Appendix 1 – Washington State Department of Transportation (WSDOT)

Challenges Facing Washington State Freight Systems

Across all modes and systems, freight shipments are growing, which reflects positive economic growth and development for Washington. But the growth of goods movement is just one factor in a dynamic system. Equally important, shippers drive constant, dynamic interaction between freight modes as they pursue just-in-time service and lower inventory and transportation costs. Without strategic investments in important freight corridors, connectors, and hubs, the state's population growth and increased demand from freight-dependent industry sectors will overwhelm its infrastructure and operational capacity, leading to a loss of economic competitiveness.

Exhibits 1, 2, 13, and 14 illustrate growth on Washington State's freight highway and rail systems.

Examples of WSDOT Freight System Analysis and Project Priorities

As a cabinet agency, WSDOT is responsible for providing the Governor and the Legislature with prioritized state freight highway and rail investment recommendations for inclusion in budget proposals. Strategic analysis is particularly important for large-scale investments that require broad citizen support, but also applies to prioritizing medium and smaller projects. Public investment choices that are based on a deep understanding of the use of freight corridors can rise above project-by-project intervention to optimize entire freight systems.

2009-2028 Highway System Plan Analysis: Central Puget Sound

WSDOT reviewed existent truck trip data, regional freight studies, and conducted statewide interviews and surveys of freight shippers and carriers, to identify the most important performance gaps.

To analyze and prioritize new freight highway project proposals in Central Puget Sound, WSDOT also acquired additional truck trip counts in heavily-traveled urban freight corridors. The preliminary analysis evaluated the top 10 to 12 potential truck freight projects against criteria that included truck volume served, potential benefit to trip reliability or travel time, and reduction in congestion for trucks and general-purpose traffic. This first screen evaluation was used to narrow the list to the top

five priority projects. If data was available, a more detailed analysis of highest priority freight projects was done to document transportation benefits. When necessary data was not available, the recommendations include a plan to address the gap.

This analysis produced several high-priority, low-cost truck freight project proposals for Central Puget Sound. If proven effective, related freight projects could be implemented across the state. Project examples include:

- **Pilot Study of Ramp Meter By-Pass for Heavy Trucks**
  This project would conduct up to three demonstration studies to test the operational benefits of either allowing trucks to bypass the ramp meter using the HOV lane or relocating the ramp meters to increase the acceleration distance. Most on-ramps to major freeways in the urban areas of Central Puget Sound are metered. A typical heavy truck can accelerate to 42 mph in 1,000 feet on a flat grade. But on a five-percent grade, common on uphill ramps, a truck can only accelerate to 24 mph in the same distance. Just before unstable flow begins and freeway speeds are above 35 mph, slow-moving trucks that merge into traffic can reduce the speed of the entire mainline. The differential in truck versus general traffic speed also increases the risk of a crash. Cost estimate: $400,000.

- **Improved Signage for Truck Movements**
  Conduct a comprehensive review of potential improvements, evaluate and prioritize signage improvements based on truck movement benefit, and develop a uniform design practice and protocol for truck signage. At various locations improved signage could reduce confusion for truck drivers who are unfamiliar with the area, and enhance safety by giving truck drivers time to change lanes. Cost estimate: $750,000.

Please see Exhibit 15 for a detailed description of the analysis done for Central Puget Sound's urban core.

2009-2028 Highway System Plan Analysis: Greater Washington

The WSDOT team reviewed existent truck trip data, regional freight studies, and conducted statewide interviews and surveys of freight shippers and carriers, to identify the most important performance gaps.

This analysis produced high-priority, low-cost truck freight project proposals for Greater Washington. Project examples include:

- **Statewide Truck Advanced Traveler Information System**
  This project would expand WSDOT's existing advanced traveler information system in 2009-2011 to provide information specifically

tailored to the needs of the trucking community. The information would be provided via Web and phone, and could also be "pushed" out via subscription email alerts. The proposal includes an outreach program to make trucking firms and shippers aware of the new service, and data maintenance. Benefits include: improved truck mobility due to increased knowledge of construction activity, unplanned incidents, and truck parking options. Improved safety due to increased compliance with weight and permitting restrictions. Cost estimate: $380,000.

- **Improved Truck Traveler Information by Upgrading Intelligent Transportation Systems on and in the vicinity of I-90 Snoqualmie Pass.** This project would provide improved information on road conditions and closures with advance notification so shippers and trucking companies could prepare for driving conditions, choose alternate routes, or adjust delivery schedules.

  The project would benefit general traffic as well as freight. It would replace the MIST System that controls variable speed limits and traction advisory to provide more accurate information and direct communications. It would upgrade the Highway Advisory Radio system to provide real-time communication of road and weather conditions. It would also add new cameras, information kiosks at rest areas, and a Variable Message Sign at I-90 near Ellensburg to provide real-time information on delays. Cost estimate: $2 million.

- **US 395/North Spokane Corridor Interim Improvements: Francis Street to I-90.** This project would study alternatives and design improvements that would maintain traffic flow from Francis Street to I-90 until the full North Spokane Corridor is completed. Cost estimate: $2.2 million.

- **I-5 Connectors to Port of Vancouver and Vancouver Industrial Lands.** This project would analyze current and future capacity for truck, multimodal and general traffic on primary truck freight corridors, and provide recommendations to assure efficient freight flows. Cost: $300,000.

- **Reduce Truck Crossing Delays at the Canadian Border.** This project would identify the primary reasons that the federal FAST program is underutilized by truck freight at Washington border crossings. It would also develop strategies to increase the use of dedicated truck lane(s) at the border. Cost estimate: $30,000.

Please see Exhibit 10 for a complete list of new, low-cost freight project proposals ready to be implemented in 2009-2011 in the *2009-2028 Highway System Plan*.

Exhibit 11 lists highway projects and strategies with significant freight benefits that are included in the *2009-2028 Highway System Plan* for future evaluation and funding.

Freight Rail Project Prioritization: Washington State Freight Rail Assistance and Investment Bank Programs

The Legislature authorized WSDOT to administer $5.85 million in the 2007-2009 biennium and $7.75 million in the 2009-2011 biennium for two freight rail grant and loan programs. WSDOT applied the following criteria to evaluate and prioritize proposals for the programs.

Freight Rail Assistance Program Criteria

- Cost/benefit analysis performed by WSDOT. The Washington State Department of Community, Trade and Economic Development will assist WSDOT evaluate the economic development benefits.
- Viability of proposal: financial sustainability.
- Financial and/or in-kind participation by local agency, railroad, private companies, or other funding sources.
- Safety improvements and/or urgent needs.
- Preservation of rail corridor.
- Reduction of delay on statewide railroad system.
- Geographic balance.
- Reduced impacts on roads.
- Environmental benefits.

A complete copy of both the Freight Rail Assistance Program application and methodology is located in Exhibit 16.

Freight Rail Investment Bank Program Criteria

- Value to the community expressed in dollar terms. This step quantifies probable job creation and/or retention, the project's cost/benefit analysis results, and value to distressed counties.
- Strategic benefit: how integral the project is to future development of the rail line, the regional economy, and the specific businesses.
- Matching funds, scaled according to the contribution.

A complete copy of both the Freight Rail Investment Bank Program application and methodology is located in Exhibit 17.

To see the full methodology the Department currently uses to evaluate proposed freight rail projects and a list of funded freight rail projects**,** please go to www.wsdot.wa.gov/Freight/Rail/GrantandLoanPrograms.htm and review the Freight Rail Assistance Program and Freight Rail Investment Bank Program.

WSDOT will apply the Rail Benefit/Impact Evaluation Methodology developed in 2008 to future freight rail grant and loan proposals.

While the completed methodology wasn't available before September 2008, WSDOT freight rail project recommendations submitted to the Office of Financial Management and the Legislative Transportation Committees in 2008 used components of it, as they were finalized.

WSDOT Continuously Improves Its Freight System Analytic Methods

WSDOT has heard strong, statewide support from public and private stakeholders to develop a data-based method to classify the state's freight corridors by their economic importance, and use the information to prioritize investments in our freight systems.

How can we analyze the economic importance of freight corridors to Washington State?

WSDOT is developing a Freight Corridor Classification Criteria and companion Freight Data and Analytic Program to help state leaders and transportation professionals evaluate the economic importance of major freight corridors in Washington State. When fully implemented, the freight corridor criteria and data program will:

- Identify the state's most important freight corridors and performance problems.
- Prioritize freight corridors by their ability to support state and regional economies.
- Give local, regional, and state transportation agencies useful information about all of the state's freight corridors.
- Produce weighted 'freight value' factors that government officials, transportation project managers, engineers and planners may use within their existing evaluation process or as a stand-alone when considering improvements to transportation facilities.

The combined Freight Corridor Classification Criteria and Freight Data and Analytic Program are planned as a 10-year phased program. Each component will provide stand-alone value to decision makers and transportation professionals.

The Freight Corridor Classification Criteria includes:

1. Identification of the freight-dependent industry sectors that provide the largest contribution to the state's economic output. WSDOT has completed this analysis and categorized the state's freight system users into three groups:
   - Global Gateways: International Trade and Logistics.
   - Made in Washington: Agribusiness, Construction, Manufacturing, Mining and Timber/Wood Products Sectors.
   - Delivering Goods to You: Retail and Wholesale Trade.
2. Weighted values for freight-dependent industry sectors in Washington State's regional economies. These will be based on:
   - Industry sectors' economic output.
   - Geographic distribution.
   - Predicted growth.
   - Greater Washington and Central Puget Sound will be measured on separate scales relative to their economic output.
3. Development of a comprehensive Washington State freight data program that provides high quality, standardized freight data on an ongoing basis.
4. Identification of the locations of statewide production centers and freight hubs.
5. Prioritization of the state's existing and planned freight corridors as measured by freight volume, and the economic output associated with the corridors as determined in step 2, in descending order as follows:
   a. Primary statewide shipping corridors.
   b. Connectors between primary freight corridors and freight production centers and/or hubs or secondary routes.
   c. Secondary routes between production centers and connector and/or primary corridor.

   These corridors include marine, rail, pipeline and road.
6. A performance gap analysis for the three types of freight corridors: primary corridors, connectors, and secondary corridors.
7. An analysis of future performance gaps based on growth factors.
8. Development of a wide range of solutions to address important performance gaps. These solutions may be operational and/or infrastructure related. Proposals will include funding options.
9. Ranking of all solutions based on their ability to fix the problem versus the total cost to implement. This step begins with a mode-neutral evaluation that ranks proposals by their ability to produce the greatest economic and public benefits at the least cost to public and private sectors. In addition to the quantitative analysis applied in steps one through eight, qualitative benefits and impacts shall be considered and accepted if adequate justification is provided.
10. State leaders consider the prioritized freight system proposals to determine allocation of public resources. The Freight Corridor

Classification Criteria may be used for all freight modes and transportation facilities in Washington State.

WSDOT Statewide Freight Data and Analytic Program

WSDOT recognizes the need to develop a comprehensive Washington State Freight Data and Analytic Program that provides high quality, standardized freight data on an ongoing basis. This data is necessary to implement the Freight Corridor Classification Criteria.

Components of the 10-year program include:

- Statewide commodity flow data to link freight corridors with regional and state economic output.
- System-wide truck counts and standardized data collection methods.
- Statewide training in the use of standard freight data collection and analytic methods.
- State freight information center providing a single source for freight data.
- Graphic Information System maps of the state's freight systems.
- Industry sector growth forecasts to determine future demand.
- Inventory of the state's rail and marine systems.
- Statewide freight system model.
- Targeted freight system analyses.
- Identification of freight user performance goals and measurements to track system performance.
- Urban freight system analysis.
- Data to support freight-related emission reduction strategies.

WSDOT Freight Rail Benefit/Impact Evaluation Methodology

Development of the Methodology

As directed by ESHB 1094, WSDOT convened a work group comprised of representatives from FMSIB, the Department of Agriculture, and various modal service providers and users in 2007-2008. The work group collaborated to develop the methodology and supporting tools that will be used to evaluate state investments in rail projects. The Rail Benefit/Impact Evaluation Methodology and supporting tools were developed considering:

- The priorities detailed in ESHB 1094.
- Public benefits measured by quantitative and qualitative criteria.
- Benefit levels for each user group: the state, ports, shippers, railroads, and communities.
- Comparison of stakeholder benefits to support negotiations leading to the appropriate level of state and other entities' funding participation.

- Recommendations from the 2006 Statewide Rail Capacity and Needs Study.

Components

The methodology is comprised of the following components:

- Rail Benefit/Impact Evaluation Methodology (Guidance Document)
- Proposal Application
- Rail Benefit/Impact Evaluation Workbook
  - Legislative Priority Matrix
  - Project Management Analysis
  - User Benefit Levels Matrix
  - Benefit Cost Analysis Tool
  - Benefit Cost Analysis Summary Sheet
  - Benefit Impact Evaluation Summary Sheet

The evaluation process should apply different levels of rigor in recognition of the type, size, and complexity of the project being evaluated, and the users' expectations of results.

Analytic process

The analysis generally starts when a project proposal application is submitted to WSDOT, although it may be used to evaluate other rail projects under consideration by the state. The Department verifies the information in the application by confirming that it reflects actual existing field conditions and aligns with project requirements. Shippers, railroads, business owners, and other parties related to the project must confirm that the information in the application accurately represents their business needs and level of commitment to the project.

The Rail Benefit/Impact Workbook Legislative Priority matrix and Project Management Analysis worksheets determine how well the project aligns with the state's priorities, and how it will meet scope, schedule, and budget expectations. The User Benefit Levels Matrix worksheet helps evaluators determine which stakeholders receive benefits and at what approximate level. After the project has been reviewed using the Rail Benefit/Impact Evaluation Methodology and tools, a summary of results is published. The summary includes how the project was reviewed, tools applied, reasoning, and recommendations. Exhibit 18 is a copy of the Rail Benefit/Impact Evaluation.

Flexibility for Future Use

The freight Rail Benefit/Impact Evaluation Methodology and tools have been developed for use today, and with foresight to expand its capabilities in the future. For example, when information from the proposed statewide

Freight Data and Analytic Program is available, it should be incorporated into all rail project evaluations.

As changes in the economy and the state's goals occur, the methodology will need to be updated to ensure the correct benefits and measures are being used. A technical work group will periodically review baseline evaluation results and the latest evaluation results to ensure that the process uses the correct measures and benefits for current freight conditions.

The freight Rail Benefit/Impact Evaluation Methodology has garnered the interest of other Departments of Transportation around the country, who are reviewing it as a best practice and possible incorporation into their own processes.

WSDOT's Proposed Freight Highway and Rail Projects

2009-2028 Highway System Plan Freight Highway Project Proposals

Please see Exhibit 10 for a complete list of new, low-cost freight project proposals ready to be implemented in 2009-2011 in the *2009-2028 Highway System Plan*.

Exhibit 11 lists highway projects and strategies with significant freight benefits that were included in the *2009-2028 Highway System Plan* for future evaluation and funding.

Freight Rail Project Proposals

The timing of this report fell mid-way into the 2008 Freight Rail Assistance Program and Freight Rail Investment Bank Program evaluation cycle. These rail project recommendations are due to the Legislature on November 1, 2008. WSDOT issued a call for projects for the Freight Rail Assistance Program and Freight Rail Investment Bank Program on May 20, 2008, with a submittal due date of September 5, 2008. Proponents' projects will be evaluated using the finalized Rail Benefit/Impact Evaluation Methodology.

The Freight Rail Investment Bank Program list of recommended projects that was submitted to the Office of Financial Management and the Legislative Transportation Committees on December 1, 2007, was evaluated using the component of the methodology that had been completed at that time. Please see Exhibit 12 for a list of these projects.

At the request of the Legislature, WSDOT also evaluated a proposed state rail project—Stampede Pass Tunnel Modifications—using a qualitative analysis method in 2007. The Department was required to analyze the

volume of freight traffic that would likely be shipped by rail rather than trucks, if the Stampede Pass rail tunnel were modified to accommodate double-stacked rail cars. The result of that analysis shows that investment in mainline railroad capacity could accommodate fast growing rail freight demand for accessing greater U.S. markets. However, as truck services from Eastern Washington to Central Puget Sound markets are readily available at a comparable cost to rail, market demand is unlikely to produce a modal shift, all things being equal. The Department's analysis showed that the proposed investment was unlikely to moderate growth in truck traffic on the state's congested urban highways without substantial investments in improved local access and timely services of short-line rail freight.

WSDOT is working towards developing a comprehensive freight rail methodology that takes into account current market conditions or, at a minimum, those that reflect the state's goals and interests, as directed by the Governor's office and the Legislature.

The WSDOT Project Management System: Highway and Rail Capital Project Delivery

One of WSDOT's core responsibilities is to manage and deliver each project funded by the Legislature as scoped, on-time and within budget. Project delivery begins with the programming of a given project, extends through design, right of way, and construction activities, and terminates once the project is "operationally complete" or ready to serve its purpose. The Governor established a goal for WSDOT to complete 90 percent of highway projects on-time and within budget in *"The Cabinet Strategic Action Plan."* The Department's internal goal is to deliver 100 percent of all projects on-time and on-budget.

Highway Project Management System

Delivery of a highway project is a complex process and is dependent upon numerous entities for review, approval, cooperation, and coordination. A myriad of federal, state, and local laws and regulations govern all aspects of project delivery. WSDOT has also received direction from the Legislature regarding project management, control, and reporting procedures. The Department has an integrated system of project control, reporting, and management to support its project delivery objectives.

Project Control and Reporting

WSDOT's Project Control & Reporting division provides transparency and accountability for public projects by measuring project delivery and reporting results. WSDOT uses the Capital Program Management System

to establish, monitor, and deliver the statewide Highway Capital Construction Program and its *Gray Notebook* to report the results. The Department has prioritized standardization of data and processes to ensure that comparable analyses and management controls are applied across modes and regions.

Project Management Continuous Improvement

WSDOT's management principle for delivery and accountability is to manage the resources taxpayers and the Legislature entrust to us for the highest possible return of value. The Department refined its project management process for delivering capital transportation projects in 2005 by Executive Order 1032.00. This project management process, as adopted by WSDOT, is based upon industry standards for project management, such as the Project Management Body of Knowledge through the Project Management Institute. The Department's Project Management Process is a five-step process that includes: Initiate and Align the Team; Plan the Work; Endorse the Plan; Work the Plan; and Transition and Closure.

In 2006 and 2007, the Legislature provided funding for formation of the Statewide Program Management Group (SPMG). This team developed a strategic plan for program delivery in 2006. The Department is now implementing recommendations from that plan with support from the SPMG team.

WSDOT Rail Capital Delivery Project Management System

To meet the Department's project delivery goals, the WSDOT State Rail and Marine Office implemented Project Management Institute processes and procedures as part of their project delivery program in 2007. The WSDOT State Rail and Marine Office folio "A Guide for Funding Recipients" describes the capital rail project management processes and procedures and is included in Exhibit 19.