

Washington State Freight Rail Plan

2010-2030

Scott Witt, Director

State Rail and Marine Office

Washington State Department of Transportation

Paula Hammond

Secretary of Transportation

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Chief of Staff

Olympia, Washington

September 30, 2009



National Freight Plan

Scott Witt, Director
State Rail and Marine Office

National Rail Plan

FRA meeting on September 9, 2009, addressed these questions.

- What should be in America's National Rail Plan?
- What is the best process to bridge from preliminary National Rail Plan to the long-range National Rail Plan?
- What should be the interface between state and national plans?

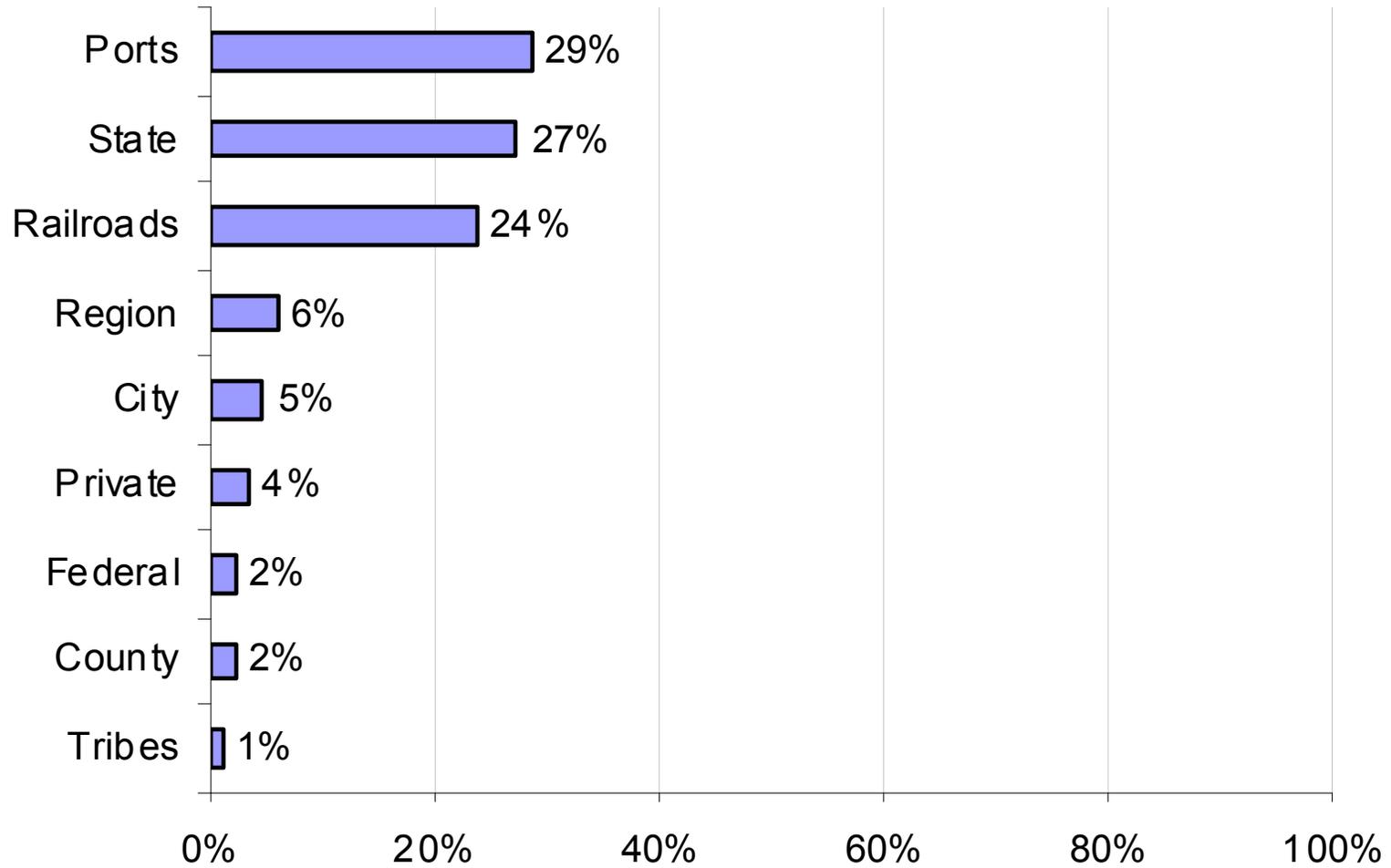
Review of Projects Survey

Lynn Scroggins
Senior Rail Planner
State Rail and Marine Office

Projects Survey Summary

- Number of Responses: ~88 projects
- Multiple Funding Sources: ~46%
- Mainline Projects: ~50%
- Project Estimate Range:
 - High \$150,000,000
 - Low \$125,000
- Total So Far: \$1,805,116,540

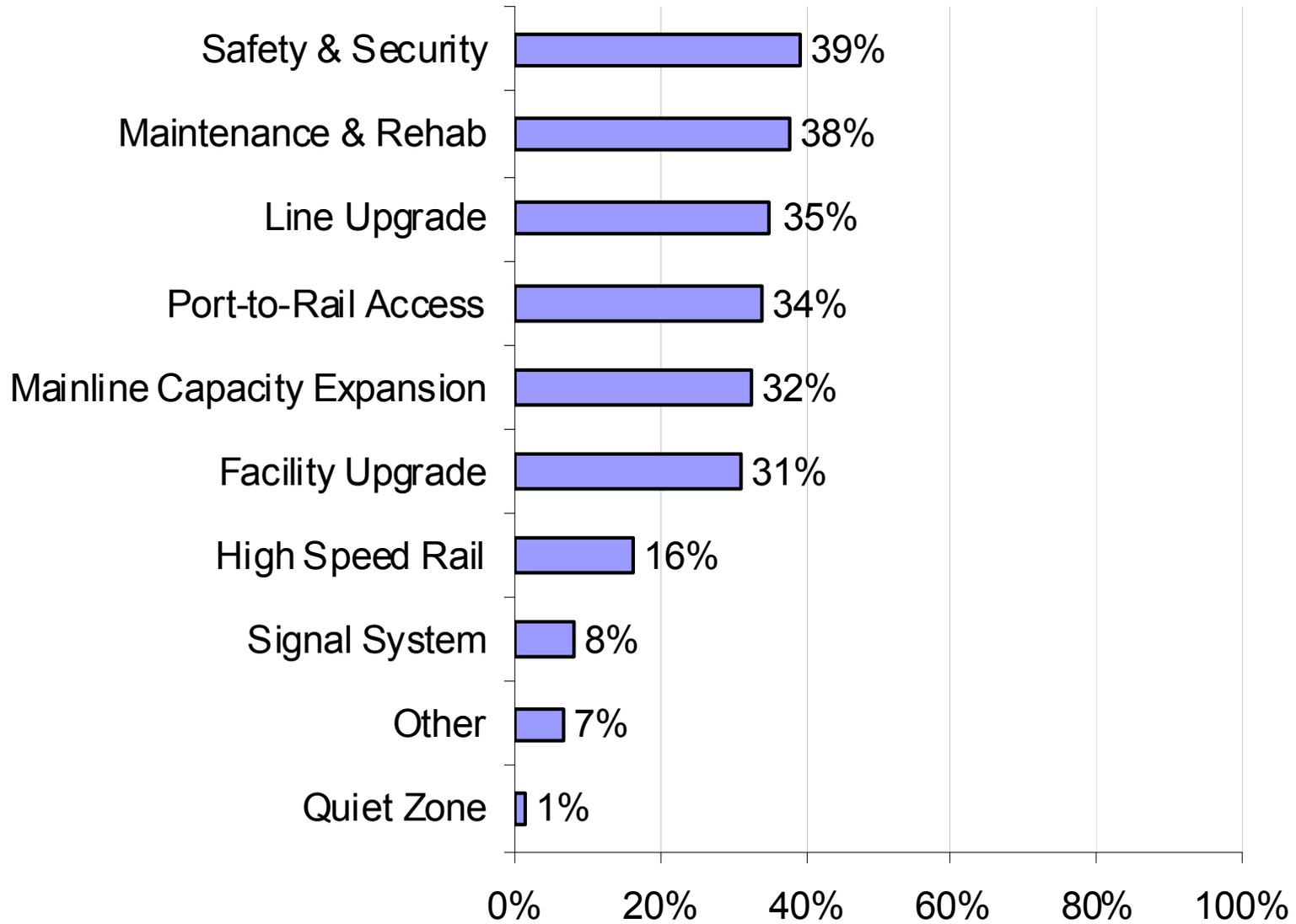
Survey Respondents – 84 Responses



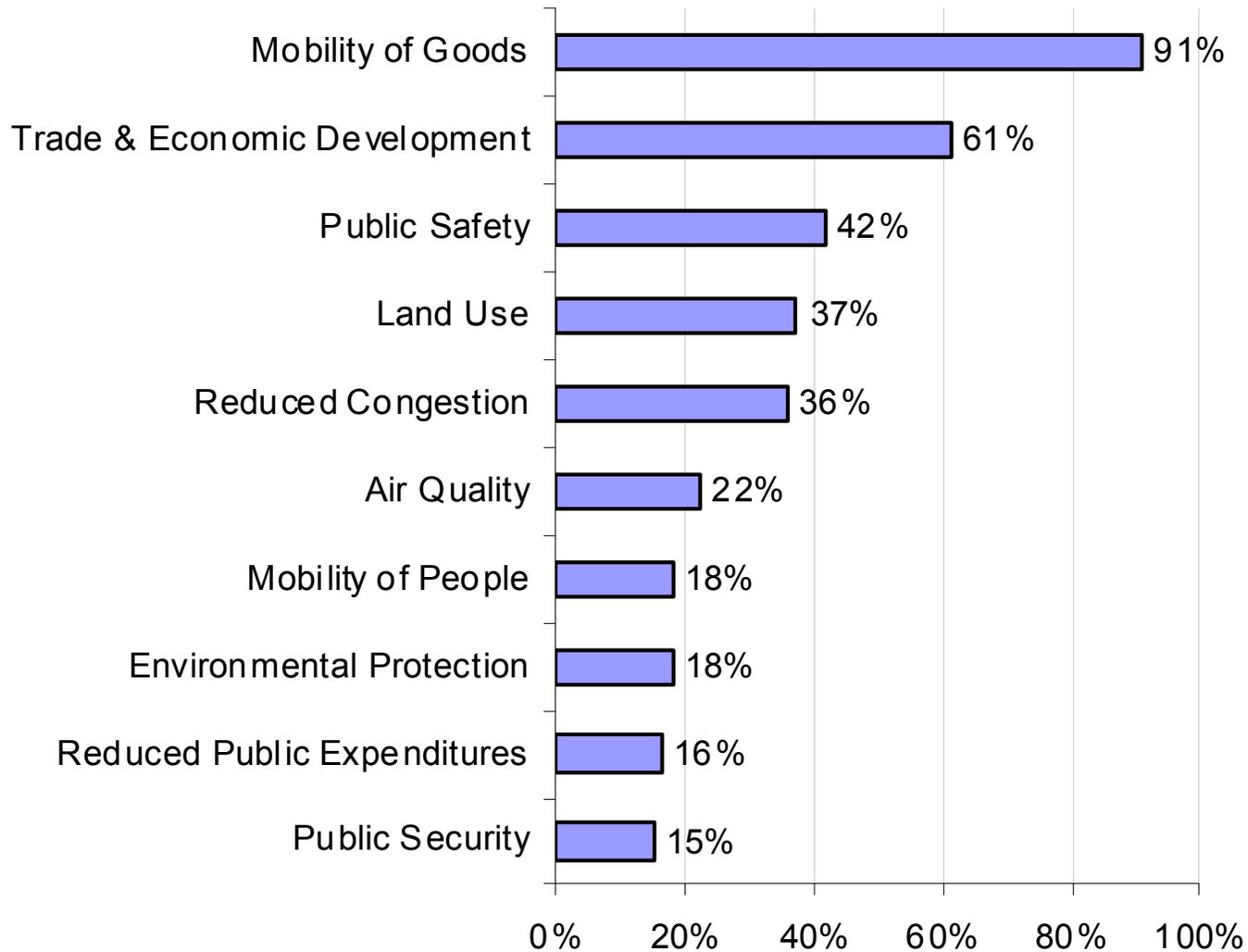
Estimated Completion Dates

Dates	Number of Projects
2010	14
2011	8
2012	5
2013	2
2014	2
2015	2
2016	2
2017	1
2018	1
2020	1
2022	1

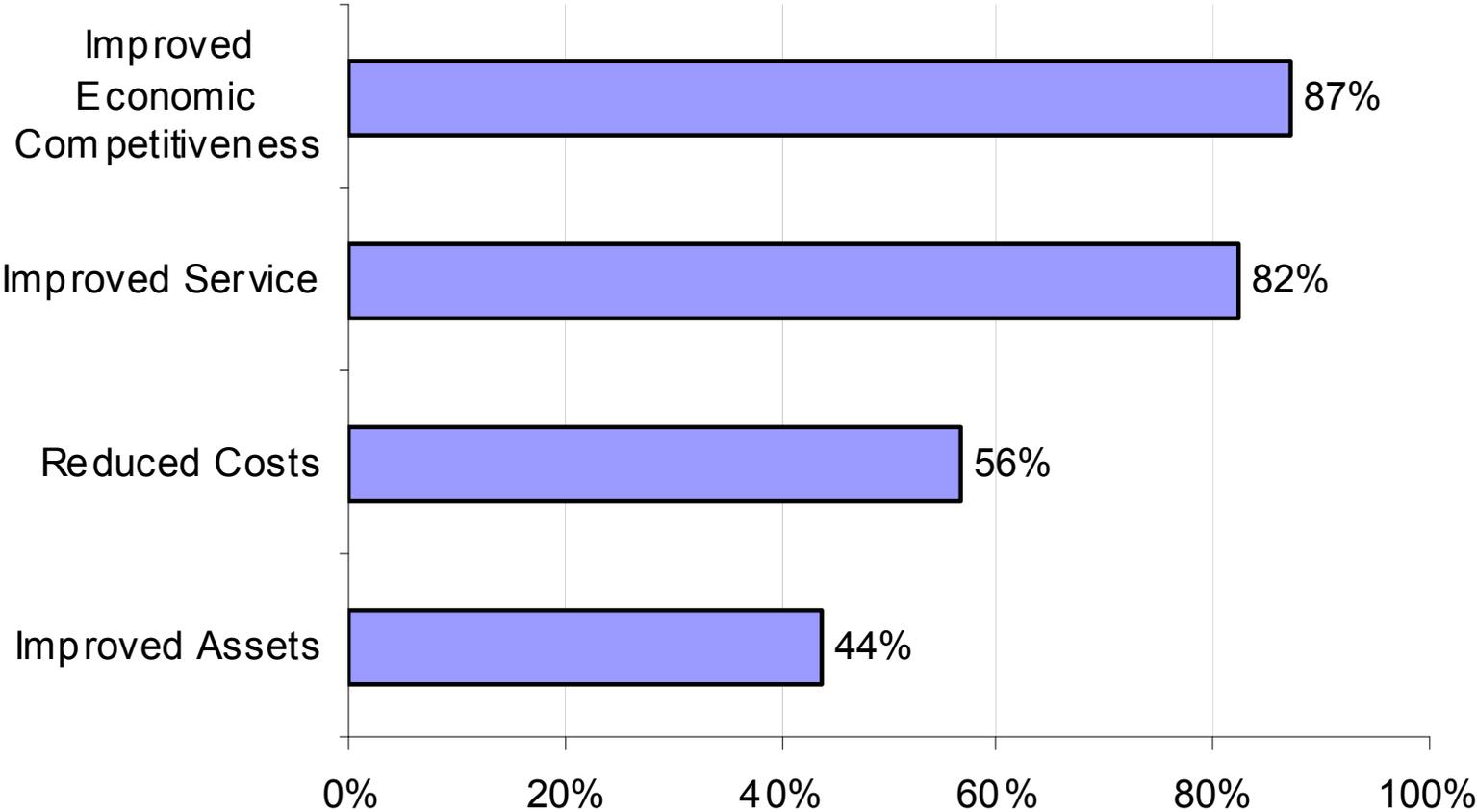
Project Types – 74 Responses



Public Benefits – 67 Responses



Private Benefits – 62 Responses



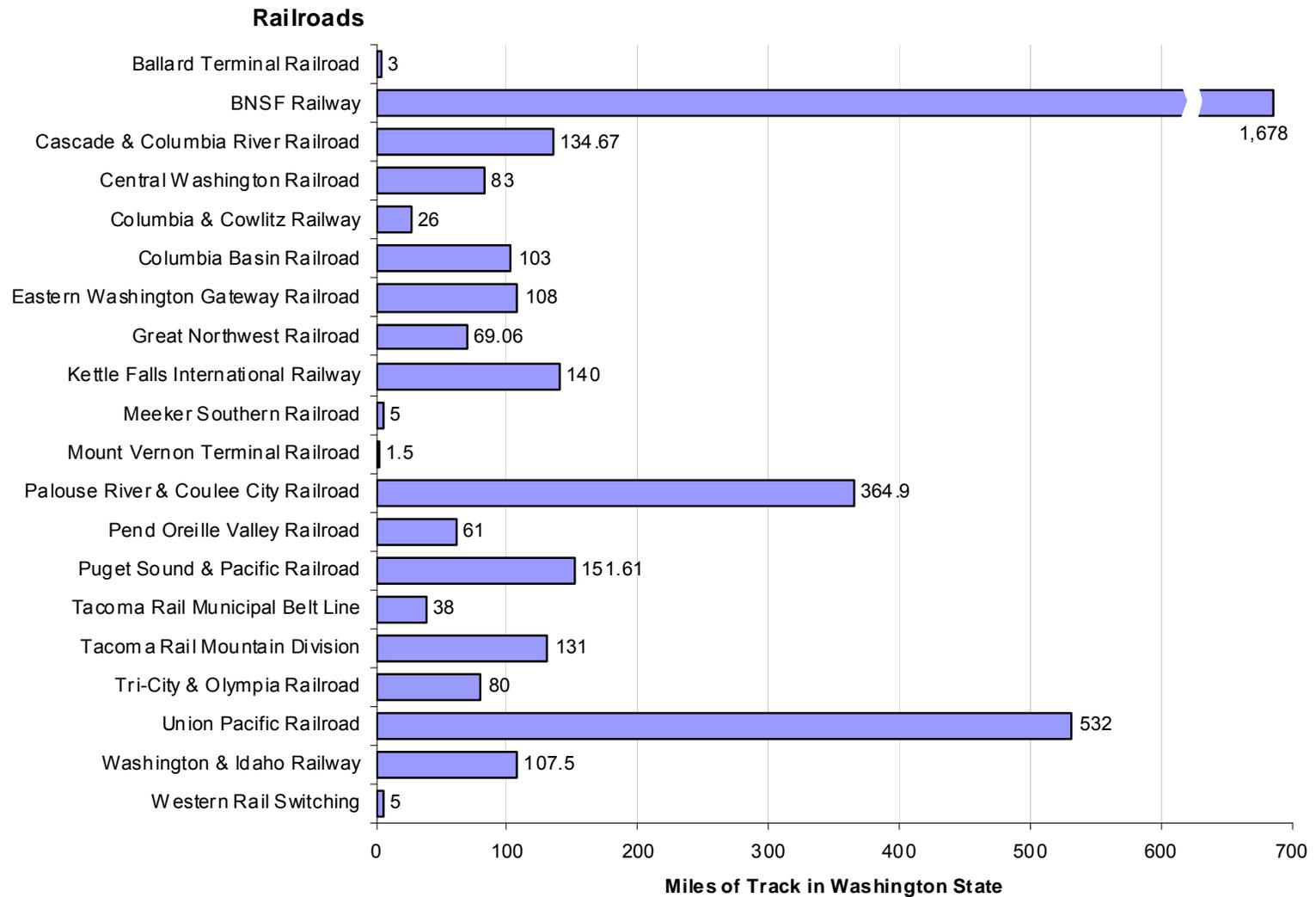
Rail Assets and Capacity

Teresa Graham

Research and Data Specialist

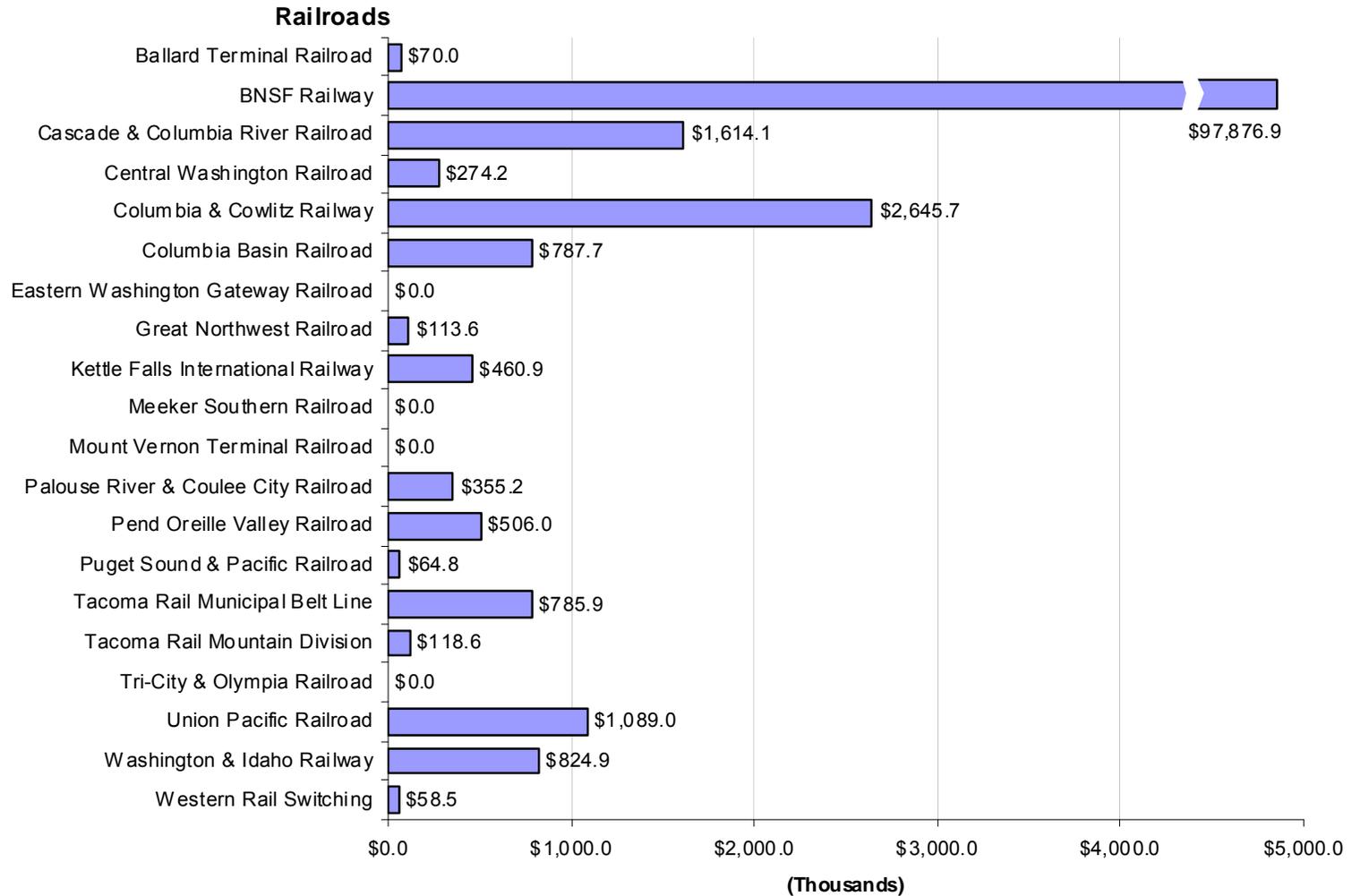
State Rail and Marine Office

Owned/Operated Miles of Track – 2008*



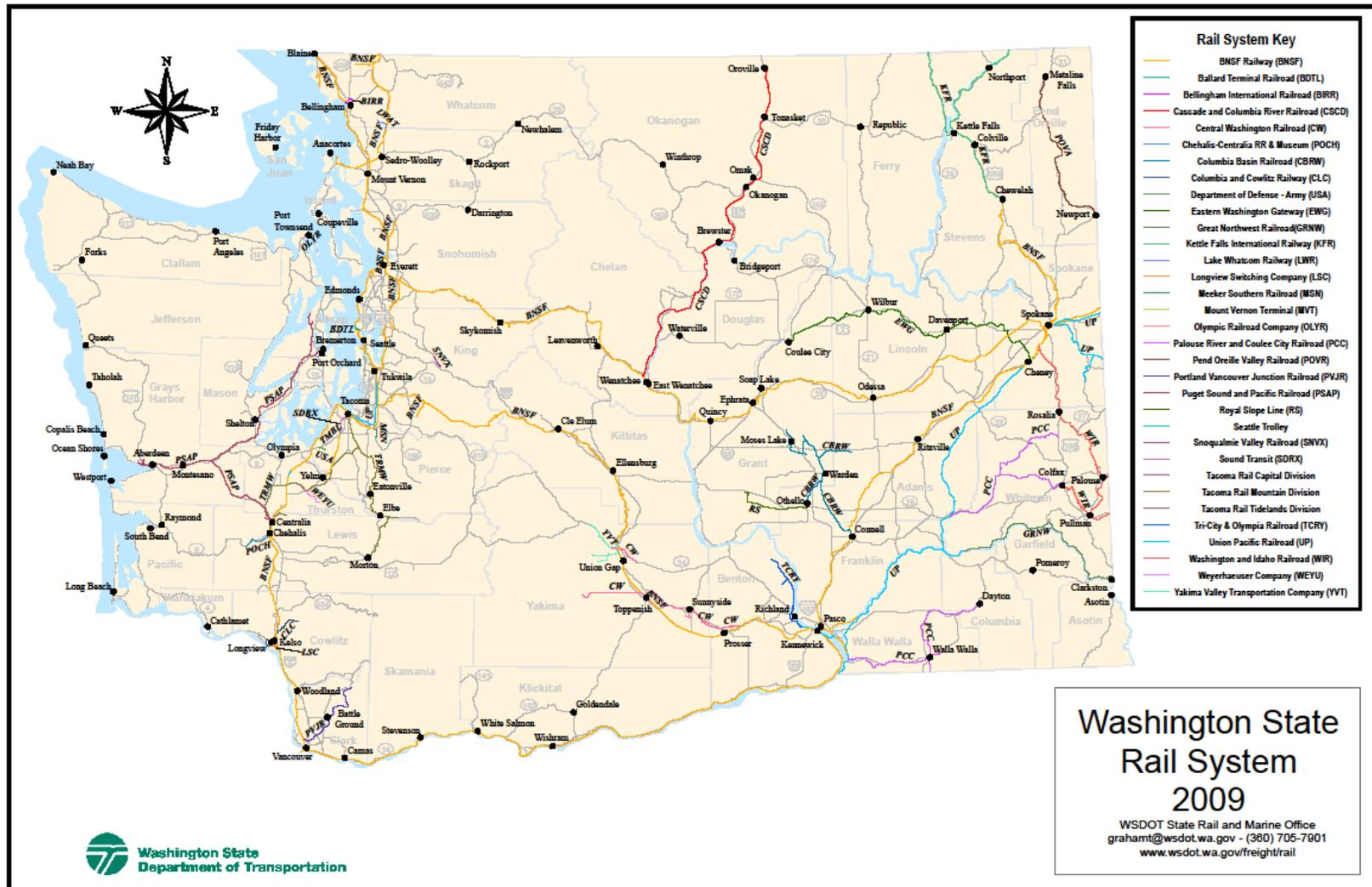
*2008 Utilities and Transportation Annual Reports

Total Gross Intrastate Operating Revenues per Railroad – 2008*

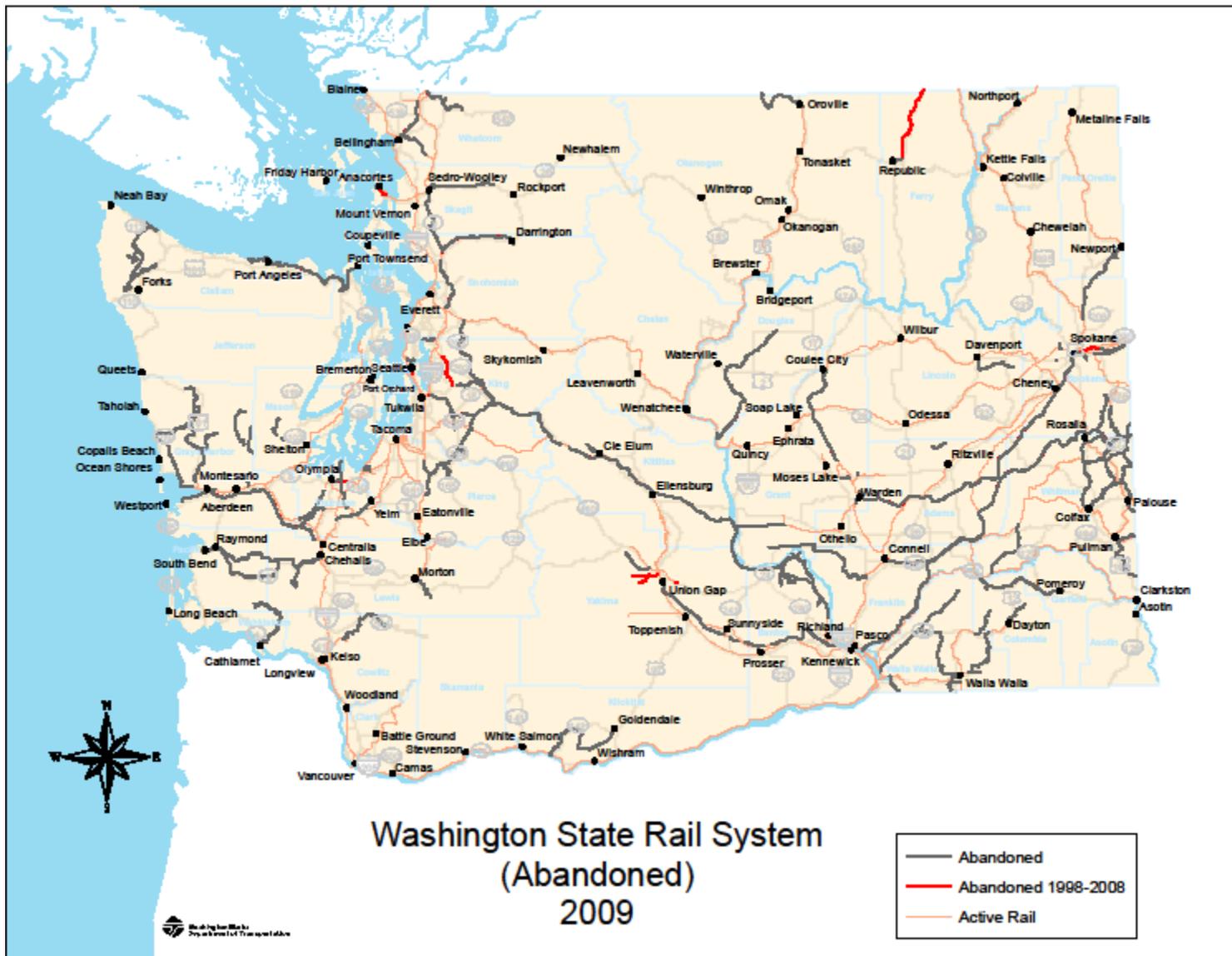


*2008 Utilities and Transportation Annual Reports

2009 Rail System



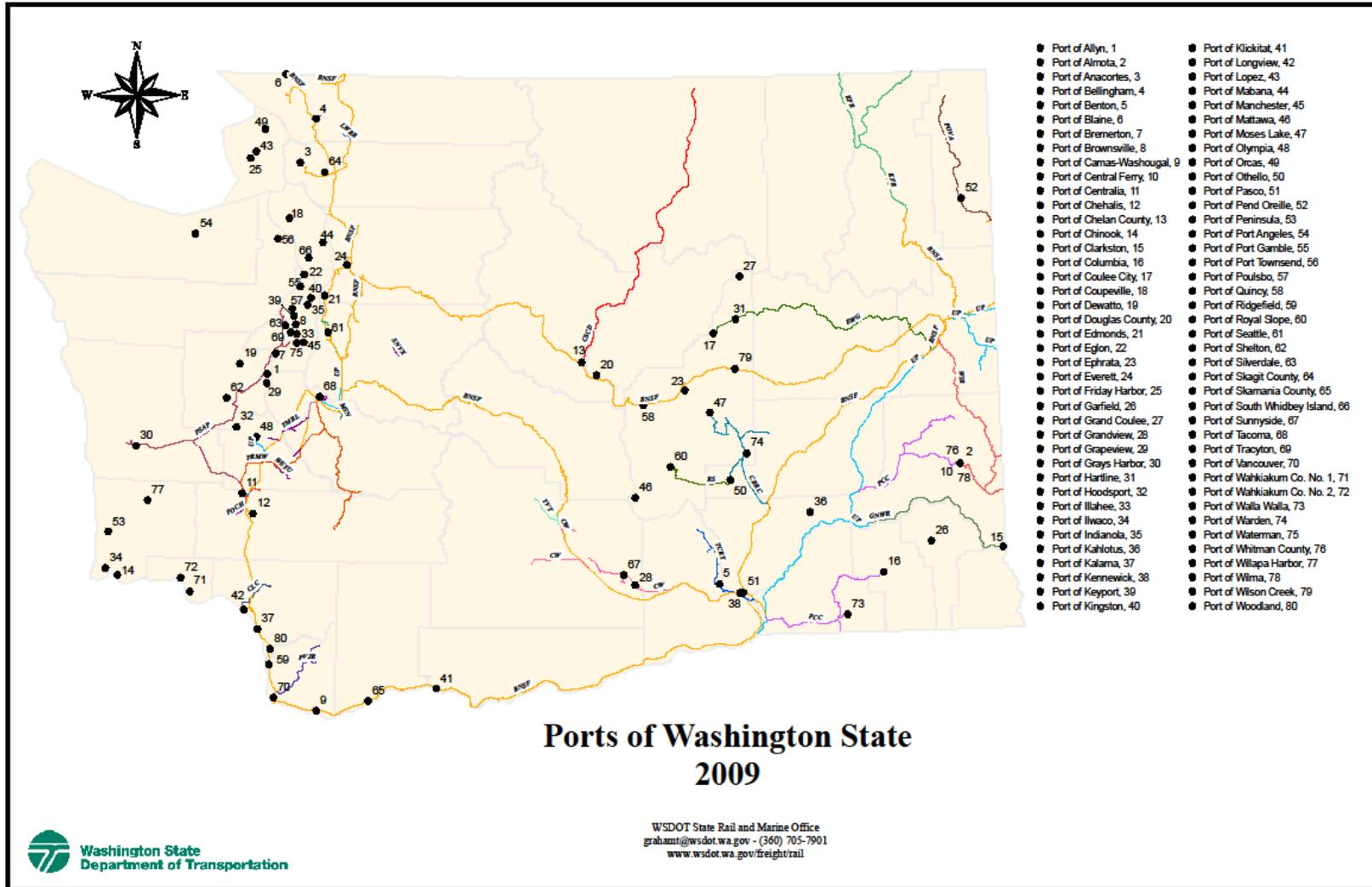
Abandoned Rail Lines



Abandonment Survey List: Likely Abandonments – 11 Received

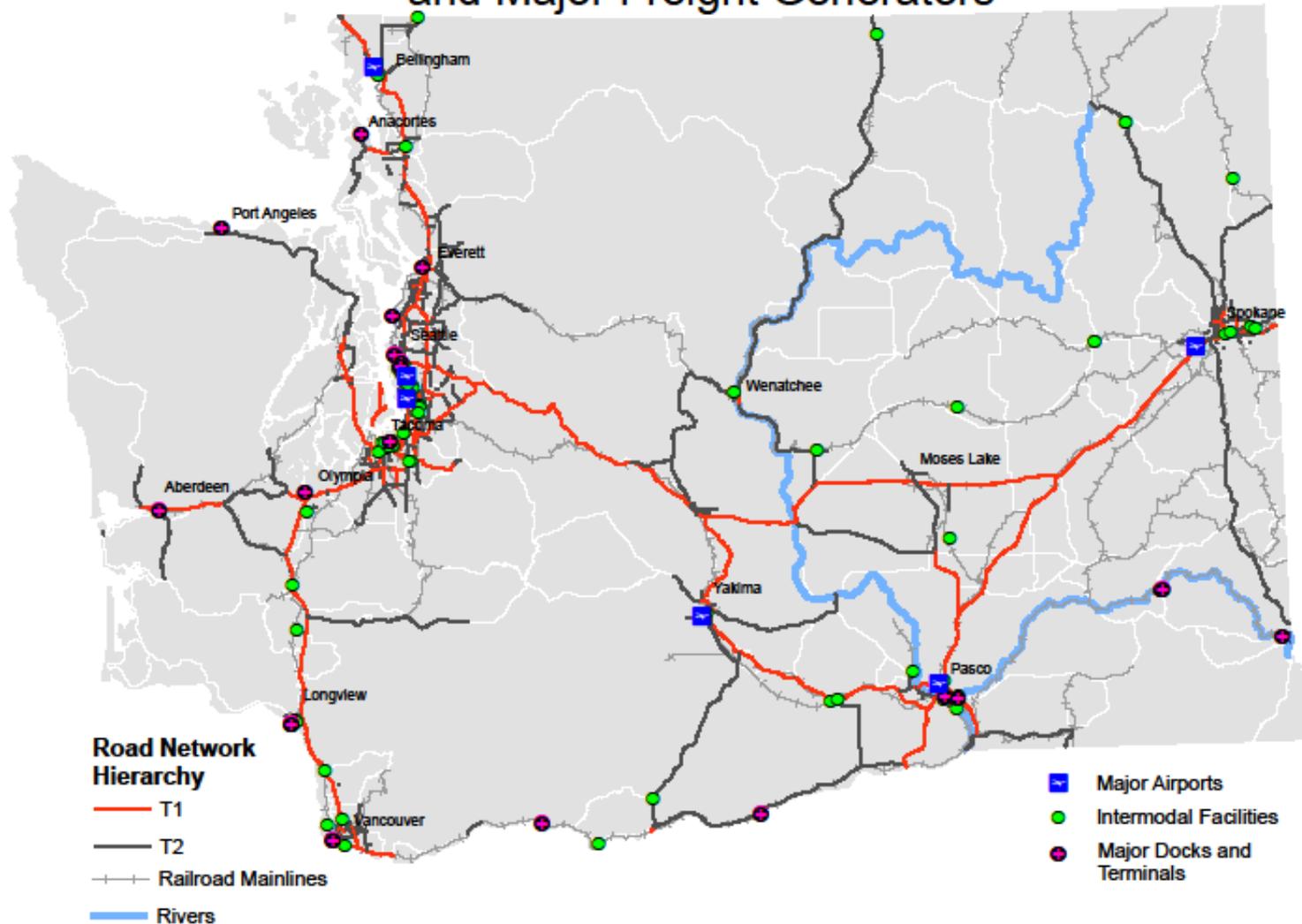
Submitted by	RR Owner	RR Operator	Location
Port of Grays Harbor	PSAP	PSAP	West of Hoquiam River
Port of Othello	Don't Know	Don't Know	Reopen Milwaukie Line
Port of Seattle	BNSF	BNSF	Snohomish/ Woodinville/Renton and Woodinville/ Redmond
Union Pacific	UP	None	Yakima Industrial Lead, MP 57.3 to MP 58.75
Union Pacific	UP	None	Yakima Industrial Lead, MP 62.75 to MP 63.55
Yakima County Public Services	Don't Know	Don't Know	White Swan Branch Line

Washington State Ports



Intermodal Facilities

Washington State Freight Network and Major Freight Generators

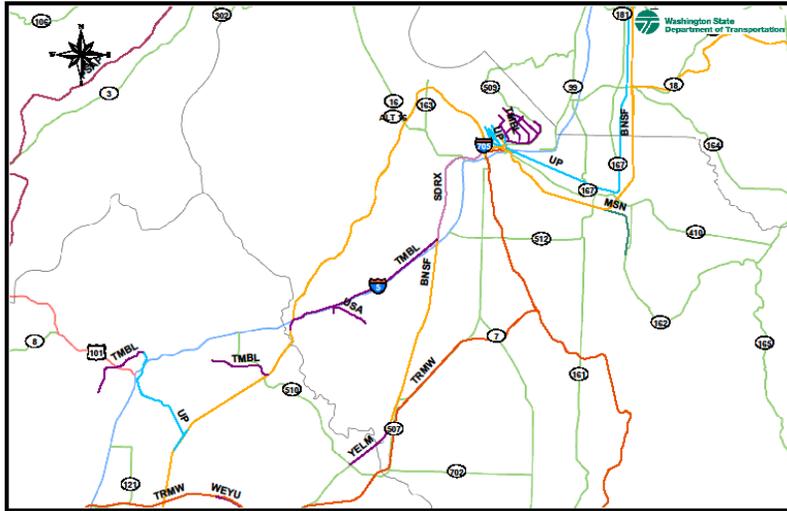


Railroad Assets and Capacity

For each railroad this will include:

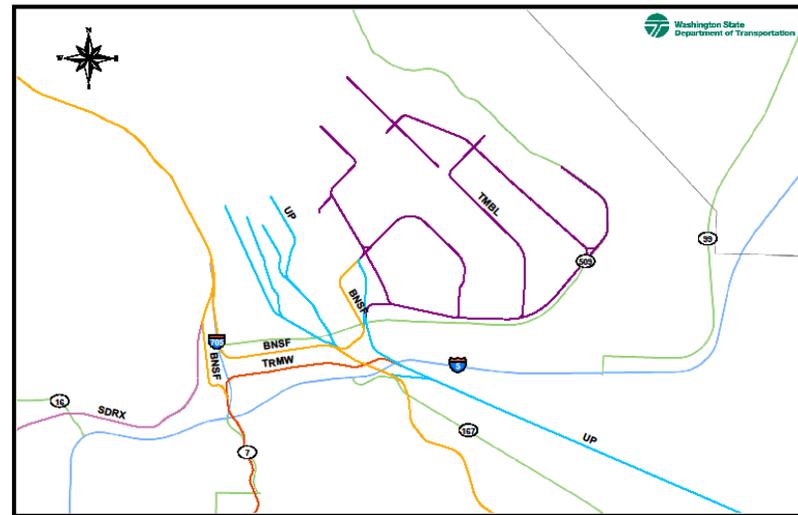
- Location of rail line.
- History of rail line.
- Commodities carried.
- Revenue per 2008 UTC report.
- Map of rail line.

Rail Assets Map Sample



Tacoma Rail
Mountain Division

Tacoma Rail
Municipal Belt Line



Railroad Capacity

2006 Rail Capacity Study

Rail Segment	RR	Capacity
Vancouver, BC to Ferndale	BNSF	7
Ferndale to Burlington		14
Burlington to Everett		24
Everett to Seattle		45
Seattle to Tukwila		137
Tukwila to Auburn		204
Auburn to Tacoma		122
Tacoma to Nisqually		72
Nisqually to Castle Rock		101
Castle Rock to Woodland		96
Woodland to Vancouver, WA		146
Everett to Wenatchee		22
Wenatchee to Spokane		24
Auburn to Yakima		10
Yakima to Pasco		12
Pasco to Lind		40
Lind to Spokane		48
Auburn to Yakima		10
Yakima to Pasco		12
Pasco to Lind		40
Lind to Spokane		48
Pasco to Lind		40
Lind to Spokane		48
Vancouver to Wishram		36
Wishram to Pasco <7,000' Trains		72
Wishram to Pasco >7,000' Trains		28
Spokane to Sandpoint, ID		70
Sandpoint, ID to Whitefish, MT		50
Wishram to Bend, OR		9

Rail Segment	RR	Capacity
Tukwila to Tacoma	UP	36
Portland, OR to Wishram		35-40
Wishram to Hinkle, OR		35-40
Hinkle, OR South		30-35
Hinkle, OR to Spokane		7
Spokane to Eastport, ID		8

Vision and Goals Update

Lynn Scroggins
Senior Rail Planner
State Rail and Marine Office

State and National Vision/Goals*

- Safety and Security
- Energy
- Livable Communities
- Economic Growth
- Environment
- Congestion Relief
- Jobs
- Mobility
- Preservation

* unranked

Vision Statement

- A future ideal.
- A reflection of positive and negative scenarios.
- Incorporates statewide perspectives.
- Incorporates functionality and linkages with the Washington State economy and society.

Goals*

1. Support Washington's economic competitiveness and economic viability through strategic freight rail partnerships.
2. Preserve the ability of Washington's freight rail system to efficiently serve the needs of its customers.
3. Facilitate freight system capacity increases to improve mobility, reduce congestion, and meet the growing needs of Washington's freight rail users, when economically justified.

* unranked

Goals* (Continued)

4. Take advantage of freight rail's modal energy efficiency to reduce the negative environmental impact of freight movement in Washington.
5. Address the safety and security of the freight rail system and make enhancements, where appropriate.
6. Encourage livable communities and family-wage jobs through freight rail system improvements.

* unranked

State Functions – Leadership and Expansion

- Data Management and Information Capacity
- Statewide Coordination and Partnerships
- Public Awareness
- Funding Capacity
- Strategic Planning

Cost Benefit Analysis

George Xu, Ph.D.

Strategic Planning & Research Manager

State Rail and Marine Office

Background

The *Washington Rail Capacity and System Needs Study* was requested by the Washington State Legislature (2006) to answer the question:

“Should the state continue to participate in the freight and passenger rail system, and if so, how can it most effectively achieve public benefits?”

The conclusion is that the state **should** continue to participate in the freight and passenger rail systems because:

- The economic vitality of Washington State requires a robust rail system.
- The current rail system is nearing capacity.

Study Recommendations

- The state should invest only when it has been demonstrated that projects will deliver **public benefits** to the citizens and businesses of Washington State, and when it has been demonstrated that there is a low likelihood of obtaining those benefits without public involvement.
- The state should make effective and responsible improvements to the rail system improvements that will serve the **economic development, transportation, social, and environmental goals** of Washington State and its citizens.

Legislative Directions

Under ESHB 1094, the Washington State Legislature required Washington State Department of Transportation (WSDOT) to develop and implement the benefit/impact evaluation methodology recommended in the *Statewide Rail Capacity and System Needs Study*, finalized December 2006.

Legislative Directions (Continued)

The benefit/impact evaluation method is developed using the following priorities, in order of relative importance:

1. **Economic, safety, or environmental advantages of freight movement by rail compared to alternative modes;**
2. Self-sustaining economic development that creates family-wage jobs;
3. Preservation of transportation corridors that would otherwise be lost;
4. Increased access to efficient and cost-effective transport to market for Washington's agricultural and industrial products;
5. Better integration and cooperation within the regional, national, and international systems of freight distribution; and
6. Mitigation of impacts of increased rail traffic on communities.

Tool Development

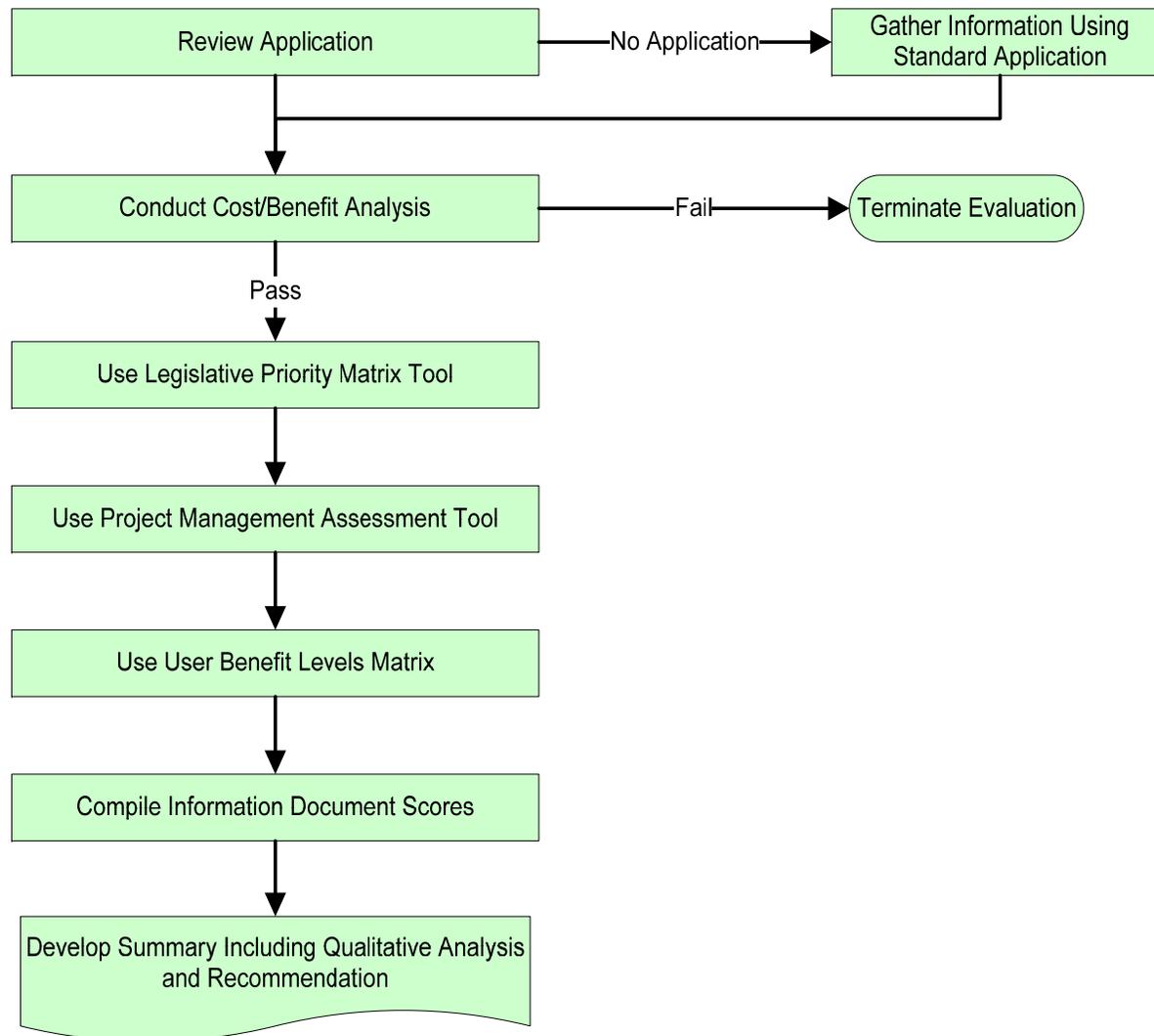
WSDOT developed CBA tool for rail based on legislative guidance and with assistance from partners:

- Other state agencies (FMSIB, CTED, Department of Agriculture, Labor, WTC)
- Private railroads (mainlines and short lines)
- Associations of Washington Cities and Counties
- Ports
- Legislative and Governor's staff

Benefit/Cost Analysis Tool Overview

- Evaluation Process.
- Benefit/Cost Calculator.
- Legislative Priority Matrix.
- Project Management Assessment.
- User Benefit Levels Matrix.

Evaluation Process



Step 1: Quantify Benefits and Costs

■ Benefits:

- Transportation Benefits (travelers' time saving, reduction in highway congestion, shipper's savings, reduction in highway use, reducing auto delay at grade crossing, etc)
- Economic Benefits (jobs, taxes, business incomes).
- External impacts (emission reduction and safety improvement).

■ Costs

- Capital investment.
- Cost of maintaining project work during estimation period.
- Cost of maintaining equipment during estimation period.
- Leverage.

Update Values of Benefits and Rail Cost Indices

- Benefit Values:
 - WSDOT economists update benefits values periodically to ensure quick and high quality CBAs are performed upon requests from policy makers or required by routine program needs.
- Costs:
 - WSDOT developed rail cost inflation indices system to accurately gauge project costs. Such indices are updated quarterly.

Assess Quantitative Benefit and Cost

This Benefit/Cost spreadsheet is used to calculate cost-effectiveness of rail projects based on the initial construction cost of the project and anticipated yearly savings and maintenance costs. Enter benefits starting in the year they will start to be realized.

	2008	2009	2010	2011	2012	2013	2014	
Measures (see measures sheet for explanations)								
Transportation and Economic Benefits								
Reduced Road Maintenance Costs					\$4,147	\$5,076	\$6,048	\$7,020
Shipper Savings					\$49,075	\$60,066	\$71,568	\$83,070
Reduction in auto delays at grade crossing								
Economic Impacts								
New or retained jobs								
Tax from industrial development								
External Impacts								
Safety Improvements					\$48,425	\$59,271	\$70,620	\$82,070
Environmental benefits					\$45,824	\$56,087	\$66,827	\$77,570
Total Maint Costs	Yearly maintenance and other recurring costs							
	\$65,933	\$0	\$0	\$0	\$0	\$6,500	\$7,000	\$7,500
Maint Present Value	\$0	\$0	\$0	\$0	\$5,343	\$5,532	\$5,699	\$5,866
Project Cost								
	Net Yearly Benefits							
	\$1,291,354	\$0	\$0	\$0	\$0	\$147,471	\$180,500	\$215,063
Benefit Present Value	\$0	\$0	\$0	\$0	\$121,210	\$142,652	\$163,430	\$184,210

Factor	Value	Definition
15 -Yr. Benefits	\$3,034,694	Total Benefits
Payback*	10.23 years	Time for payback
Discount Rate	4.00%	Rate used to calculate time value of money
NPV	\$654,244	Net Present Value of all costs and benefits
B/C Ratio	1.48	The ratio of the Net Present Value of all benefits to Net Present Value of all costs
B/C Pass	yes	B/C ratio greater than or equal to 1.00?

Step 2: Assess Benefits Based on Legislative Priority

- Assessment of how a project fit with legislative priorities.
- Weighted.
- Guidance for evaluators for scoring.
- Summary of scores by priority.

	4: Highly likely/probable (76%-100%)	3: Likely (51%-75%)	2: Somewhat likely (26%-50%)	1: Unlikely/improbable (0%-25%)	-1: Has a negative impact on benefit	Totals	Comments
Legislative Priorities and Measures							
i) Economic, safety, or environmental advantages of freight movement by rail compared to alternative modes							
Yellow boxes are calculated automatically							
Economic	4						
Safety		3					
Environmental			2				
						54	
ii) Self-sustaining economic development that creates family wage jobs							
New Jobs				1			
Retained Jobs			2				
Business		3					
						30	
iii) Preservation of transportation corridors that would be otherwise lost							
Rail preservation				1			
Intermodal			2				
Access			2				
						20	
iv) Increased access to efficient and cost-effective transport to market for Washington's agricultural and industrial products							
Washington Products							
Service Reliability							
Access to Rail							
						0	
v) Better integration and cooperation within the regional, national, and international systems of freight							
International and National Trade Flow							
Access to Markets							
Integration with Other Modes							
						0	
vi) Mitigation of impacts of increased rail traffic on communities							
Reduced Roadway Delays							
Reduction in Noise or Vibration							
Reduction in Vehicle/Train Crashes							
						0	

Summary of Project Scores by Legislative Priority	i	54
	ii	30
	iii	20
	iv	0
	v	0
	vi	0

Total Legislative Summary Score	104
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Benefit Matrix Ranking for Project Management Assessment		
Measure	Score	Comments
Project Readiness		
Partner Funding		
Project Scope		
Project Resources		
Project Budget		
Project Schedule		
Project Equipment Needs		

Project Management Score	0
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A weighted matrix tool that assesses qualitative benefits based on Washington State Legislature's priorities.

Step 3: Project Management Ranking

A project management matrix is developed to evaluate likelihood of success of a project when invested.

- Project management assessment.
- Prompts evaluation of project readiness.
- Evaluates the current cost, scope, and schedule status.

Benefit Matrix Ranking for Project Management Assessment

Measure	Score	Comments
Project Readiness		
Partner Funding		
Project Scope		
Project Resources		
Project Budget		
Project Schedule		
Project Equipment Needs		

Project Management Score	0
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Step 4: User Benefit Levels Matrix

The User Benefit Levels Matrix is intended to help determine who is benefiting from the project and at what level. The matrix is to be completed giving a percentage that represents the amount of benefit for each user for each measure. The percentage of benefits are then added for each user and divided by the number of measures used providing an overall project benefit for each user.

- Different benefits/measures.
- Distributional impacts on users.

User Benefit Levels

Enter the percentage of benefit for the measure that will be realized for each user of the result of the project. The total value must equal 100%. Provide reasoning information for the conclusion of amounts in the comment section.

Measure ↓ User →	State	Ports	Trucking	Shippers	Railroads	Communities	Totals	Comments
New Jobs	75%					25%	100%	
Cost Reductions				80%		20%	100%	
System Velocity Improvements	25%			25%	50%		100%	
Hours of Train Delay	25%	25%			50%		100%	
Yard Dwell Time	30%				70%		100%	
Increased Traffic Revenue		25%			75%		100%	
Reliability	50%				50%		100%	
Throughput/Capacity	14%	12%	74%				100%	
Market Share	25%				75%		100%	
Competitive Advantages						100%	100%	
Shipping Advantages	25%	25%			50%		100%	
Region Economy						100%	100%	
State Economy	100%						100%	
International Trade Flow	75%				25%		100%	
Network		50%		25%	25%		100%	
Market Access	25%	25%		25%	25%		100%	
Bottleneck Relief		100%					100%	
Benefit Levels	28%	15%	4%		29%	14%		

Results							Comments		
This Test	28%	15%	4%	0%	29%	14%	State should participate, but only if other beneficiaries contribute an appropriate share	Direct investment and supporting institutional mechanisms	The results show the highest levels of benefit are for two of the users. The State and Community are the highest benefactors and as such most of the fund would be by them. Depending on the financial
Example	55%	0%	0%	10%	15%	20%	State should participate and be prepared to contribute more than the other groups if not all funds.	Direct investment at a higher level and supporting institutional mechanisms.	

Summary

- Summary of all quantitative and qualitative results.
- Provides documentation for project ranking.
- Write report for CBA requests from policy makers.

Project Benefit/Impact Evaluation Summary Sheet

What is the preferred alternative and why?

Using the information in the Legislative Priority and Project Management sheet summarize the benefits for this scenario?

Using the information in the User Benefits sheet summarize the results.

Using the Benefit/Cost Analysis sheet summarize the results.

Provide a recommendation for project selection. Summarize how information was reviewed and applied.

Application

B/C tool has been used in following areas:

- Evaluated Rail Assistance and Rail Bank Programs for two consecutive biennia.
- Performed a couple of dozen of Legislature and Governor Requested CBAs.
- Assisted in Amtrak *Cascades* Mid-Range Planning and Washington State Freight Rail Planning.
- Help local programs and entities to analyze benefit and costs.
- Used to develop federal grants application such as ARRA applications.
- Help understanding strategic issues such as second train to Vancouver, B.C.

Next Steps

Important Dates

- **October 6** – Eastern Washington Advisory Committee Meeting, Moses Lake.
- **October 22** – Public Open House, Olympia.
- **November 2** – Draft to Advisory Committee for review.
- **November 13** – All comments from Advisory Committee due to State Rail and Marine Office.
- **December 10** – Final draft to WSDOT Executives.
- **December 31** – Washington State Freight Rail Plan completed.

Questions?

Contacts

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