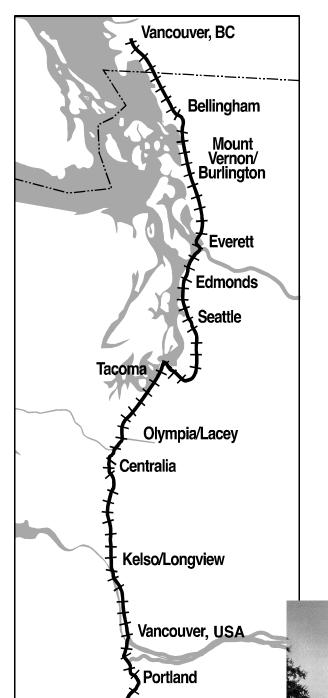
Pacific Northwest Rail Corridor



Revised
Executive Summary
for the
Intercity
Passenger Rail
Plan for
Washington State
1998 – 2018



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Prepared by the Public Transportation and Rail Office, Washington State Department of Transportation.
December 1998

Revised Executive Summary for the Intercity Passenger Rail Plan for Washington State 1998 – 2018

PREPARED FOR THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

BY
THE RESOURCE GROUP
IN ASSOCIATION WITH
HDR ENGINEERING, INC.

DECEMBER 1998

EXECUTIVE SUMMARY

Washington State is incrementally upgrading its Amtrak passenger rail system along the Pacific Northwest Rail Corridor (PNWRC) in western Washington. The State's ultimate goal is to provide faster, more frequent, and more reliable passenger rail service.

The State's vision for passenger rail in the Pacific Northwest extends over a twenty year horizon. The vision is being implemented through an incremental approach, that is, service is being increased over time, based on market demand and legislative funding.

The vision of reduced travel times and better passenger rail service in the Pacific Northwest began in the late 1980s when the Washington State legislature funded a program to improve rail depots across the state. A few years later, the Washington State Legislature directed (SHB 1452) that a comprehensive assessment be made of the feasibility of developing a high speed ground transportation system in the State of Washington.

In October 1992, the <u>High</u> <u>Speed Ground Transportation</u>

<u>Study</u> was delivered to the Governor and the legislature. This study confirmed the feasibility of developing high speed rail in the region.

Following release of this study, Engrossed House Bill 1617 (codified as RCW Chapter 47.79) directed the Washington State Department of Transportation (WSDOT) to develop "high-quality intercity passenger rail service ... through incremental upgrading of the existing [Amtrak] service." By using an incremental (step-by-step) approach to implementing higher speed service, a logical progression of infrastructure investment, service frequencies, and performance are being guided through market demand.

Freight rail and Amtrak intercity rail service is an important part of our state's transportation system.

Moving people and goods by rail is safer and more environmentally friendly than adding traffic to our already congested highways.

Improvements to the State's rail system, whether funded by the private sector or the public sector, can help mitigate the impacts of our fast growing economy and population. As such, the purpose of this WSDOT's Passenger Rail Program is to:

- > Provide a viable, cost effective, travel mode that significantly increases the options for accommodating intercity travel.
- ➤ Respond to the direction given in Revised Code of Washington, RCW Chapter 47.79, to develop high quality rail passenger service through the incremental upgrading of the existing service. A specific purpose of an incremental approach is to prevent as little harm as possible on the environment.
- > Increase safety throughout the corridor.
- Improve passenger, freight, and port operations throughout the corridor by providing for more efficient, predictable, reliable, and cost effective movement of people and goods.

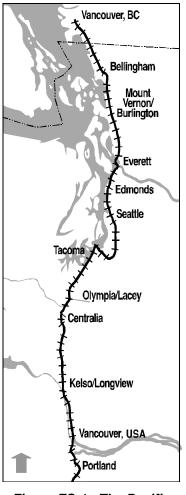


Figure ES-1. The Pacific Northwest Rail Corridor

WHERE DO THE TRAINS RUN?

Amtrak intercity passenger service in the State of Washington is operated over the Burlington Northern Santa Fe Railroad (BNSF) main line. The alignment roughly parallels Interstate 5 and runs through nine counties in western Washington. These counties are: Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, and Whatcom. In addition, a number of cities and towns are also traversed by the rail line, including Vancouver, Kalama/Longview, Kelso, Centralia, Olympia/Lacey, Tacoma, Seattle, Edmonds, Everett, Mt. Vernon, and Bellingham. In Oregon, the alignment travels through Portland, Salem, Albany and Eugene. The Oregon portion of the corridor is discussed in a separate document prepared by the Oregon Department of Transportation.

The corridor is diversely populated and contains a mixture of farmlands, small communities, natural habitats, and large metropolitan areas.

WHO ARE THE PARTNERS FOR THE PNWRC PROGRAM?

Corridor development is a cooperative effort between the states of Oregon and Washington, Burlington Northern Santa Fe Railway (BNSF), Union Pacific Railroad, Amtrak, the Central Puget Sound Regional Transit Authority (Sound Transit), the Province of British Columbia, ports, local communities, and ticket buying passengers.

WHAT WORK HAS ALREADY BEEN DONE OR IS CURRENTLY UNDERWAY?

Over the past five years, the states of Washington and Oregon commissioned a series of feasibility studies intended to assess the practical problems, costs, and benefits of providing public investment to upgrade the corridor for increased passenger rail service. Specific projects that have been completed include track improvements between Seattle and Vancouver, BC and station improvements and renovations throughout the corridor.

These efforts have resulted in expanded service between Portland and Seattle (1994 and 1998); reinstated service between Seattle and Vancouver, British Columbia (1995); and the purchase of three new train sets for use in the corridor (1996).

Altogether, more than \$120 million has been committed so far by the state of Washington towards implementation of these efforts and other near-term improvements to rail passenger service. Our partners, the state of Oregon, Amtrak and the BNSF have committed over \$350 million for improvements to the system.

Currently, the states of Washington and Oregon have begun specific programs to upgrade rail trackage, improve signal systems and stations.

WHY CAN'T WE JUST INCREASE TRAIN SPEEDS AND PUT MORE TRAINS ON THE TRACK NOW?

Amtrak trains on the Pacific Northwest Rail Corridor operate primarily on tracks owned by BNSF and share those tracks with freight trains. These tracks were designed to carry a certain number of trains. With the increase in passenger service, the tracks are reaching their capacity to carry passengers through the corridor on a reliable schedule without seriously impacting freight service. In addition to the number of trains on the track, these tracks are congested in many areas, particularly places where bridges or tunnels limit the system; places where freight trains are put together and/or taken apart; and places where rivers, shorelines, and mountains limit train service. If more passenger trains are to be in this corridor, improvements must be constructed to relieve or bypass these chokepoints.

In addition, maximum authorized passenger train speeds are 79 mph on most lines. These speeds are the highest allowed by the Federal Railroad Administration's regulations for the type of track and signal system currently in existence. To increase speeds above 79 mph, improvements to the tracks and crossing signals need to be made.

It is also critical, because of the increasingly diverse activities on the railroad system, that newer, centralized control systems be installed. This improvement, together with tracks, will ensure that the capacity needs of the many users of BNSF's railway are met.

The partners believe that once these infrastructure improvements are in place, passenger rail service can be increased to a level that will result in up to 2.2 million passengers per year; 500 million passenger miles per year; and hourly service between Seattle and Portland and service every two to four hours between Seattle and Vancouver, BC. The system will carry these people with no automobile emissions, improved safety, and no operating subsidy.

WHAT TYPE OF SERVICE IS WSDOT PLANNING?

WSDOT's approach to increasing train operations includes providing service enhancements along the corridor using an incremental approach. Enhancements began in the early 1990's when the state of Washington, the province of British Columbia, and our partners, worked together to reinitiate service between Seattle and Vancouver, BC. Also during this time, Washington and Oregon, with

our partners, introduced new corridor train service between Seattle and Portland, OR.

WSDOT's current plan calls for improved service and infrastructure improvements along the corridor to be implemented by the year

Table ES-1
Corridor Round-Trip Trains (per day)

Comaci Rouna Imp Iranic (per aay)				
Destination	1998	2002-2005	2017-2020	
Portland, OR to Seattle, WA	4	8	13	
Seattle, WA to Vancouver, BC	1	3	4	
Vancouver, BC to Portland, OR	N/A	2	2-3	

Table ES-2
Corridor Travel Times (plus/minus ten minutes)

Destination	1998	2002-2005	2017-2020
Portland, OR to Seattle, WA	3:30	3:15	2:30
Seattle, WA to Vancouver, BC	3:55	3:40	2:57
Vancouver, BC to Portland, OR	N/A	6:57	5:37

2003. Between the years 2003 and 2018, the railroad infrastructure and service will be incrementally upgraded based upon market demand and legislative authorization.

Table ES-1 presents an overview of the number of round-trip passenger trains per day for current and future service along the corridor. Table ES-2 summarizes travel times for this service.

HOW MANY PEOPLE WILL RIDE THE TRAIN?

The goal for the PNWRC rail program is to serve almost 2.2 million passengers every year. Based on current ridership and in-depth

computer modeling, this projection is very realistic.

Ridership on the corridor trains has increased substantially in recent years. Prior to April 1994, there was only one daily local round-trip between Seattle and Portland. Annual ridership on the Seattle to Portland train was under 100,000 per year before service expansion began.

By May 1996, after WSDOT and ODOT introduced new service, corridor ridership rose to over 300,000 per year. Total ridership in the corridor increased from 226,000 (1993) to 550,000 by 1998. Table ES-3 illustrates current ridership in the corridor as well as five year and 20 year projections.

Table ES-3 Annual Ridership—Existing and Projected

Destination	1998	2003	2018
Vancouver, BC to Portland, OR	550,000	1,319,000	2,180,000

However, WSDOT recognizes that market forces change over time. As such, if ridership goals are not met for each phase of the program, increased service may not be provided or may be deferred. On the other hand, if ridership along the corridor increases beyond WSDOT's projections, it would be possible, based upon legislative funding, to increase service in a shorter time frame. This incremental approach was designed to serve the needs of both riders and taxpayers.

WHAT IMPROVEMENTS WILL HAVE TO BE MADE TO MEET WSDOT'S SERVICE GOALS?

Improvements that have been identified by WSDOT include:

- > Upgrade grade crossings;
- Enhancing train control signals to improve rail corridor capacity and increase train speeds;
- Upgrading tracks and facilities to relieve congestion, improve ride quality, increase train speeds, and enhance safety;
- Purchasing new train equipment to operate safely and efficiently along the corridor, now and in the future; and
 - > Improving stations and their ability to serve neighboring communities.

Some of these projects have already been implemented, and some are underway.

SERVICE LEVEL ONE (FIVE YEAR) PROJECTS

Over the next five years, WSDOT, and our partners, will design and construct a number of infrastructure improvements along the corridor to attain five year service goals and meet the needs of intercity, freight and



The new Talgo Cascades train. The train was assembled in Washington state and was introduced to the Pacific Northwest in December 1998.

commuter rail. This discussion highlights these projects. More information about these projects will be contained in the NEPA/SEPA environmental review that is being prepared by WSDOT. The EIS will be released for public comment in mid-1999. In addition, projects that are located between Everett and Seattle are discussed in detail in Sound Transit's NEPA/SEPA environmental documentation.

Vancouver Yard Upgrades

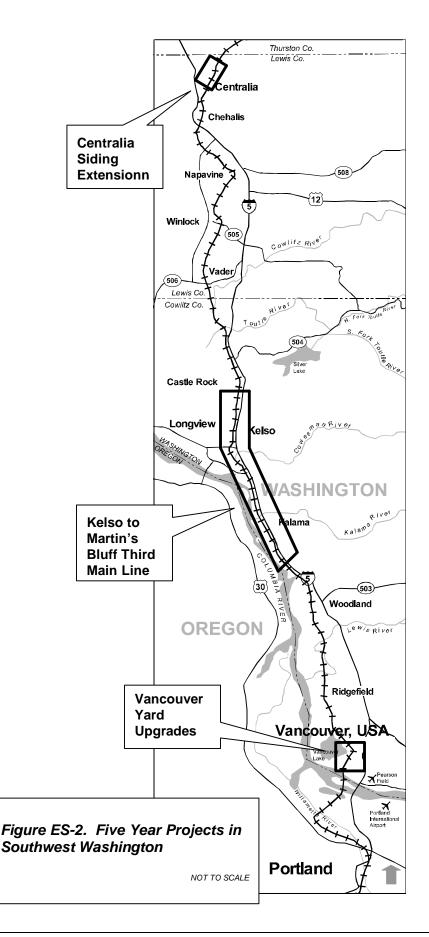
This project generally consists of a double-track bypass of the Vancouver yard and a siding extension.

A bypass track is a track that bypasses other railroad facilities. This bypass will allow passenger trains to go by the yard without being affected by yard operations, or be held up by freight trains.

Siding tracks are secondary tracks parallel to the main line. The siding extension allows trains on the same track to pass each other -- one train will turn off the main line and wait on the siding track while the other passes by on the main line track. As the rail corridor becomes increasingly congested, extensions to existing sidings are required. Sidings help to increase capacity along the corridor.

Kelso to Martin's Bluff Third Main Line

This project consists of adding a



third main line track. The third main line will separate passenger traffic from slower freight traffic allowing an increase in the number of passenger trains. Freight access to the Port of Kalama will also be improved with the extension of the freight siding track in Kalama.

Centralia Siding Extension

This existing siding in Centralia extends along the eastside of the track. The siding will be extended approximately 2,300 feet to the north. This project will help to increase capacity on the main line in this area of the corridor.

Ballard Double Tracking

The project restores track parallel to the

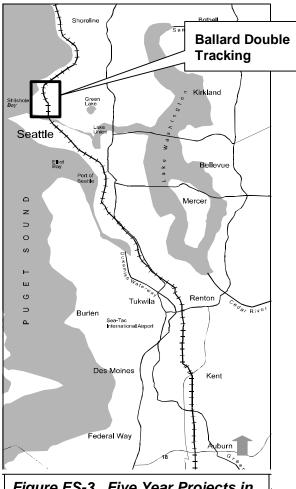


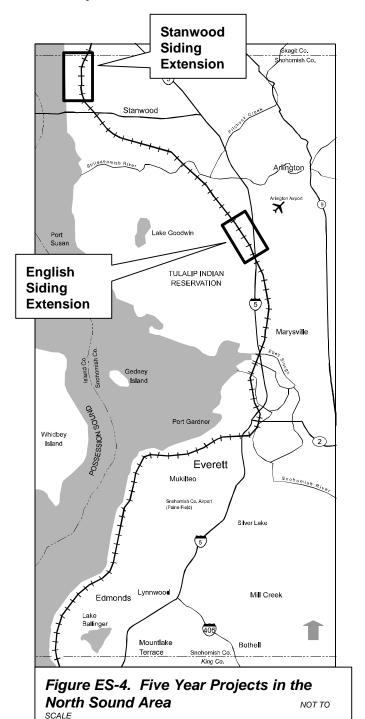
Figure ES-3. Five Year Projects in the Central Sound Area

NOT TO SCALE

existing main line (double tracking).

Completion of this improvement will result in increased capacity and passenger train reliability.

English Siding Extension in Snohomish County



This project is an approximate one mile extension of the existing siding at English, located several miles north of Marysville in Snohomish County. This siding extension is required to provide additional capacity and reliability for train traffic.

Stanwood Siding Extension

This infrastructure improvement is an approximate 1.5 mile extension of the existing siding at Stanwood. This siding extension is

required to provide additional capacity and reliability for train traffic.

Mt. Vernon Siding Extension

This project is an approximate half mile extension of the existing siding at Mt. Vernon. The siding extension is required to provide additional capacity and reliability for train traffic.

Bellingham Main Line Relocation and Siding Extension

This project consists of relocating the main line along the waterfront in Bellingham and extending the existing siding. Completion of this improvement will result in increased capacity and train reliability.

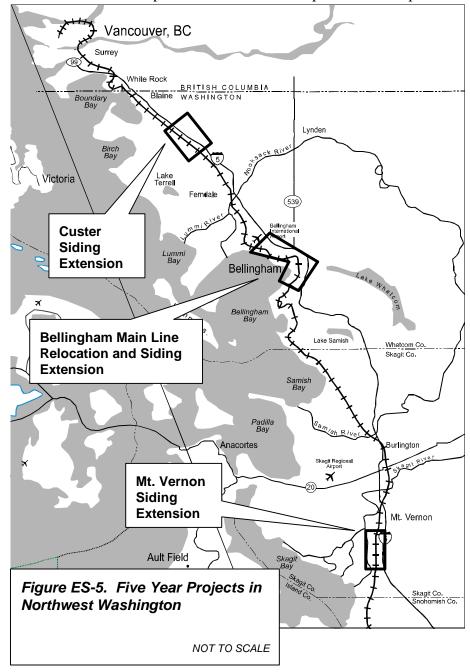
Custer Siding Extension

The project consists of a siding extension and associated turnouts at the existing Custer siding. The siding extension is required to provide additional capacity and reliability for train traffic.

POTENTIAL IMPROVEMENTS

Following implementation of the first service level goal and associated improvements, WSDOT will continuously work with our partners until full build out in 2018.

Due to changing freight demand, it is virtually impossible to project specifically where and what types of improvements will be needed in the future. Figure 6, on the following page, presents known trouble spots and chokepoints

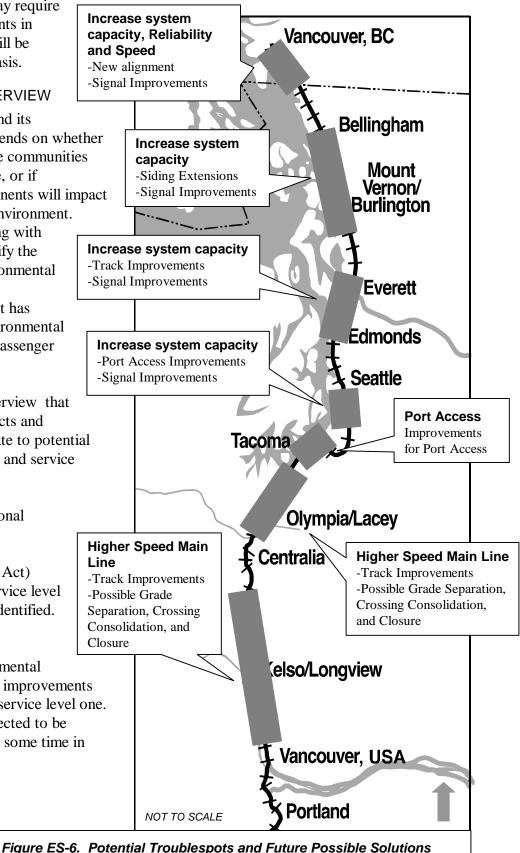


along the corridor that may require infrastructure improvements in future years. This plan will be updated on an ongoing basis.

ENVIRONMENTAL OVERVIEW

The feasibility of a plan and its implementation often depends on whether it will have impacts on the communities that it is intended to serve, or if construction of its components will impact the surrounding natural environment. WSDOT has been working with FHWA and FRA to identify the appropriate level of environmental analysis for their intercity passenger rail program. It has been agreed, that the environmental process for the intercity passenger rail program will include:

- An environmental overview that presents general impacts and mitigation as they relate to potential project improvements and service levels; and
- Detailed NEPA (National
 Environmental Policy
 Act)/SEPA (State
 Environmental Policy Act)
 documentation for service level
 projects, as they are identified.
 WSDOT is currently
 performing detailed
 NEPA/SEPA environmental
 review for the project improvements
 needed to implement service level one.
 This document is expected to be
 available to the public some time in
 1999.



FINANCIAL AND INSTITUTIONAL FRAMEWORK

Extensive analysis of current and future railroad operations reveals that there are many infrastructure improvements needed to meet WSDOT's vision of increased passenger rail service while maintaining freight capacity needs. To meet service and capacity demands, WSDOT is working with its partners to identify projects, their costs, and financing options.

WHAT WILL THE TOTAL SYSTEM COST?

The most recent capital cost estimates call for a \$1.9 billion investment in the corridor However, this cost estimate is for the corridor as a whole – a corridor that includes intercity passenger rail along with freight rail and commuter rail. In addition to the capital costs, passenger rail will require an additional \$200 million for operations, for a total of \$2.1 billion.

CAPITAL INVESTMENTS

In order to achieve WSDOT's vision of faster and more frequent service, it is imperative that improvements and investments be made throughout the corridor, from Oregon to British Columbia. In addition to the three jurisdictions, our other partners -- BNSF, Sound Transit, and Amtrak -- will also need to make capital investments in the corridor.

A significant share of the \$1.9 billion invested in the corridor will be directed towards general corridor improvements such as bridge upgrades and crossing improvements that will serve passenger rail, commuter rail, and freight traffic. A planning-level review of the projects proposed for the corridor indicated that approximately 75% of the total facilities costs

Table ES-3 Corridor Capital Costs (in millions of 1997 dollars)

	2003	2018	Total
Corridor Facilities Investments			
Oregon	\$36	\$156	\$192
Washington	\$164	\$448	\$612
British Columbia	\$45	\$610	\$655
Total Corridor Capital Investments	\$245	\$1,214	\$1,459
Miscellaneous Capital Costs			
Trainsets	\$90	\$135	\$225
Land Acquisition	\$13	\$25	\$38
Station Improvements	\$12	\$131	\$143
Total Miscellaneous Capital Costs	\$115	\$291	\$406
Total Corridor Rail Costs	\$360	\$1505	\$1865

can be attributed to intercity passenger rail for the entire corridor, including Washington, Oregon and British Columbia. This implies that approximately \$1.5 billion of the total \$1.9 billion in corridor investments is associated with improving intercity passenger rail service in the corridor.

OPERATING COSTS

According to the PNWRC Operating Plan, the total annual cost of providing intercity rail service (operations and maintenance) is projected to range from approximately \$23 million currently and increase with the level-of-service to over \$72 million at project buildout, excluding the effects of inflation. Operating revenues, which include income from passenger fares and on-board food and beverages sales,

are currently meeting approximately 60% of regional costs.¹

Estimates were developed that highlight how the anticipated growth in ridership will build operating revenues, improve the system's farebox recovery, and reduce the required operational subsidy. Looking forward, operating revenues are expected to jump to approximately 65% of operating costs by the year 2003 and increase to better than 100% by program completion. This results in operating subsidy requirements of approximately \$18.0 million per year to start, and gradually decreasing until all operations costs are expected to be recovered from operating revenues. These estimates are expressed in constant 1997 dollars and are based on current operating experience and comparable corridor activity elsewhere in the Amtrak system.²

Who's Going To Pay For IT?

To answer the question of how we will pay for the expansion of passenger rail service, we must first identify who is being asked to make the investment. For the purposes of this evaluation, the State of Washington is assumed to be asking this question, thus, the analysis focuses on the elements of the program that could be WSDOT's responsibility. The balance of the

¹ It should be noted that this analysis excludes the impact of Amtrak's Coast Starlight service. Although this train does serve passengers traveling within the corridor, it is primarily designed to serve the major cities of the west coast and therefore was not included in the analysis of corridor costs and subsidies. However, currently 140,000 passengers use this train each year for intercity travel within the Northwest corridor. This implies that expanded passenger service will be building from an existing customer base of more than 480,000 passengers per year.

funding is expected to come from the other principal partners, in particular British Columbia and the State of Oregon plus in-state partners such as Sound Transit and the freight railroads. However, it is important to note that no long-term financial commitments have yet been made by any of these entities.

COST ALLOCATION

At this time the issue of cost allocation has not been resolved. Therefore, for the purposes of analyzing the financial implications for the State of Washington, a division of cost responsibility among the principal partners was made. It is assumed that WSDOT will be responsible for the facility improvements located in the State of Washington, plus half of the rolling stock requirements and half of the annual operating subsidies. The rolling stock and operating subsidy requirements assume that these costs are shared equally between Washington and BC for the Seattle-Vancouver service and between Oregon and Washington for the Seattle-Portland/Eugene service.

Having allocated corridor costs among the principal partners, a second allocation of the instate costs is necessary. The program costs include all necessary improvements to ensure the efficient movement of intercity passenger rail and freight rail in the corridor plus new commuter rail service in the Central Puget Sound area. Many projects will be to the benefit of all of these entities. Thus, the actual cost allocation will be determined on a project-by-project basis and will be the result of negotiations among WSDOT, Sound Transit and the railroads.

However, for planning purposes, a rough allocation was prepared. Table ES-4, on the following page, presents the criteria that were applied to the corridor projects in the state of Washington.

² Berk and Associates, <u>Economic Analysis for the</u> <u>Intercity Passenger Rail Program for Washington State</u>, September 1998.

Table ES-4 Cost Allocation Criteria for Capital Costs in Washington State

Project Location	Primary Project Goal	WSDOT's Share	Partners' Share
Outside of the RTA District	To meet passenger rail requirements	100%	
Outside of the RTA District	To meet general capacity requirements	50%	50%
Within the RTA District	To meet passenger rail requirements	50%	50%
Within the RTA District	To benefit all rail users	33%	66%

Source: Berk & Associates, Economic Analysis for the Intercity Passenger Rail Program for Washington State, September 1998.

Table ES-5, also on the following page, shows a preliminary cost allocation for WSDOT based on the identified criteria. It is important to note that this allocation is for illustrative purposes only. At this time, there has not been any formal agreement among the various interested parties regarding the issue of cost sharing for proposed improvements. These figures are only for use in developing a preliminary financial analysis for the Washington elements of the proposed program. The total funding commitment required during the development of the program is \$2.1 billion, expressed in 1997 dollars. Of this amount approximately 42% or \$871.25 million can reasonably be allocated to WSDOT.

IS IT WORTH THE INVESTMENT?

In the fall of 1998, an independent study was performed to objectively analyze whether passenger rail is a competitive and viable

Table ES-5
Preliminary Washington State Department of Transportation Cost Allocation (Millions of 1997 US Dollars)

	Corridor	WSDOT's	WSDOT	WSDOT	WSDOT
	Total	% Share	98-03	04-18	Total
Facilities	\$1,459	32%	\$125.0	\$340.0	\$465.0
Land and Stations	\$181	100%	\$25.0	\$156.0	\$181.0
Trainsets	\$225	50%	\$45.0	\$67.5	\$112.5
Total	\$1,865	41%	\$195.0	\$563.5	\$758.5
Operating subsidies (1998-2018)	\$225.5	50%			\$112.75
Total requirements	\$2,095	42%			\$871.25

Source: Berk & Associates, Economic Analysis for the Intercity Passenger Rail Program for Washington State, September 1998.

transportation alternative. This economic analysis employed a methodology called "cross-modal analysis".

This analysis was designed to aid policy-makers during the course of establishing funding priorities for scarce transportation resources. The analysis looked at the total public and private costs of passenger rail, highway and air travel and compared that to the amount of use for each system. It did not attempt to evaluate the marginal cost of a particular trip and so is not intended as a commentary on potential mode choice decisions.

This analysis was not intended to address all of the issues regarding transportation costs and investments. It merely aims at establishing a framework to compare different intercity transportation systems and to inform the ongoing funding priority deliberations.

Findings of the Cross-Modal Analysis

The cross-modal analysis was performed in two steps. First, the direct and indirect operating costs (direct operating costs, travel time and externalities) were compared among the three intercity modes. Following this analysis, a comparison of the full costs, including annualized capital costs per passenger mile was performed.

The approach of separating capital and operating costs allowed for a direct comparison among the modes without the potentially distorting effects of the current capital costs, since passenger rail service is currently a relatively minor element in the intercity travel market, there is substantial investment required to bring it into a competitive position in terms of service frequency and travel time. The other two modes are well established and require less infusion of capital.

When these methods were applied to intercity passenger rail in the Pacific Northwest Rail

Corridor, results reveal that passenger rail service is comparable to both air and highway travel. This approach reveals that by 2015 rail costs amount to \$0.63 per passenger mile, while highway travel is estimated to cost \$0.78. Adding in the value of time and external costs, rail is revealed as an even more competitive choice. This approach reveals that by 2015 rail costs amount to \$0.97 to \$1.27 per passenger mile, while highway travel is estimated to cost \$1.42 to \$1.79 per passenger mile.

Highway capital costs, over the current period of study, do not exceed \$0.012 per passenger mile, but they reach more than \$0.60 per passenger mile for rail. This variation is largely driven by two key factors:

- Rail is in a different place in the investment cycle. While highway and air are mature systems, rail is still in the midst of building a system infrastructure.
- ➤ Differences in projected levels of ridership for each mode. Total highway capital costs (\$2.3 billion) exceed those for rail (\$1.5 billion), however, given the 15.5 billion vehicle miles that are projected for the I-5 corridor in 2015, average costs are significantly lower for highway travel; and

Conclusions

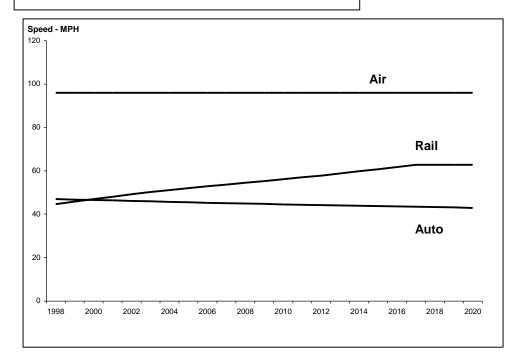
The final step of the cross modal analysis was to combine the total operating costs per mode with the capital costs.

However, the investment in the rail system will result in significant improvements in the level-of-service, both in terms of frequency of service and reduced travel times. The investments in the highway system will not have a significant impact on the degradation in the overall level-of-service, as average speeds are projected to continue to slow throughout the period. As a result, a significant portion of the cost effectiveness advantage for highway comes at

the expense of a significant decrease in the level-of-service. Figure ES-7 illustrates this point.

The cost per passenger mile for rail travel will begin to decrease in the years beyond the current planning horizon. This is due to the fact that the rate of capital investment is expected to be significantly lower in the years beyond 2018. Improvements would be complete and the service objectives met, therefore, future capital needs are likely to be limited to rehabilitation and maintenance needs.

Table ES-7 Comparison of Level-of-Service Among Modes Over Time



How Will Future Expansion OF Passenger Rail Service Be Implemented?

To move forward with future implementation, operational, financial, and environmental information need to be updated so accurate information can be presented to taxpayers and legislators. Specifically, the steps that will be taken periodically include:

- Updated track capacity analysis;
- Revised operational analysis;

- Identification of track and facility improvements necessary for increased service;
- ➤ Identification of funding sources;
- Negotiations and agreement for cost allocation of project improvements;
- > Revision of this Plan; and
- Environmental studies for project improvements.

To obtain a copy of the entire Revised PNWRC Intercity Passenger Rail Plan 1998 - 2018, you can

- *call the WSDOT Rail Office at (360) 705-7900 or 1-800-822-2015;*
 - fax your request to (360) 705-6821;
 - e-mail your request to rail@wsdot.wa.gov; or
 - download it off the Internet at www.wsdot.wa.gov/pubtran/rail.

¹ Wilbur Smith Associates, <u>Operational Analysis Pacific</u> <u>Northwest Rail Corridor</u>, December 1997, page 1-1.