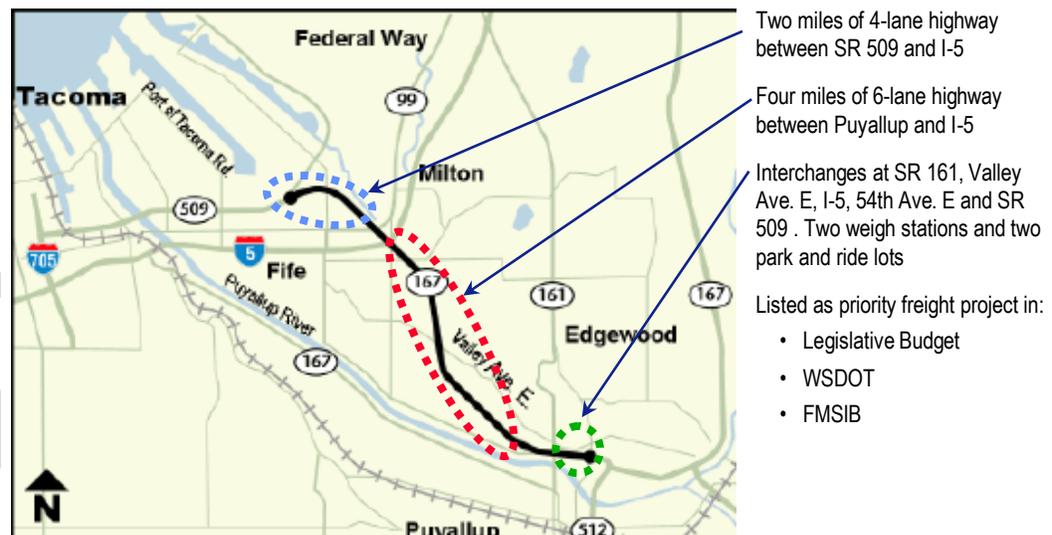
2.4 SR 167 PROJECT

Project Description²⁵

- The SR 167 Extension is a critical missing link in the State's highway network. Its completion is expected to improve safety and reduce congestion along local roads and freeways in the surrounding area.
- Two miles of four-lane highway between SR 509 and I-5.
- Four miles of six-lane highway between Puyallup and I-5.
- Interchanges at SR 161, Valley Avenue E, I-5, 54th Avenue E, and SR 509. Two weigh stations and two park-and-ride lots.

The SR 167 project has been listed as a priority freight project by the Washington State Legislature in its legislative budget, the Freight Mobility Strategic Investment Board, and in the Washington State Transportation Plan.

Figure 2.9 SR 167 Extension
Project Components



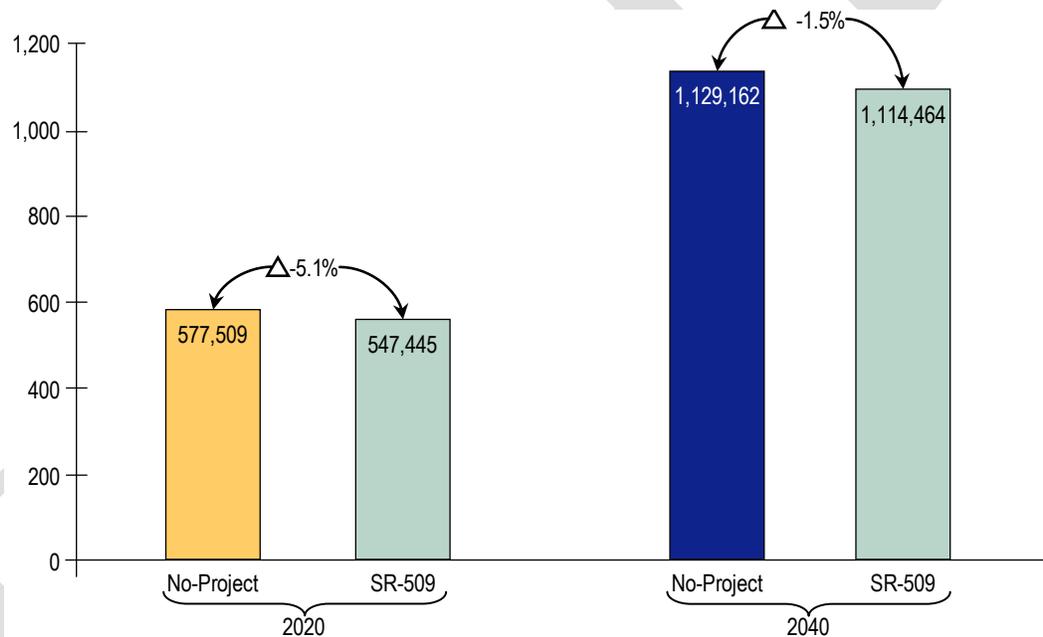
²⁵Source: WSDOT project web site:
<http://www.wsdot.wa.gov/projects/SR167/tacomatoedgewood/>.

Overall Project Benefits²⁶

The SR 167 project would:

- Reduce travel delays of freight and passenger traffic (overall travel time reductions are shown in Figure 2.10 below);
- Improve safety for traffic, pedestrians, and bicyclists;
- Improve access between SR 167 and I-5;
- Reduce flooded area along local creeks; and
- Improve air quality in the corridor

Figure 2.10 Performance of SR 167 in 2020 and 2040
Average Daily Vehicle-Hours of Delay



The modest improvement of 5.1 percent estimated for the project right after opening (Figure 2.10) is calculated for the entire region and is not isolated to the SR 167 corridor. A change of that magnitude for the aggregate delay through the region is a very significant improvement. The more modest improvement of 1.5 percent 20 years after opening indicates that growth in traffic has led to more roadway users traveling in the improved corridor to use SR 167, thus overwhelming the additional capacity. This convergence with the prior

²⁶Source: WSDOT project web site:
<http://www.wsdot.wa.gov/projects/SR167/tacomatoedgewood/>.

condition is common and demonstrates why continual investments are necessary.

Comparison of Truck and Passenger Vehicle Benefits

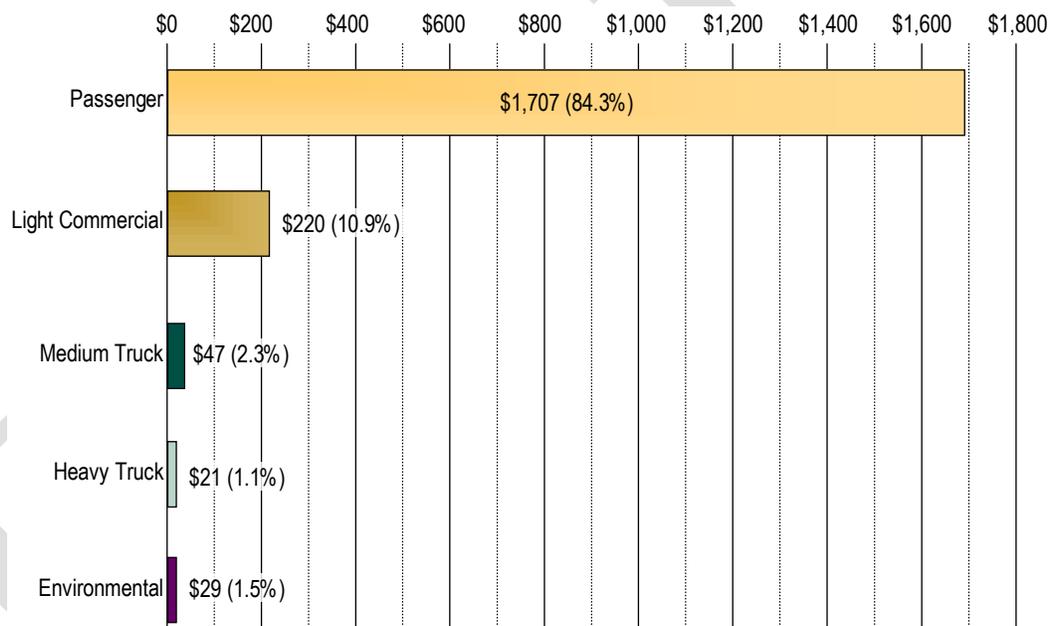
Four types of benefits (travel time, reliability, operating cost, and toll cost) were calculated and compared for passenger vehicles and for light, medium, and heavy trucks.

Overall, passenger vehicles received the majority (84.3 percent) of project benefits. Light commercial vehicles received the next greatest share (11 percent), followed by medium trucks (2.3 percent) and heavy trucks (1.1 percent).

Figure 2.11 compares the amount of benefit by user group.

Figure 2.11 SR 167 Extension

Project Benefits (in Millions of Current Dollars, 2021 to 2050)



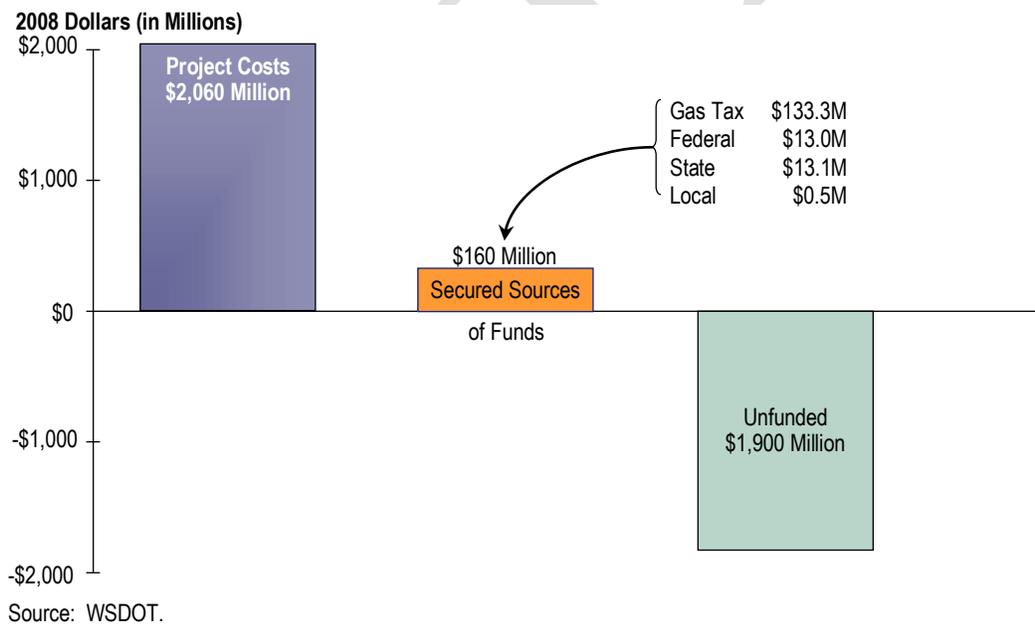
Possible Funding Arrangement

The SR 167 project is estimated to cost \$2.06 billion. The project is almost entirely unfunded at the current time. About \$160 million in state and Federal funding have been secured, but a funding shortfall of \$1.9 billion remains. Figure 2.12 shows the project finances as they currently stand.

If responsibility for paying project costs is to be strictly proportional to benefits received, then:

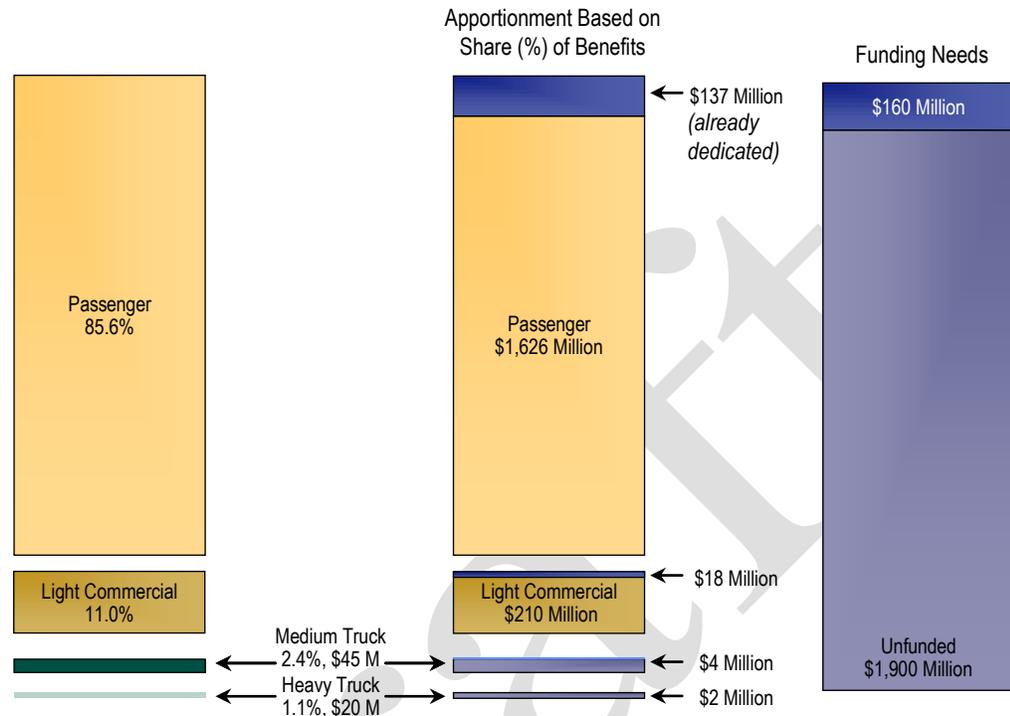
- Passenger vehicles should pay 84 percent of project costs, or \$1,763 million. An estimated \$137 million of this has already been dedicated²⁷.
- Light commercial vehicles should pay 11 percent of the project costs, or \$228 million. An estimated \$18 million of this has already been dedicated.
- Medium trucks should pay 2.4 percent of project costs, or \$45 million. An estimated \$4 million of this has already been dedicated.
- Heavy trucks should pay 1.1 percent of project costs, or \$20 million. An estimated \$2 million of this has already been dedicated.
- A “benefit dollar for funding dollar” method of allocating funding responsibility (discussed in the 509 example above) is not shown because the outcome would be nearly identical to the proportional method, due to the fact that project benefits roughly equal costs.
- Figure 2.13 graphically displays this breakdown of cost responsibility.

Figure 2.12 SR 167 Extension
Project Financials (in Millions of 2008 Dollars)



²⁷The amount of dedicated funding by user group is unknown, since funds come from a variety of sources. Dedicated funding by user group was estimated based on the proportion of benefits received.

Figure 2.13 SR 167 Extension
Possible Funding Scenario



- The freight (medium and heavy truck) combined share of \$59 million could be raised through imposition of one or more user fees.
- Alternatively, since the amount to be raised is relatively small, freight stakeholders could dedicate one-time funding amounts to cover their share of project costs.
- If the freight share of project costs could be raised through a user fee or one-time contribution, the great majority of project costs would remain unfunded. About \$1,836 million would need to be raised from passenger and light commercial vehicles.

2.5 FAST-FMSIB UNFUNDED PROJECTS

There are a large number of small-scale freight projects in Washington State with funding needs. The Freight Mobility Strategic Investment Board (FMSIB) and the Freight Action Strategy Team (FAST) both maintain lists of such projects, which include grade separations, roadway widenings, and overcrossings.

The consultant team worked with representatives of FMSIB and FAST to identify a set of wholly or partially unfunded projects of importance to both groups and located in the Puget Sound region (the analysis area covered by the PSRC's travel demand model).

- Fifteen of these projects, listed in the box at right, were then grouped together for analysis. Grouping was necessary because the impacts of individual projects can not be detected by the PSRC travel demand model.
- Descriptions of individual projects will be included in a technical appendix in the final version of this report.

Overall Project Benefits

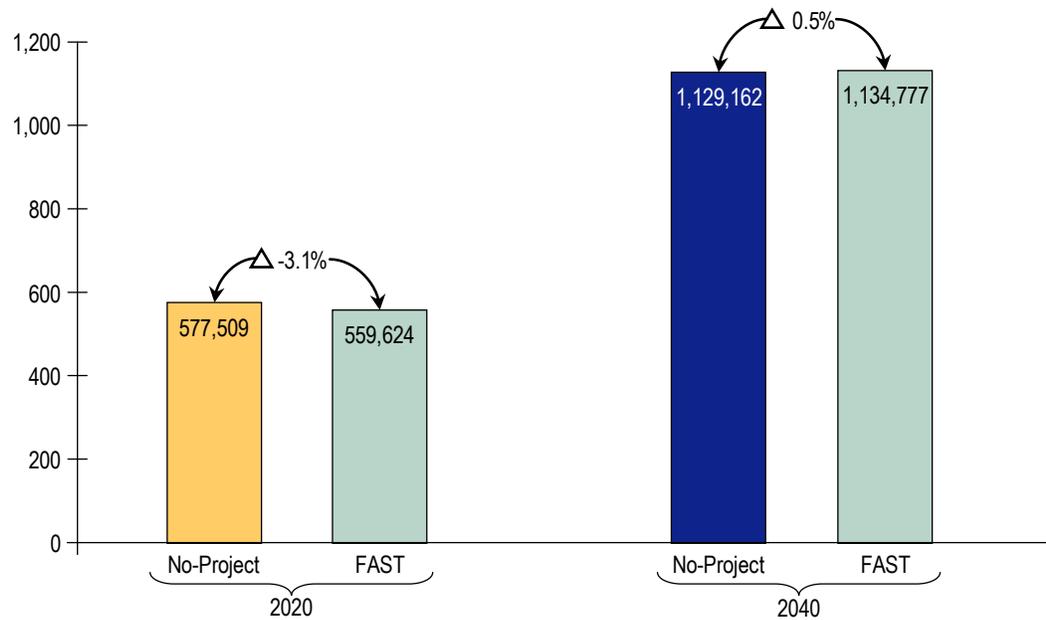
The FMSIB-FAST package of projects would bring a variety of types of benefits. Benefits vary by project, but the types of benefits expected for typical overcrossing construction and grade separation projects include the following:

- Improve safety by eliminating rail/highway conflicts at existing at-grade crossings;
- Reduce vehicle delay and improve travel time reliability at railroad tracks through grade separation;
- Improve air quality by reducing delay-related idling of trucks and other vehicles as they wait for trains; and
- The travel demand analysis of the project package showed some overall reduction in delay would occur in the short term (until 2020), but the benefit would disappear by 2040, as shown in Figure 2.14.

FAST-FMSIB Project Selected for Analysis

1. North Canyon Rd Extension Grade Separation;
2. East Marginal Way Widening;
3. South Spokane Widening;
4. M St. SE Grade Separation;
5. 70th Avenue E and Valley Avenue Widening;
6. Lincoln Avenue Grade Separation;
7. Lander St. Overpass;
8. Willis St. Double Grade Separation;
9. S. 228th St. Double Grade Separation and Widening;
10. Strander Boulevard Grade Separation and Widening;
11. SR 202 Corridor-widening (FMSIB, not on FAST Corridor);
12. SR 18 Widening;
13. I-5 Port of Tacoma Road Overcrossing Widening;
14. S 212th St. Double Grade Separation; and
15. 8th St.-UP Grade Separation & Widening (Deferred)

Figure 2.14 Performance of FMSIB-FAST Corridor Projects
Average Daily Vehicle-Hours of Delay in 2020 and 2040



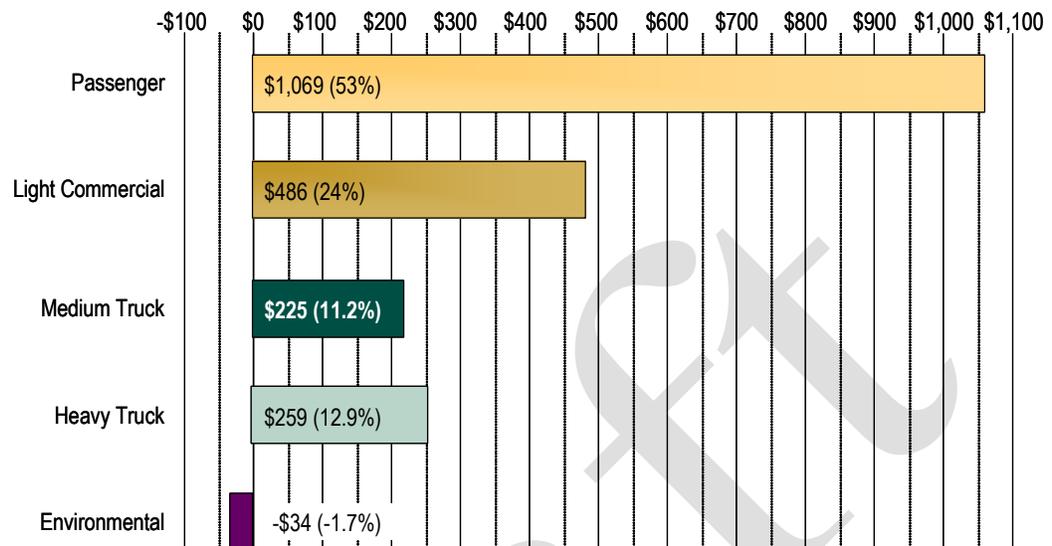
The modest improvement of 3.1 percent estimated for the project right after opening (shown in Figure 2.14) is calculated for the entire region and is not isolated to the areas immediately adjacent to the FAST projects. A change of that magnitude for the aggregate delay through the region is a very significant improvement. The more modest change of +0.5 percent 20 years after opening indicates that growth in traffic has overwhelmed the additional capacity.

Comparison of Truck and Passenger Vehicle Benefits

Four types of benefits (travel time, reliability, operating cost, and toll cost) were calculated and compared for passenger vehicles and for light, medium, and heavy trucks.

Overall, passenger vehicles received the majority (53 percent) of project benefits. Light commercial vehicles received the next greatest share (24 percent), followed by medium trucks (11 percent) and heavy trucks (13 percent). Figure 2.15 below compares the benefits by user group.

Figure 2.15 FAST-FMSIB Corridor Projects
Project Benefits (in Millions of Current Dollars, 2021 to 2050)



Possible Funding Arrangement

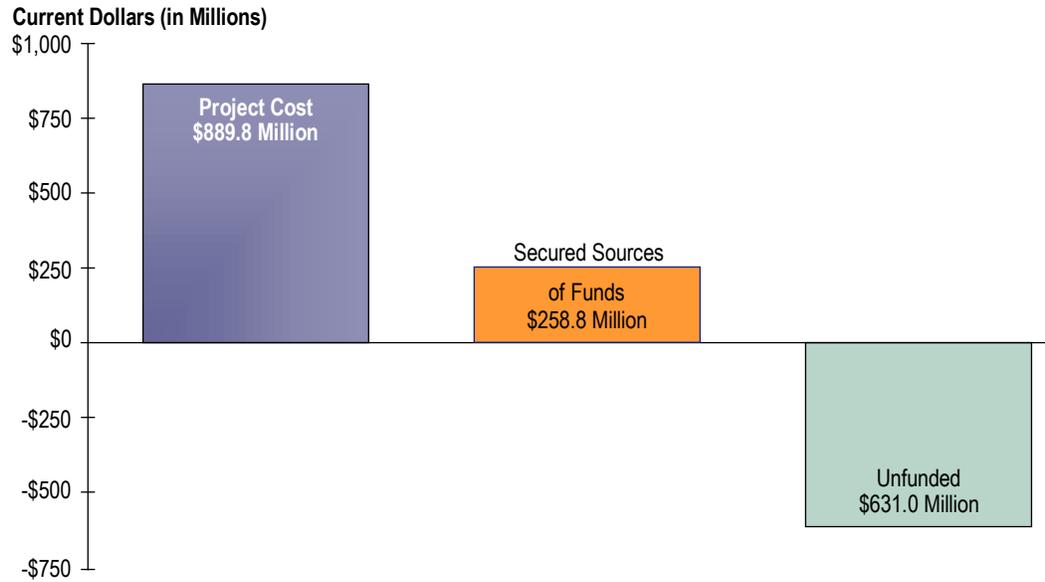
Total project costs for the FAST-FMSIB corridor projects are estimated at \$890 million. The projects are partially unfunded; it is estimated that approximately \$259 million has been secured, leaving \$631 million unfunded. Figure 2.16 shows the project finances as they currently stand.

If responsibility for paying project costs is to be strictly proportional to benefits received, then:

- Passenger vehicles should pay 53 percent of project costs, or \$468 million. An estimated \$137 million of this has already been secured²⁸.
- Light commercial vehicles should pay 24 percent of the project costs, or \$212 million. An estimated \$62 million of this has already been secured.
- Medium trucks should pay 11 percent of project costs, or \$99 million. An estimated \$29 million of this has already been secured.
- Heavy trucks should pay 13 percent of project costs, or \$113 million. An estimated \$33 million of this has already been secured.
- Figure 2.17 graphically displays this breakdown of cost responsibility.

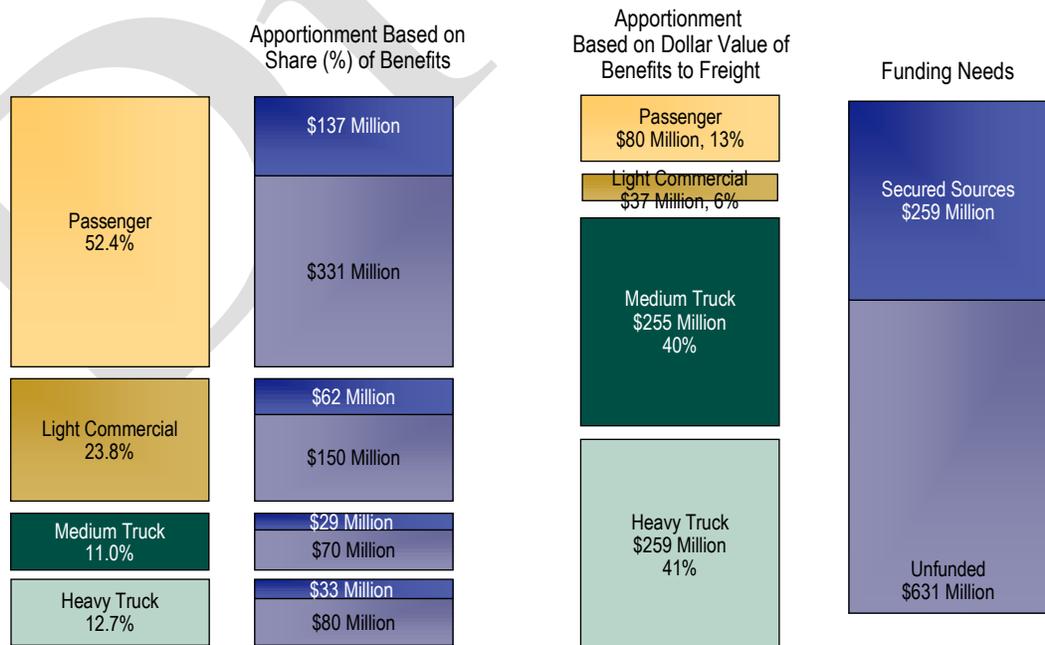
²⁸The amount of dedicated funding by user group is unknown, since funds come from a variety of sources. Dedicated funding by user group was estimated based on the proportion of benefits received.

Figure 2.16 Project Financials of FMSIB-FAST Corridor Projects
in Millions of 2006 Dollars



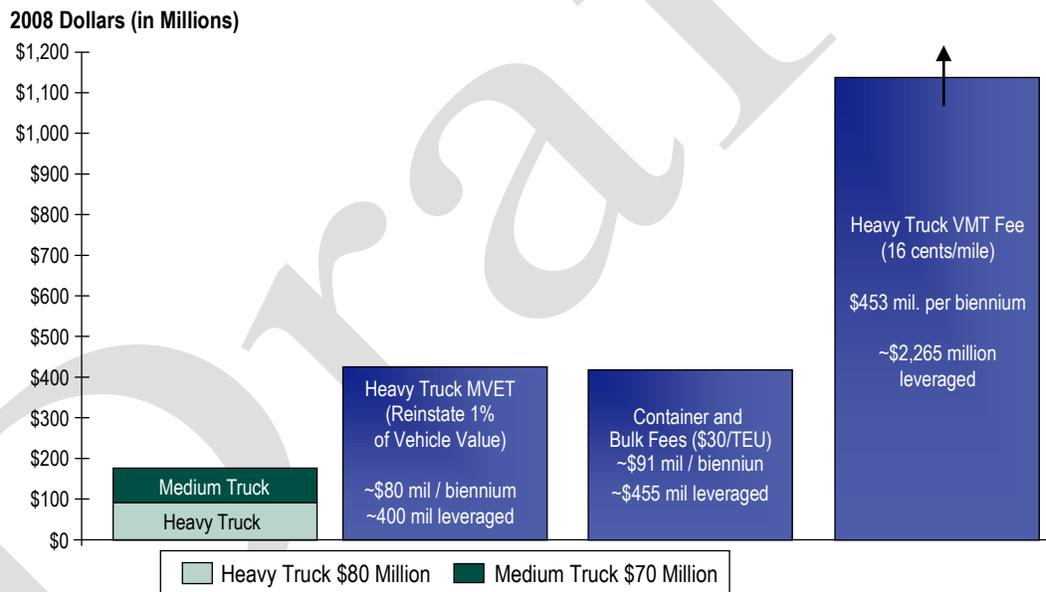
Source: FAST Brochure, August 2006. (Latest costs available).

Figure 2.17 FAST Corridor Projects
Possible Funding Scenarios



- The freight (medium and heavy truck) combined unfunded share of \$62 million could be raised through imposition of one or more user fees. Figure 2.18 illustrates what could be raised from several types of user fees and compares the amounts to the unfunded project costs.
- Alternatively, since the amount to be raised is relatively small, freight stakeholders could dedicate one-time funding amounts to cover their share of project costs.
- If the freight share of project costs could be raised through a user fee or one-time contribution, the majority of project costs would remain unfunded. About \$481 million would need to be raised from passenger and light commercial vehicles.

Figure 2.18 FAST Corridor Projects
Possible Funding Scenario



Note: MVET estimate based on historical MVET revenues inflated 5 percent a year (slightly less than historic rate of MVET revenue increase) to the current biennium. Heavy truck share of MVET revenues is estimated based on data in MVET study conducted by WSDOT. Container fee revenues based on 2007 import container volumes into Puget Sound ports.

2.6 SUMMARY AND CONCLUSIONS

The preceding project examples demonstrated a method whereby the benefits of certain types of freight projects can be disaggregated and assigned to categories of road users. Benefits accruing to passenger vehicles and light commercial vehicles are assumed to be “public sector” benefits, while benefits accruing to medium and heavy trucks are assumed to be “freight benefits.” While imperfect,

this method allows a more informed and objective discussion of the perennial question – “who should pay and how much.”

Of the projects analyzed, the SR 509 and FMSIB-FAST freight project groups hold significant benefits for freight user groups – about 23 percent of total project benefits in most cases. The share of freight benefits on the SR 167 project was much smaller – about 3 percent.

These percentages suggest that: 1) contributions from the freight industry made in proportion to project benefits could significantly offset total project needs for the SR 509 and FMSIB-FAST projects, but would leave the majority of the need uncovered, indicating that it would be necessary to raise substantial sums of money from the public sector in order to complete the projects; and 2) the contributions from the freight industry for the SR 167 Extension would not meaningfully offset project costs; the great majority of which would need to be covered through public sector contributions.

A secondary finding of the benefit-cost analysis is that two of the three projects appear to be cost-beneficial. For the FMSIB-FAST corridor projects, project benefits exceed the costs by a factor of more than 2. The benefits of the SR 509 project exceed the cost by a factor of more than 4. These ratios suggest an economic rationale for implementing both projects.

The cost benefit ratio of the SR 167 Extension is about 1, indicating the benefits roughly equal the costs. The economic rationale for the project is therefore less clear.

3.0 Competitive Impacts of Taxes and Fee Mechanisms

3.1 INTRODUCTION

This section describes how the imposition of new or higher taxes and fees on private industry and consumers could affect Washington's economy. It presents the theoretical impacts since the findings of this study do not recommend new or higher existing fees or taxes at this time.

Taxing or charging private industry or consumers to fund public infrastructure (call this a *project* alternative) must always be evaluated in the context of its opportunity cost, which is the full economic effect of reducing funds available for consumer and business spending. On the other hand, if the revenue funds freight projects that remove significant bottlenecks or improve logistic efficiencies, then business costs are reduced and firms increase their productivity. The *project* benefits lead to increased economic competitiveness and market share, and thus enhance the state's economy in terms of business retention and growth (e.g., higher business sales, personal income, and employment).

These benefits, however, must be compared to the *no-project* benefits of leaving the money in the private sector, where it may be spent by businesses on new plants and equipment, distributed as profits, and by taxpayers on personal consumption. Private-sector spending, just like the benefits from the *project* improvement, generates statewide economic benefits in terms of business output and employment. A careful quantitative comparison between the benefits of *project* and *no-project* alternatives can demonstrate whether spending on freight infrastructure produces a better economic outcome than private spending.

Even a careful and direct quantitative comparison of *project* and *no-project* alternatives, however, requires some simplifying assumptions. For example, the relative costs of doing business (and moving goods) in Washington State are the same as compared to alternative locations. This assumption is of particular importance when the businesses serve national or international markets, and therefore have greater discretion in terms of choice of shipping routes, distribution locations, or gateways. We know in fact that businesses locate in Washington State or use its ports for many reasons beyond the relative cost of taxes and fees, which are both tangible (e.g., proximity to raw or intermediate inputs or diversity of shipping channels) or intangible (e.g., quality-of-life or business relationships). Some of these reasons will reduce the effects of higher taxes and fees, especially in the short term (roughly three to five years).

These other locational advantages for Washington State – or put another way, the relative disadvantages of the next best alternative location – are complex and often regarded as proprietary information by private firms that use it for competitive advantage against their rival firms, or to negotiate concessions from port authorities, jurisdictions, and public agencies. Even when such information is revealed, obtaining it requires dozens of interviews with the logistics managers of shipping companies, beneficial cargo owners (BCO), carriers, distributors, receivers, etc. These challenges make it difficult to quantitatively evaluate how firms will absorb higher taxes and fees, and thus impact the State's economy.²⁹

3.2 SOME RELEVANT RESULTS FROM PORT DIVERSION ANALYSIS

While the initial reaction of firms to higher fees or taxes may be difficult to model, the port elasticity model, developed and applied by Dr. Robert Leachman³⁰ provides a robust analysis of potential diversion from Puget Sound ports if various levels of container fees were imposed. This quantitative estimate of diversion constitutes the most challenging part of a full economic analysis of the impact of container fees. The results, however, showed that there would be significant diversion of containers at the lowest fee level that the port elasticity model could evaluate (\$30 per TEU). Therefore, the Policy Group concluded that container fees were likely to comprise only one funding option with modest potential. The economic consequences to Washington State's economy were not analyzed.

Such an analysis could be accomplished using a range of tools beginning with input/output (I/O) analysis (using Washington State's I/O model), but would require making some significant assumptions in order to convert the raw numbers of diverted containers to a range of increased business costs that could be fed into the I/O model. The results would be rough estimates of the multiplier effect, which would show how such a decrease in container flows and an increase in the cost of moving goods in Washington State would ripple through the State's economy. This simple order of magnitude estimates is more

²⁹The reaction of drivers, consumers or taxpayers to higher tolls, fuel taxes, or other taxes is less complex and can be evaluated using off-the-self economic software such as REMI or TREDIS. This study, however, is focused on user fees on businesses rather than the population.

³⁰ Dr Leachman's analysis of the impacts of container fees on container volumes into Puget Sound ports is available at:
http://www.leg.wa.gov/documents/LTC/jtc/Freight/Leachman_Report.pdf. A version will be attached to the final report.

useful for comparing the relative impacts of alternative taxing scenarios than forecasting absolute estimates of impacts in the future.

In order to calculate a more accurate change in business costs, we would need to conduct interviews with shippers to gauge their reaction and/or undertake simulation modeling. Dr. Leachman conducted such modeling for the impacts of container fees in the two San Pedro Bay ports in Southern California, but in that case there was little diversion at fees over \$200 per TEU and significant generation of revenue. Furthermore, his analysis estimated the effects of spending the container fee revenues to remove bottlenecks in the flow of freight out of the San Pedro Bay ports. In his analysis of the Washington State ports, however, there was significant diversion of containers at fees above \$30 per TEU (which was the lowest the model could analyze).

The analysis of freight user fee funding sources prepared for Task 8 of this study shows the revenues that could be obtained from fee levels of between \$1.00 and \$30 per loaded TEU (based on 2007 imported container volumes)³¹. The results in annual revenue show total revenues ranging between \$2 million and \$45 million, respectively. (The section also describes the critical assumptions). If a fee were charged on both imported, exported and empty containers, annual revenues from a \$1.00 per TEU fee would generate \$3 million, and a \$30 fee would generate \$100 million. This is roughly double what could be raised by applying the fee to imports only.

3.3 OTHER ANALYSES OF TAX AND FEE IMPACTS ON STATE ECONOMIES

There has been limited related research undertaken on the effects of higher fees or taxes on the state's economy. One of the few examples is a study conducted by the Washington Research Council titled, *Taxing Business* (Policy Brief, PB 04-05 September 1, 2004).³² This study used a REMI economic model to evaluate the effects of business and occupation tax (B&O)³³ and sales tax on

³¹ The Draft Task 8 report may be accessed at:

http://www.leg.wa.gov/documents/LTC/jtc/Freight/DR2_Task8_Sept08_100608.pdf

An updated version will be attached to the final report.

³² http://www.remi.com/uploads/File/Articles/article_139h.pdf, Washington Research Council, 108 S Washington Street, Suite 406, Seattle, Washington 98104-3408, (206) 467-7088, www.researchcouncil.org.

³³ The business and occupation tax (B&O) is similar to a sales tax, although the number of transactions subject to the B&O is far greater than the number subject to the sales tax (for 2003, \$318.9 billion versus \$87.7 billion). The B&O tax applies to most business revenues at rates that range from 0.138 percent to 3.3 percent. The tax generated \$1.9 billion in revenue for the state during fiscal year 2003.

statewide employment and personal income. The analysis, however, examined a revenue-neutral substitution of these taxes with a hypothetical increase in a flat income tax, which is not the same as just increasing a tax or fee (e.g., fuel taxes or license fees) to generate additional income for transportation. Nevertheless, the analysis does show what could happen when the tax burden is shifted from businesses to consumers. The results, however, only provide a very theoretical measure of how business hiring can be affected by taxation. The selected findings summarized below are only intended as illustrative. They are not reliable measures of actual outcomes.

- When the B&O tax is replaced with a flat-rate income tax, employment in 2010 is 22,500 greater than the baseline scenario. Real disposable personal income per capita is 0.02 percent lower in 2010 with the B&O eliminated, compared to the baseline simulation.
- If the state sales and use taxes are reduced to a level that results in a revenue loss just equal to the B&O's revenue and the lost revenue is replaced with a flat-rate tax on personal income, employment in 2010 is boosted by 5,400 compared to the baseline, while real disposable personal income per capita is reduced by 0.08 percent.
- Eliminating the B&O adds 17,000 more jobs than an equivalent reduction in the sales tax. This results indicates that per dollar raised, the B&O tax is more destructive to business activity in the State than the sales tax is.
- If the sales tax on business purchases is reduced by the amount equivalent to the B&O and the revenue is replaced with a flat-rate income tax, then employment increases by 28,400 in 2010 compared to the baseline scenario, and increases real disposable personal income by 0.07 percent.

These results indicate that economic activity is hurt much more by the sales tax on business than on consumers. With the business sales tax reduction, the State has 35,400 more jobs and 0.23 percent more personal income than with the consumer sales tax reduction.

The authors contend that the results of this study are only illustrative and do not predict the full effects of shifting the tax burden from business to households. Furthermore, they list specific assumptions that lead to an overstating of the economic benefits. Finally, the REMI model, used to analyze the effects of shifting tax burdens between businesses and household, is only an extremely simplified abstraction used to understand a specific policy question and not a comprehensive analysis of a real economy.

Nevertheless, the exercise supports the premise stated at the beginning of this section that that business taxes create a drag on economic activity. What also is equally true is that tax revenues spent to remove freight bottlenecks generate economic development. Rigorous and reliable economic analysis of these closely intertwined policy goals is still beyond the reach of current state of the practice.