Freight Investment Study

Executive Summary

prepared for

The Washington State
Joint Transportation Committee

prepared by

Cambridge Systematics, Inc.

with

The Puget Sound Regional Council
Gil Hicks & Associates
Foster Pepper PLLC
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555 12th Street, Suite 1600
Oakland, California 94607

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Executive Summary

Several recent studies have noted the importance of goods movement to the Washington economy[1]. These studies have also noted growing unfunded freight transportation capacity needs.

The Federal government recognizes the importance of the national freight transportation system, but 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 freight-related fees or taxes.

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

- Easier because freight infrastructure improvements have greater access to private-sector funding than public projects. Private industry will benefit and may be assessed user fees corresponding to their benefit.
- More complicated because of the difficulty inherent in determining an appropriate private-sector freight project funding share. There are virtually no freight projects that solely benefit the private sector; most generate public benefits and/or require mitigation of impacts on the community.

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 container[2] 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 study container fees, port-related user fees and other freight funding mechanisms.

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

[1] Recent examples include the Freight Element of the Washington Transportation Plan, the Statewide Rail Capacity and Needs Study, and the Governor's Port Initiative

[2] The legislation defined a container as a twenty-foot equivalent (TEU).

state and industry stakeholders. The study process, contents, and findings are summarized below.

Study Process

The Freight Investment Study was initiated in August 2007 and finalized January 2009.

A stakeholder group and a legislative policy group were convened to provide feedback into study products and findings. The JTC policy group included 10 Legislators, a Transportation Commissioner, and a representative from the Governor's office. The Stakeholder Group included nearly 30 members representing industries listed in the box at right. SSB 5207 stipulated the composition of the stakeholder group[3].

The stakeholder and policy groups each met five times throughout the course of the study.

Industries represented in the Freight Investment Study Stakeholder Group:

- Ports of Vancouver, Tacoma, Seattle;
- Washington State Department of Transportation (WSDOT);
- Freight Mobility Strategic Investment Board;
- Washington Retail Association;
- Northwest Grocery Association;
- Wal-Mart Stores;
- Supervalu Tacoma Distribution Center;
- Association of Washington Business;
- Teamsters Union;
- International Longshoreman Workers Union;
- Ricci Endeavors, Inc.;
- Burlington Northern Santa Fe Railway;
- Union Pacific Railroad;
- Pacific Merchant Shipping Association;
- Pacific Northwest Shippers Association;
- Totem Ocean Trailer Express;
- Northwest Container Services, Inc.;
- Washington Trucking Associations;
- Alaska State Legislature;
- Association of Washington Cities;
- Carrix, Seattle Marine Terminal Operators;
- Marine Terminals Corporation, Tacoma;
- Platinum Group LLC;
- Wheat farmer; and
- Potato farmer.

Report Structure

The Freight Investment Study addressed a number of questions through technical reports and papers presented throughout the course of the study. Much of the content is presented in this final report, but some is included as appendices.

The report addresses the following questions:

- **Section 1.0 – 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

[3] SSB required that the stakeholder group include representatives of container ports, trucking, railroads, international and national shipping, organized labor, the import/export community, the Freight Mobility Strategic Investment Board, WSDOT, and others.

competitiveness of Washington's ports. Therefore, one of the central tasks of the study was to investigate the impacts of container fees on Washington's economy. This section summarizes the results of an analysis of container fees on imports into the Ports of Seattle and Tacoma, and summarizes stakeholders' responses to the analysis.

- **Section 2.0 – What other freight user fee funding sources could be implemented in Washington State?** The Freight Investment Study does not focus exclusively on container fees. This section presents a broad range of user fee options that could be used to fund freight infrastructure and discusses their potential yield, degree of connection to freight projects, and any administrative or implementation issues.
- **Section 3.0 – 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 costs would be split between the freight industry and the public sector. 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. It also provides examples of a benefit-cost analysis and cost allocation methodology for two rail projects.
- **Section 4.0 – How would a new freight funding source be administered?** If a new freight funding source were instituted, an existing or new process would be necessary to administer it. 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.

Freight Finance Beyond Washington State

The stakeholders and legislators involved in the Freight Investment Study were interested in knowing how freight projects are financed outside Washington State.

To address these questions, the consultant team prepared a background paper (Appendix A) on freight finance. The paper:

- 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.

The report showed that there are few national or international examples of dedicated streams of revenue for freight investment. Most transportation funding is used for a mix of projects that benefit the freight industry and the general public. A few examples of funding sources targeted specifically at freight are:

- Virginia's Rail Enhancement Fund, which is funded through rental car tax revenues and provides grants to improve railroad infrastructure.
- Germany's Toll Collect, a program that collects a mileage-based fee on trucks and distributes the revenue to variety of freight projects, including road, rail, and waterway improvements.
- Ports of Los Angeles/Long Beach Infrastructure Cargo Fee program, which will charge a container fee and use the revenue for port access improvements (to be implemented in 2009).

Study Findings

This Executive Summary distills all of the study information into 12 findings. Each finding is then supported with one of more consequences and one or more policy options that would address the consequences. The 12 findings have been divided into four groups: the first two findings fall under *Freight Benefits*, the third and fourth findings pertain to *Nexus*, the fifth through eighth findings relate to *Revenues*, and the last four are grouped under *Institutional Structure*.

Study Findings Related to Freight Benefits

One of the central objectives of this study involved developing a quantitative methodology to show the nexus between the benefits of a transportation project and proportionate responsibility for funding its cost. As a demonstration of this methodology, the consultant team worked with the Puget Sound Regional Council (PSRC) to analyze the benefits of three high-priority roadway projects with significant freight benefits. The results are presented in Section 3.0 of this report.

The three projects are the I-5/SR 509 extension, the SR 167 extension, and a package of 15 smaller roadway projects contained on the priority lists of the Freight Action Strategies Everett-Seattle-Tacoma (FAST) and the Freight Mobility Strategic Investment Board (FMSIB). Benefits were calculated for four categories of road user (passenger vehicles, light commercial vehicles, medium trucks, and heavy trucks). The benefits of two rail projects (the Lewis and Clark Rail line rehabilitation and the Lincoln County Industrial Park Rail Spur) were also presented.

Some caution should be used when interpreting the estimates of project benefits. The quantitative estimates of benefit presented in the finding below and throughout this report, however, are not precise. The dollar figures of benefits are generated with multiple analytic models which incorporate numerous assumptions and simplify the actual roadway networks and interactions that drive behavior. The results, therefore, are best used to provide an order of magnitude estimate of benefits received and to compare alternatives.

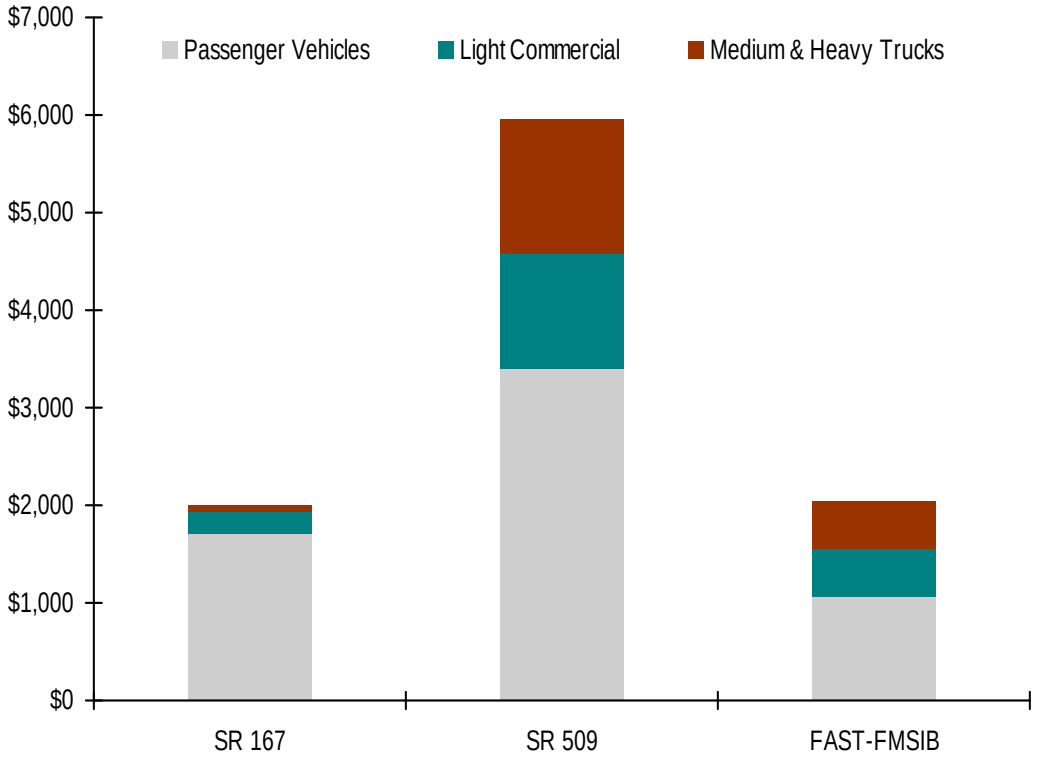
First Finding

A majority of the benefits from most roadway projects tend to accrue to passenger vehicles, while a smaller share accrues to commercial, light, and heavy trucks.

For all three projects analyzed, the majority of project benefits accrued to passenger vehicles. A minority of benefits accrued to light commercial vehicles, heavy truck, and medium trucks. In the consultant's experience, this finding is true of most roadway projects, since passenger vehicles nearly always represent the bulk of roadway users. Figure ES.1 below shows the amount of project benefits for the three road projects broken out into three categories: benefits accruing to

passenger vehicles, benefits accruing to light commercial vehicles, and benefits accruing to medium and heavy trucks.

Figure ES.1 Freight Benefits by User Types for Three Projects
Project Benefits (In Millions of Current Dollars, 2021 to 2050)



Of the three projects types analyzed, the smaller FAST-FMSIB projects had the greatest share (47 percent) of total truck benefits (including light commercial, medium, and heavy trucks). The larger highway projects, especially the SR 167 project, had a significantly smaller share of total truck benefits. These distributions are common because trucks (including light commercial vehicles) are simply outnumbered significantly by passenger vehicles on major local roadways and highways.

Second Finding

In general, the larger and longer the roadway facility, the lower the proportion of benefit accruing to commercial, light, and heavy trucks.

Although trucks may seem to dominate the traffic on roadway segments immediately adjacent to the two major ports (Seattle and Tacoma), their share is usually less than one-half and falls off at distances only a mile or more from the ports. Furthermore, most trucking tries to avoid the peak periods (morning and evening commutes), so their presence is concentrated during the midday.

A consequence of these two findings is that proportionate funding from trucks will not be sufficient to fund major highway projects. The benefit to trucking from major highway projects is too small to cover the majority of highway project costs, especially if only medium and heavy trucks are considered. Given that trucks represent a relatively small share of major highway project benefits, freight user fees and other sources of funding derived from trucking (e.g., MVET on trucks, weight-distance tax, diesel fuel tax, etc.) cannot be expected to provide the majority of funding on large highway projects, if a proportionate system of funding freight projects is used.

If the freight industry is asked to contribute partial funding through user fees, significant public funding will need to be committed as well. This may inadvertently force a reprioritization of projects based on availability of matching freight funds, and could delay or eliminate other projects being advanced by WSDOT, regional agencies, and local jurisdictions.

An alternative to the proportionate funding method is presented below (Finding 3), which may have a greater potential to cover a large share of freight project costs, but does not adhere as closely to the principle of nexus.

Study Findings Related to the Nexus Between Freight Benefits and Project Funding

The next two findings pertain to the *Nexus* between freight movement and the responsibility to fund a proportionate share of project costs.

Third Finding

Truck benefits may be understated.

The analysis of truck benefits discussed above and presented in Section 3.0 does not take into account 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.

If this is the case, then the share of trucking benefits discussed above may be understated, justifying an alternative approach to the apportionment of freight project funding responsibility. Instead of apportioning freight funding responsibility by the percentage of benefits received, the funding share may be defined by the monetary amount of the benefit generated for freight users. Freight user fees could be priced to generate revenues that match benefits to heavy trucks, which would be higher than a strict apportionment of unfunded project costs.

For the SR 509 project, for instance, this would result in the medium- and heavy-truck share of project costs being $1,373 million (dollar equivalent to benefits received). If a proportional funding scheme is maintained, medium and heavy trucks would pay only 23 percent of project costs, or $311 million.

Fourth Finding

Many FAST and FMSIB projects have significant freight benefits.

The package of FAST and FMSIB freight projects showed significant freight benefits (13 percent for heavy trucks, 11 percent for medium trucks, and 24 percent for light commercial vehicles).

This suggests that a subset of these projects provide opportunities to implement freight user fees to provide proportionate funding. One option would be to coordinate implementation of freight user fees with appropriate evaluation and screening of small projects.

Study Findings Related to Freight Funding

The next four findings relate to *Revenues*. Specifically, the findings conclude that most of the likely new user fees yield insufficient revenues or cause undesirable market distortions.

Fifth Finding

Most freight user fees would not raise revenues sufficient to fund major corridor projects.

Most of the user fees analyzed for this study, including container fees, bulk cargo fees, diesel fuel taxes, combined license fees, truck weight distance charges, and rail car fees, would raise funds ranging in the low tens of millions of dollars a year (assuming fee levels within the range of those in place in Washington State or elsewhere). These amounts would not be sufficient to fund major new highway projects, such as the SR 509 and 167 extensions, both of which have project costs of over a billion dollars.

One exception is the truck vehicle miles traveled (VMT) fee. A fee of about 15 cents per mile, a level in the range of what is currently applied in Germany, would generate hundreds of millions of dollars in revenue a year. Truck VMT fees may also be attractive in that they maintain a close nexus to truck impacts and do not have the diversionary effects associated with tolling at specific points along a roadway. This is discussed in more detail in Finding 7 below.

There are some implementation issues associated with VMT fees, such as the need to have a mechanism for recording mileage for every truck. Section 2.0 of this report provides more detail on implementation issues associated with VMT fees and other types of freight user fees.

Sixth Finding

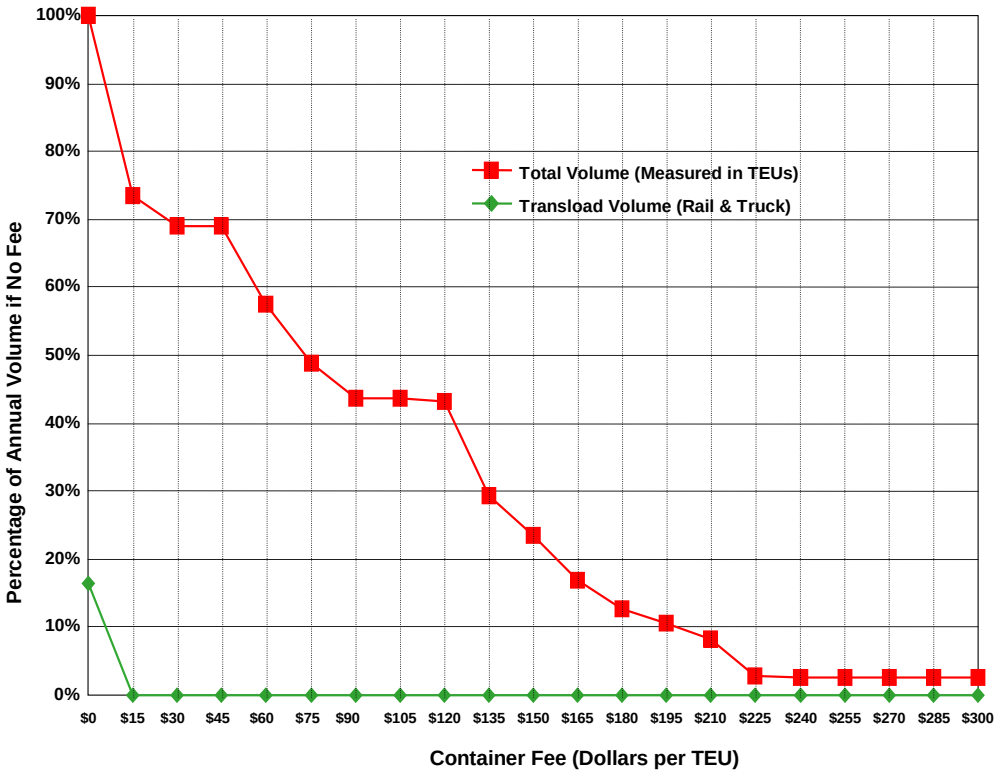
Effects of container fees above $30 are significant, but the effect of fees lower than $30 is unknown.

An analysis conducted as part of this study showed that imposition of container fees above $30 for each imported Twenty Foot Equivalent (TEU) container [$60

for each Forty Foot Equivalent (FEU) container, which is a 40-foot box or twice the size of a TEU] could cause significant diversion away from Puget Sound ports (see Figure ES.2 below). The analysis was not sufficiently sensitive to predict the effect of fees below $30.

Dr. Robert Leachman of the University of California, Berkeley, conducted the diversion analysis (Appendix B); and BST Associates conducted an independent review of the results (Appendix C). In general, BST Associates concurred with Leachman's results.

Figure ES.2 Predicted Response of Puget Sound Ports to Imposition of a Container Fee



Source: Dr. Robert Leachman, Leachman & Associates.

It is possible that a fee below $30 per TEU would not cause significant diversion, especially if the fee level remains below levels proposed at competitor ports (e.g., Ports of LA/Long Beach).[4] This could be tested through a trial container fee of

[4] Appendix B (*Port and Modal Elasticity of Containerized Asian Imports via the Seattle-Tacoma Ports*) presents Dr. Leachman's findings. His report expressed the results in 40-foot equivalent (FEU) rather than the 20-foot equivalent (TEU) containers, as shown in Figure ES.2. These results show about 30 percent diversion at a fee of $30 per TEU or $60 per FEU. Dr. Leachman's model is not sufficiently accurate to show the effects of

Footnote continued

less than $30. If significant diversion occurs, the fee could be lowered or removed. Since the fee would not be permanent, revenues could not be bonded, and could only be used on a pay-as-you-go basis.

If such a trial fee were implemented, one option would be to direct the revenues to smaller freight projects with significant secured funding sources rather than towards major corridor projects with very large unfunded costs. This would allow the smaller projects to move to completion rapidly.

Seventh Finding

Tolling can provide a direct proportionality to benefits; however, tolling feasibility is project specific.

Tolling may be an attractive means of freight finance for several reasons. Roadway users pay the toll in direct proportion to their usage of the corridor. It therefore becomes unnecessary to compute and apportion freight and nonfreight user benefits. Prior studies have shown that tolling can provide significant project funding. In addition, some of the stakeholder groups that participated in the Freight Investment Study expressed a preference for tolling over other types of user fees.

Nevertheless, project-specific tolling is not possible or appropriate for all projects due to diversion and other considerations. Projects should be analyzed on a case-by-case basis for the feasibility of tolling. Where tolling is feasible, trucks may be tolled at a different rate than autos.

A systems approach to tolling, such as the truck VMT fee, could provide the necessary direct nexus to freight movement on the transportation system and minimize diversionary consequences of project-specific tolling. A truck VMT fee could also serve as a precursor or pilot to the potential application of a system-wide VMT fee to potentially augment or replace the gas tax, which has mid- and long-term diminishing revenues due to fuel efficiency of vehicles and volatility of fuel prices.

Eighth Finding

Mid-term financing for facilities requires continued evaluation of existing tax/fee levels to account for inflation and facility needs.

Even if no new freight user fees are imposed as a result of the Freight Investment Study, the policy group may consider adjusting existing tax and fee levels to ensure that any currently planned projects with freight benefits can be com-

container fees at below $30 per TEU. While the graph shows a data point at $15 per TEU, this results was not deemed sufficiently accurate to draw conclusions from the model; thus, Dr. Leachman chose the $30 per FEU level as a threshold of greater confidence.

pleted. Inflation, fuel use trends, and rising construction costs are eroding the buying power of existing revenue sources.

Study Findings Related to Alternative Institutional Structures

The last four findings, grouped under *Institutional Structure*, describe the results of stakeholder outreach with Washington's freight industry (including the port authorities) and national research of best practices. Section 4.0 of this report discusses institutional issues in greater depth.

Ninth Finding

Private industry stakeholders want a say in the selection of eligible projects, and in the ranking and phasing of selected projects.

Significant attention in this study has been directed at the desire of private industry to contribute financially to freight improvements in proportion to the benefit they receive. The nexus between funding and benefits may also be supported by involving paying stakeholders in the nomination, selection, and ranking of projects with freight benefits. The concerns of industry representatives may be difficult to address without including them on the project review and funding panel.

As a consequence of these industry concerns, in their current configuration, public agencies such as the WSDOT Freight Rail Assistance Program (FRAP) and the Transportation Improvement Board (TIB) do not provide the desired representation. As a policy option, the existing board membership could be altered or a new panel formed that would grant membership not only based on the amount of financial contributions from stakeholders, but also based on the diversity of potential projects (e.g., highway, rail, intermodal, port-related, warehousing access, etc.).

Most of the current programming of transportation projects must be initiated by the public agency that owns or operates the facility. This requirement, however, does not seem to constrain private industry from seeking a public sponsor, which is a common practice for FMSIB project nominations.

10th Finding

Private industry stakeholders want the composition of a panel to be appropriate to types of taxes and fees, and correspond the incidence of the tax and fee and the funding contributions.

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 toll revenues are typically limited for use on the tolled facility. If container fees are implemented, it may be appropriate for stakeholders who bear the burden of paying these fees to have greater representation in how they are spent.

Membership on the panel could be restricted to those who pay for projects. This nexus between membership and contribution would have as a consequence the exclusion of communities and other stakeholders who are affected by the project, but are not helping to pay for it. So a policy option would be to expand membership to include those affected by the project, as well as those who are paying for it.

11th Finding

The public has two interests that should be safeguarded.

The first and second findings listed above concluded that a significant share of the benefits from freight projects accrue to the traveling public. Furthermore, such projects are often likely to have adverse impact on communities. As a consequence, the public will always have a vested interest in the selection (and prioritization of) projects that involve public funds and on mitigating the impacts of freight movement on communities. The administration of freight project funds should ensure safeguarding of these public interests. As a policy option, state and local governments could be represented in proportion to the use of public funds for transportation projects with freight benefits. As an alternative to proportional representation (or in addition to it), the State could retain a budgetary appropriations oversight on project selection to ensure that adequate mitigation is incorporated into the project.

12th Finding

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. If new user fees were implemented, the State Legislature and Governor could modify the panel of an existing agency to conform with the findings of this study. Which – if any – of the existing panels would be the most appropriate depend on two considerations:

1. The degree to which the legislature desires to maintain the nexus between the source of the fee revenues and the projects that result.
2. The degree to which existing project planning and programming processes are deemed adequate for programming new revenues. This judgment, in turn, depends on what distinction is made between the existing sources of revenue used for transportation (fuel tax; Federal funds; license, permits, and fees) and direct user fees (container fees, truck MVET, roadway tolls, marine terminal gate charges, etc.).