Washington State

Long-Range Plan for Amtrak *Cascades*

Washington State Department of Transportation

February 2006

Exhibit KJ01

Prepared by the Freight Systems Division
Washington State Department of Transportation

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Long-Range Plan for Amtrak *Cascades*

Prepared for the

Washington State
Department of Transportation

By

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February 2006

Washington State
Department of Transportation

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Amtrak *Cascades* continues to grow and remains a national model for rail passenger corridor development. The Washington State Department of Transportation (WSDOT) initiated its intercity rail passenger program in 1993. The program has revitalized intercity rail travel in the Pacific Northwest as measured by the increase in ridership from 225,000 in 1993 to more than 683,000 in 2006.

This Amtrak *Cascades* Long Range Plan provides a vision of potential opportunities for intercity rail passenger development in our region. In addition to achieving the federal requirements for plan development, it provides a comprehensive approach to defining infrastructure and operating requirements and costs, revenues and ridership, and the impacts of developing and operating intercity rail service in partnership with highway and aviation systems. The infrastructure and operating plans are integrated using a "building block" format. The technical work has been evaluated and modified several times since the original planning work was performed in the early 1990's. This plan and its supporting technical materials provide a detailed summary of the work that has been performed to date.

This plan was not developed using financial constraints. As a result, the plan's "building blocks" with their operational benefits are intended to be implemented incrementally while we continue to seek funding alternatives to include a federal capital funding partnership consistent with other modes of transportation.

WSDOT will continue to work with the freight railroads, ports and other partners to ensure the rail system has adequate capacity to meet the demands of its various users. The ability for freight and passenger traffic to coexist on a common infrastructure and continue to grow is important to our regional mobility and economy.

As WSDOT implements the Amtrak Cascades program, we will continue to refine and update the plan. Work on "mid-range" components of the plan is underway and will be completed in late 2008.

Paula J. Hammond, P.E.
Interim Secretary of Transportation

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Supporting Technical Documents:

1. Amtrak *Cascades* Operating and Infrastructure Plan Technical Report
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Executive Summary

The Washington State Department of Transportation (WSDOT) has updated its long-range plan for intercity passenger rail service in western Washington. The service, known as Amtrak *Cascades*, connects Portland, Seattle, Vancouver, BC and ten intermediate cities (see **Exhibit ES-1**).

Exhibit ES-1
Amtrak *Cascades* Rail Corridor

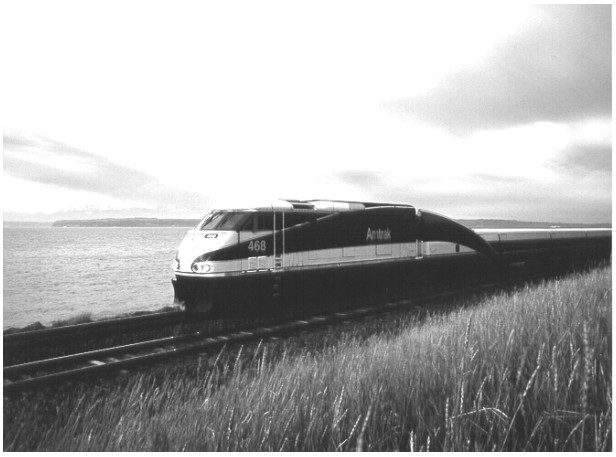
WSDOT's latest long-range plan for Amtrak *Cascades* service includes service goals, ridership and revenue forecasts, equipment requirements, updated operating and capital construction plans, and cost estimates for each service increment that could be added in the years ahead if funding and market demand exist.

WSDOT's updated plan for intercity passenger rail service follows a step by step approach that links specific sets of construction projects to service improvements. These service improvements are grouped into six distinct "building blocks" that could be introduced to the traveling public over time.

The total cost for all the construction and equipment necessary to achieve WSDOT's service goals for intercity passenger rail service between Portland, Seattle, and Vancouver, BC is estimated to exceed $6.5 billion dollars in 2006 dollars. The intercity service will also require operating subsidies each year as the capital investments are put in place. Upon completion of the capital investment plan, WSDOT's projections show that the service could carry nearly three million passengers per year and operate with limited or no public subsidy, depending on prices charged for passenger fares.

WSDOT's updated long-range plan for Amtrak *Cascades* is intended to serve as the state's blueprint for the development of intercity passenger service. As

such, the blueprint lays out how the entire capital program could be completed by the year 2023. However, there is only limited funding currently available to execute the plan. If WSDOT's long-range plan is to be completed by 2023, the federal government must become an active funding partner, just as it is in other transportation programs. The absence of federal funding will prevent WSDOT from implementing this plan by 2023 and may severely limit the department's ability to add faster, more frequent service in the years ahead.



Amtrak *Cascades* train—introduced to the Pacific Northwest Rail Corridor in January 1999.

How does this plan fit in with WSDOT's other planning efforts?

This plan satisfies the requirements outlined by the state legislature for rail planning and its integration into WSDOT's multi-modal plan (*Washington Transportation Plan*) mandated by the state and federal governments.[1]

In addition to these requirements, this plan is designed to meet the U.S. Department of Transportation's recommended planning framework for high speed intercity rail service development.[2] WSDOT has made the decision to comply with these federal planning guidelines in order to ensure Washington State's eligibility for potential federal funding.

How did Washington State's intercity rail program begin?

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. In 1991 the Washington State Legislature directed the Washington State Department of Transportation (WSDOT) to develop a comprehensive assessment of the feasibility of developing a high speed ground transportation system in the state of Washington.

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[1] *RCW 47.79.040*

[2] *Railroad Corridor Transportation Plans – a Guidance Manual, USDOT, Federal Railroad Administration, April 2001.*

In October 1992, the *High Speed Ground Transportation Study* 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 in April 1993, WSDOT was directed (Revised Code of Washington Chapter 47.79) to develop "high-quality intercity passenger rail service ... through incremental upgrading of the existing [Amtrak] service." The legislature believed that this step-by-step approach would help to build a "rail culture" in the region that would eventually make rail a competitive and viable alternative to automobile and regional air travel.

In October 1992, the U.S. Department of Transportation's Federal Railroad Administration (FRA) designated the Pacific Northwest Rail Corridor as one of five high speed rail corridors in the United States. The 466-mile long rail corridor stretches from Eugene, Oregon to Vancouver, British Columbia, Canada. This designation helps our region compete for potential federal funds to assist the state with planning and implementing improved passenger and freight rail service throughout the corridor.

Purpose of the Program

Freight and passenger rail is an important part of our state's transportation system. Moving people and goods by rail is safer and friendlier to the environment 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 growing economy and population.

The purpose of Washington State's passenger rail program is to:

- Provide a viable, cost-effective travel mode that significantly increases options for intercity travel.
- Respond to the direction given in Revised Code of Washington Chapter 47.79 to develop high quality passenger rail service through the incremental upgrading of the existing service.
- Develop faster, more frequent, safe and reliable Amtrak *Cascades* service that requires little or no operating subsidy.
- Reduce the overall impacts of transportation improvements on local communities and the environment.
- Increase safety throughout the corridor.
- Team with our partners and customers to provide more efficient, predictable, reliable and cost-effective movement of people and goods.

Where do the trains run?

Amtrak operates Amtrak *Cascades* service in the state of Washington over the BNSF Railway Company's (BNSF) north-south main line. The alignment roughly parallels Interstate 5 and runs through nine counties in western Washington: Clark, Cowlitz, Lewis, Thurston, Pierce, King, Snohomish, Skagit, and Whatcom. The trains also travel through parts of Oregon and British Columbia.

Is WSDOT developing the Amtrak *Cascades* program by itself?

Rail corridor development is a cooperative effort of many entities, including the states of Oregon and Washington, BNSF, Union Pacific Railroad, Amtrak, Sound Transit, the province of British Columbia, ports, local communities, and ticket-buying passengers.

Throughout the program, WSDOT and these organizations and agencies are continually reviewing system improvements and negotiating the funding arrangements for these improvements.

What work has already been done or is currently underway?

Over the past ten years, the states of Washington and Oregon have commissioned a series of feasibility studies to assess the practical problems, costs, and benefits of providing public investment to upgrade the corridor for safe, faster, more frequent, and reliable passenger rail service.

These efforts have resulted in expanded service between Portland, OR and Seattle (1994 and 1998); reinstated service between Seattle and Vancouver, BC (1995); expanded service between Portland and Eugene, OR (1994 and 2000); and additional service between Bellingham and Seattle (1999). New Amtrak *Cascades* service was introduced in January 1999. This new service features new trains built by Talgo, Inc. and upgraded customer amenities.

Station improvements throughout the corridor have also been completed (Bellingham; Mount Vernon; Everett; Olympia/Lacey; Centralia; Kelso/Longview; Vancouver, WA) or initiated (Seattle). **Exhibit ES-2** on the following page lists the investments that have been made by the various funding entities between 1994 and 2004.

Exhibit ES-2
Amtrak *Cascades* Investment History: 1994- 2005

Capital Investments
Portland, OR-Seattle-Bellingham-Vancouver, BC

Funding Source	Amount
BNSF Railway Company	$9.4 million
Washington State (WSDOT and Washington State Transportation Improvement Board)	$120 million
Amtrak	$62.0 million
Federal Funds for stations and safety projects (non-Amtrak, Federal Transit Administration and the Federal Railroad Administration)	$44 million
Sound Transit and the Federal Transit Administration (projects improve rail system capacity that benefit commuter, intercity passenger and freight services)	$346.0 million
Oregon (Union Station to the Columbia River)	$13.7 million
Local/other for stations	$13.6 million
Total Capital Investment	$608.7 million

Amtrak *Cascades* Operating Investments
Portland, OR-Seattle-Bellingham-Vancouver, BC

Funding Source	Amount
State of Washington	$150.0 million
Amtrak	$77.0 million
Total Operating Funds	$227.0 million

Total Capital and Operating Investments for Amtrak *Cascades*
Portland, OR-Seattle-Bellingham-Vancouver, BC

TOTAL	**$836.0 million**
WASHINGTON STATE SHARE OF TOTAL	**$270.0 million**

Why can't we just increase train speeds and put more trains on the tracks now?

Amtrak *Cascades* trains operate primarily on tracks owned by BNSF; they share those tracks with freight trains. With increases in passenger and freight rail service, the tracks are reaching their capacity.

Congestion is due to the increased number of trains on the tracks, particularly where bridges or tunnels limit the system; where freight trains are put together and/or taken apart; and where rivers, shorelines, and mountains limit train service. If more passenger trains are added to this corridor, improvements must be made to relieve or bypass these chokepoints.

In addition, maximum authorized passenger train speeds are seventy-nine miles per hour (mph) on the entire corridor. These speeds are the highest allowed by the FRA's regulations for the current type of track and signal system that exists along the corridor. To increase speeds above seventy-nine mph, improvements to the tracks, crossings, and train control and signal systems need to be made. These investments, together with track and facility improvements, will ensure the needs of the many users of BNSF's railway are met.

What type of future service is WSDOT planning?

Washington State plans to incrementally improve Amtrak *Cascades* service over the next twenty years, based on market demand, partnership investment, and legislative authorization. Improvements to track, safety systems, train equipment and stations will reduce travel times, increase train frequency, and improve safety and reliability.

WSDOT's current plans outline rail corridor and service development through 2023. **Exhibit ES-3**, on the following page, presents an overview of the number of round-trip passenger trains per day for current and planned service along the corridor. **Exhibit ES-4**, on the following page, summarizes travel times for this service through year 2023.

The travel times and train frequencies presented in this discussion focus on a service mid-point, as well as year 2023. Year 2023 represents WSDOT's twenty year build-out plan. A specific year was not chosen for the "mid-point" in service and infrastructure development—a number of intermediate years could have been chosen; however, development of this incremental rail service is dependent upon program funding.

Exhibit ES-3
Amtrak *Cascades* Daily Roundtrip Trains

Total Trains	1994	2003	Mid-point	2023
Portland, OR to Seattle, WA	1	3	8	13*
Seattle, WA to Vancouver, BC	0	2**	3	4

**Includes three trains which travel north, beyond Seattle, to Vancouver, BC.*
***Amtrak Cascades #513/516 travels between Seattle and Bellingham.*

Exhibit ES-4
Amtrak *Cascades* Travel Times

Destination	1994	2003	Mid-point	2023
Portland, OR to Seattle, WA	3:55	3:30	3:00	2:30
Seattle, WA to Vancouver, BC	N/A	3:55*	3:25	2:37
Vancouver, BC to Seattle, WA to Portland, OR	N/A	N/A	6:40	5:22

**Travel time for train #510/517.*

Source for Exhibits ES-3 & ES-4: Amtrak Cascades Timetable Effective October 27, 2003, and Amtrak Cascades Operating and Infrastructure Plan Technical Report, 2004.

How many people will ride the train?

Ridership on Amtrak *Cascades* has increased substantially in recent years. In 1993, when service expansion began, annual ridership on Amtrak's Seattle to Portland, OR train was less than 95,000 passengers per year. By 2004, ridership between Seattle and Portland, OR increased to almost 350,000 annual riders. An additional 155,000 riders traveled between Seattle and Vancouver, BC in 2004.

Analysis and computer models show that, once these infrastructure improvements are in place, passenger rail service can be increased to a level that will result in nearly three million passengers per year[3] along the corridor.

The service will carry these people with no automobile emissions, improved safety, and little or no operating subsidy.

A review of these trends indicates the direct relationship between Washington State's investments in passenger rail service and infrastructure improvements along the corridor and increased ridership. This pattern is projected to continue throughout the next twenty years. **Exhibit ES-5**, on the following page, presents projected ridership in the corridor for the service mid-point and 2023.

What improvements need to be made to meet WSDOT's service goals?

Improvements identified by WSDOT and cooperating agencies and organizations include:

[3] *Amtrak Cascades Ridership and Revenue Forecasts Technical Report, 2004.*

Exhibit ES-5
Amtrak *Cascades*: Projected Future Ridership

Corridor	2004	Mid-point	2023
Seattle to Vancouver, BC	156,872	418,100	945,700
Seattle to Portland, OR	351,426	932,100	1,916,400
Portland, OR to Vancouver, BC	NA	59,900	133,200
TOTAL*	508,298	1,410,100	2,995,300

Source: Washington State Department of Transportation Rail Office and Amtrak Cascades Ridership and Revenue Forecasts Technical Report, 2004.

- Upgrading grade crossings to ensure safe passage of trains, vehicles and pedestrians;
- Increasing speeds to improve corridor capacity and travel times;
- Enhancing train control signals to improve corridor capacity, increase train speeds, and enhance safety;
- Purchasing new passenger train equipment to operate along the corridor to increase frequencies and decrease travel time;
- Improving stations and their ability to serve neighboring communities and to provide connections to other modes of travel; and
- Upgrading tracks and facilities to relieve congestion, improve ride quality and safety, increase train speeds, and improve corridor capacity.

In addition to these improvements, WSDOT intends to continue to actively market the program to the public, and work closely with Amtrak to ensure that day-to-day operations meet customer expectations.

What are WSDOT's "building blocks" and how will they be put in place?

Following the legislature's directive, WSDOT's long-range plan for Amtrak *Cascades* uses an incremental approach that allows the state of Washington to add faster, more frequent Amtrak *Cascades* service based on market demand, partnership investment, and legislative authorization.

In order to ensure that public funds are expended in the most efficient manner, the long-range plan identifies all of the construction projects that will be necessary to achieve WSDOT's service goals as depicted in **Exhibits ES-3** and **ES-4**. Each construction project is designed to solve a particular problem

within the corridor. These projects are then grouped into "building blocks" that must be constructed in the sequence described in this plan. Each successive "building block" adds upon the preceding investments and allows WSDOT to add more daily trains, improve schedule reliability, and reduce travel times in a methodical and rational way. These "building blocks" ultimately become the daily timetables that the traveling public will rely upon once a "block" of construction projects has been completed. This planning approach combines methods commonly used by intercity rail planners in Europe with the incremental approach sought by the state legislature.

What will the total system cost?

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. To fulfill the rail system needs of all users over the next twenty years, a capital investment in excess of $6.5 billion[4] by 2023 will be required. However, it should be recognized that, given the uncertainties involved in projecting future expenses, total costs can only be broadly estimated.

How long will these rail investments last?

The current configuration of the BNSF main line was completed in 1914. Modifications and updates have been made periodically along the corridor since that time. However, for the most part, the system and infrastructure that we have in place today have been unchanged for ninety years. Using history as a guide, it is safe to say that the physical investments that the state of Washington and our partners make along the corridor will last – if properly maintained – for up to one hundred years or longer. WSDOT also assumes that locomotives and trainsets will require regular repairs and overhauls, with replacement becoming necessary after twenty to thirty years of service. WSDOT's long-range plan assumes that track and signal maintenance will be funded through operating revenues, and equipment restoration and replacement will require periodic capital investments as locomotives and trainsets reach the end of their lifecycles.

What will it cost to operate?

The total annual cost of providing intercity rail service (operations and maintenance) is projected to range from today's approximately $20 million to more than $83 million by year 2023, excluding the effects of inflation.

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[4] *In 2006 US dollars.*

Exhibit ES-6
Operating Revenue, Costs, and Subsidy

	2002	Mid-Point	2023
Annual Operating Revenue	$9.2	$36.5	$82.3
Annual Operating Costs	$20.3	$51.5	$83.4
Net Operating Revenues (Subsidies)	- $11.1	- $15.1	- $1.1
Farebox Recovery	45%	71%	99%

Source: Washington State Department of Transportation Rail Office and Amtrak Cascades Operating Costs Technical Report, 2004.

Estimates have been 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, with full implementation of the plan, operating revenues are expected to increase to approximately seventy-one percent of operating costs by the mid-point service and to approximately ninety-nine percent by program completion. This results in operating subsidy requirements of approximately $11 million per year to start, increasing to approximately $15 million per year, and gradually decreasing until nearly all operations costs are expected to be recovered from operating revenues. These estimates are expressed in constant 2003 dollars and are based on current operating experience and comparable corridor activity elsewhere in the Amtrak system.[5] **Exhibit ES-6** provides the operating costs, projected revenue, and anticipated subsidy for the Amtrak *Cascades* program for mid-point service and year 2023.

If all of the corridor improvements are put in place during the twenty-year period, 34 million passengers are projected to travel a total of nearly 5.2 billion passenger miles. Cost and revenue estimates indicate that over this timeframe the program will operate with an average farebox recovery of over seventy-five percent, requiring just under $165 million in total operational subsidies. These projections were based on the assumption that fares for the Amtrak *Cascades* service would not increase over time.

Who's going to pay for it?

WSDOT's long-range plan for Amtrak *Cascades* service outlines the various construction projects, equipment requirements, and operating expenditures that will need to be funded in order to achieve WSDOT's goals for intercity passenger rail service between Portland, Seattle and Vancouver, BC.

[5] *Amtrak Cascades Ridership and Revenue Forecasts Technical Report, 2004.*

Development of improved Amtrak *Cascades* service is dependent upon funding from the state of Washington, Amtrak, Sound Transit, the state of Oregon, the province of British Columbia, the federal governments of the United States and Canada, other participating agencies and organizations, and passengers using the service.

Funding for Amtrak *Cascades* Capital Projects

It is important to note that no long-term financial commitments have yet been made by any of the various funding entities that are described in this plan. However, this long-range plan assumes that the major capital construction projects that are needed to support expanded Amtrak *Cascades* service in the Pacific Northwest will be funded in the following manner:

- Projects necessary to provide faster, more frequent Amtrak *Cascades* service between downtown Portland, OR and the Columbia River will be funded by the state of Oregon, with potential funding coming from the federal government and Amtrak.
- Projects necessary to increase the level of *Sounder* commuter rail service in the central Puget Sound region will be funded by Sound Transit and the federal government.
- Projects necessary to provide faster, more frequent Amtrak *Cascades* service between the Columbia River and the Canadian border will be funded by the state of Washington, with potential funding coming from the federal government and Amtrak.
- Projects necessary to improve Amtrak *Cascades* service in British Columbia will be funded by the province of British Columbia, the Canadian federal government, and regional transportation agencies.
- Train sets and locomotives will be funded by the states of Oregon and Washington, with additional funds provided by Amtrak and the federal government.
- The Seattle Maintenance Facility will be funded by Amtrak, the federal government, the state of Washington, and Sound Transit.
- Station improvements will be funded jointly by local jurisdictions, regional, state and provincial governments, and the federal governments of the U.S. and Canada.
- The new rail bridge across the Columbia River will be funded by the railroads, the states of Washington and Oregon, and the federal government.
- Projects that provide a direct benefit to the BNSF Railway Company will be funded by the railroad.

In 2003, WSDOT and the BNSF Railway Company reached agreement on a legal framework that will govern the construction of Amtrak *Cascades* capital projects within the Washington segment of the Pacific Northwest Rail

Corridor. This twenty year agreement outlines how each of the individual projects that WSDOT has identified for Amtrak *Cascades* service in Washington will be constructed, what operational benefits each project will produce, and under what conditions costs for the projects will be shared by the two parties. It is the only legal agreement of its kind between a railroad and a state government, and it is intended to streamline the construction process for both BNSF and WSDOT in the years ahead.

Funding for Amtrak *Cascades* Operations

Ticket-buying passengers, the states of Washington and Oregon, and Amtrak currently fund the operating costs for Amtrak *Cascades* service in the Pacific Northwest. This long-range plan identifies anticipated operating costs and revenues over a twenty year planning horizon. However, this plan does not assign any specific funding amounts to any of the participating agencies that will be required to contribute operating funds to offset the difference between passenger revenues and total operating costs. This is not possible at this time, as all participating agencies must contend with limited budgets that are determined by the respective state legislatures and Congress. WSDOT will continue to work with the state of Oregon, Amtrak and other jurisdictions in order to secure the necessary funds to operate faster, more frequent Amtrak *Cascades* service between Portland, OR, Seattle, and Vancouver, BC over the next twenty years.

How will this program benefit the citizens of Washington now and in the future?

The public funds that will be invested to support faster and more frequent Amtrak C*ascades* service will offer the citizens of Washington a number of benefits in the years ahead. The service will provide a viable alternative to automobile and regional air travel, while supporting improved freight rail mobility within the state of Washington.

The Amtrak *Cascades* program is being implemented through an incremental system approach. Service for both passenger and freight rail continues to be improved while planning and engineering for future improvements moves forward.

Planning for the Amtrak *Cascades* program has and will continue to incorporate the corridor's projected population growth, increases in domestic and international trade, and the freight mobility needs of our region's ports.

Continued implementation of the Amtrak *Cascades* program will help ease our region's growing pains in a cost-effective manner. The efficient movement of people and goods within the region is crucial to the state's

ability to compete in world markets, to protect the environment, and to maintain a high quality of life.

What are the next steps?

As WSDOT continues to develop its Amtrak *Cascades* intercity passenger rail program, the department will regularly update and evaluate operational, financial, and environmental plans in order to provide accurate information on the program's progress to taxpayers, legislators, the Governor, and the Washington Transportation Commission.

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