Amtrak Cascades Service Development Plan – Alternatives Development

Preliminary Purpose and Need Statement

July 28, 2023

1 Background

The Pacific Northwest Rail Corridor (PNWRC) is one of 11 federally designated high-speed rail corridors in the United States. The 461-mile (742-kilometer) PNWRC runs primarily parallel to Interstate 5 (I-5) and serves the most densely populated areas of the Cascadia megaregion, linking Seattle, Washington to Vancouver, British Columbia (BC), Portland and Eugene, Oregon. The PNWRC is a critical north-south transportation corridor for local, regional, statewide, and international passenger and freight rail operations in the Pacific Northwest.

The Washington State Legislature authorized an intercity rail passenger program in 1993 and directed the Washington State Department of Transportation (WSDOT) to provide a safe, efficient, environmentally responsible alternative to increasing highway capacity.[1] The Amtrak Cascades program was developed by WSDOT in response to this directive. It is intended to complement the other parts of the transportation system, help accommodate future intercity travel demand, ensure economic vitality, reduce emissions contributing to climate change, and protect the quality of life in the state.

The states of Washington and Oregon provide financial support to Amtrak in the operation of the Amtrak Cascades passenger rail service serving 18 cities along the corridor. By the end of 2023 the Cascades passenger rail service will include the level of service made possible by federal investments under the American Recovery and Reinvestment Act, with six daily round trips between Seattle and Portland; two daily round trips between Seattle and Vancouver, BC; and two daily round trips between Portland and Eugene.

WSDOT, with the Federal Railroad Administration (FRA), is preparing a Preliminary Service Development Plan (SDP) to study possible alternatives for enhancing the Amtrak Cascades service between Portland and Vancouver, BC, over the next 20 years (referred to as the Washington State segment). The Preliminary SDP is intended to identify the future development of intercity passenger rail service along the Washington State segment of PNWRC through improvements to rail safety, daily frequencies, travel times between stations, passenger amenities, trip reliability, and on-time performance (this future development is defined as the "Project"). The Preliminary SDP complements similar planning work being undertaken by the Oregon Department of Transportation for the Portland to Eugene portion of the PNWRC.[2]

Exhibit 1 shows the study area for the Preliminary SDP for the Washington state segment of the PWNRC from Vancouver, BC, to Portland, as well as the entire 461-mile PNWRC extending down to Eugene, OR.

This Preliminary Purpose and Need Statement will be used to guide alternatives development, analysis, and the identification of refined service options during planning. It will be subject to agency and public review and comment in any subsequent National Environmental Policy Act (NEPA) process.

[1] RCW 47.79.010 Legislative declaration

[2] Oregon Department of Transportation, Oregon Corridor Investment Plan

Exhibit 1 Study Area Map

2 Preliminary Purpose

The purpose of the proposed Project is to enhance intercity passenger rail service for travelers along the existing route used for the Washington state segment of the PNWRC. The Project would:

- Meet growing intercity travel demand with more frequent, reliable and customer-focused service
- Strengthen multimodal connections to improve accessibility and provide better travel options
- Support greenhouse gas reduction goals
- Support the economic vitality of communities served by PNWRC passenger service
- Address transportation system equity issues along the corridor
- Ensure the rail corridor has the capacity to support needs of all passenger and freight rail service providers

Additionally, the project will:

- Avoid or minimize negative community and environmental impacts
- Be a cost-effective investment

3 Preliminary Need

In the years since WSDOT's intercity passenger rail program started in 1993, the need for intercity passenger rail service in the Pacific Northwest has continued to grow as rail travel has become a more desirable and convenient mode of transportation compared to air and highway travel.

Amtrak Cascades service improvements are needed to address the growing travel demand and congestion in the corridor, as well as improve the connectivity of the transportation system. Effective and efficient transportation options like Amtrak Cascades are crucial to ensure the economy of the state of Washington and the Pacific Northwest region continues to thrive. These improvements will support WSDOT in achieving the vision of a safe, sustainable, and integrated multimodal transportation system.

3.1 Growing travel demand in the corridor

Travel demand continues to increase due to the rapid growth in regional commerce and population in the corridor. Highway traffic congestion on I-5, which primarily parallels the entire PNWRC, is no longer restricted to peak times around major cities. Recent forecasts suggest that the commercial airports in the Puget Sound region, even with planned expansions, will not be able to accommodate the demand for air travel by 2050. As the population is increasing, it is also changing. Demographic trends may increase the demand for intercity passenger rail. Amtrak Cascades provides a safe and more efficient travel option to meet the growing travel demand in the corridor.

3.1.1 Population and employment growth

Population and employment growth are key factors affecting demand for passenger rail service. The populations of cities along the PNWRC have been growing and this growth is expected to continue in the future. Exhibit 2 shows the populations of the three major metropolitan areas in the corridor and forecasted populations in 2040. Collectively, the three areas have added 1.3 million people in the past decade and are forecast to add another 2 million people over the next two decades. Exhibit 2 also shows how employment is increasing in these metropolitan areas. The capacity of the transportation system, including Amtrak Cascades, needs to grow to meet the demands of a larger population and work force.

Exhibit 2 Population and employment data and forecasts for major PNWRC metropolitan areas

Population (million)	2010	2020	2040 forecast
Metropolitan area			
Vancouver, BC[3,4]	2.4	2.8	3.6
Seattle, WA[5]	3.7	4.3	5.4
Portland, OR[6,7]	2.2	2.5	3.0
Total	8.3	9.6	11.6
Employment (million)			
Metropolitan area			
Vancouver, BC[8,9]	1.2	1.4	1.8
Seattle, WA[10]	1.9	2.4	3.0
Portland, OR[11,12,13]	0.8	1.0	1.2
Total	3.9	4.6	6.0

[3] BC Stats, Population Estimates & Projections for British Columbia, accessed July 7, 2022
[4] BC Stats, Population Estimates & Projections for British Columbia, accessed July 7, 2022
[5] Puget Sound Regional Council, PSRC Data Portal LUV-it County Summaries 2023, accessed July 19, 2023
[6] Metro, Population Forecast to 2060, April 2016
[7] Portland State University Population Research Center, 2020 Census Metropolitan Statistical Area Profiles
[8] Metro Vancouver, Metro 2040 – Shaping Our Future: Baseline Annual Report 2011-2013, 2013
[9] Metro Vancouver, Metro 2050, 2021
[10] Puget Sound Regional Council, PSRC Data Portal LUV-it County Summaries 2023, accessed July 19, 2023
[11] Metro, Employment forecasts for 2035 by city and county, February 2013
[12] Metro, Portland-area 2045 population and housing forecasts by city and county, February 2021
[13] Metro, Portland-area 2040 population and housing forecasts by city and county, July 2016

3.1.2 Demographic changes

In addition to population growth, demographic changes in the population of Washington are increasing the proportion of people likely to ride Amtrak Cascades.

Amtrak Cascades is popular with people over 65 years old. Nearly 25% of riders indicated they were over 65 in an on-board survey performed in 2018. As ridership recovers after the pandemic the percentage is similar, with 27% of Amtrak Cascades riders responding to customer surveys in 2022 [14] in this age group. The number of people over 65 is increasing quickly nationwide, corresponding with a similar increase in births after World War II (the Baby Boomer generation). In Washington, this age group represented 17% of the state's total population. This percentage is forecast to increase to 23% by 2050, with most of the growth occurring by 2030.[15] As the population ages, more people are likely to experience limitations to their mobility, which may create a greater demand for transportation options like passenger rail.

In 2015, millennials surpassed baby boomers as the nation's largest living generation. This segment of the population includes people born in the 1980s through the late 1990s and composed 24% of Washington's population in 2020.[16] Millennials are an important part of the travel market. They travel more frequently and spend more money on travel than any other age group.[17] Almost 90% of millennials live in metropolitan areas.[18] Passenger rail can be an attractive option for this age group, supporting car-free travel between urban centers. Customer surveys from 2022[19] indicate that approximately 30% of Amtrak Cascades passengers have been millennials.

These changing demographic trends contribute to an increasing demand for non-automobile intercity travel and could result in an increased demand for passenger rail services like Amtrak Cascades.

3.2 Increasing corridor congestion

I-5 runs primarily parallel to the PNWRC and is frequently congested, particularly around major Washington cities like Seattle, Tacoma, Everett and Vancouver. As seen in Exhibit 3, the central part of the corridor between Olympia and Everett is heavily used and travelers on I-5 are regularly delayed by congestion. Congestion on the corridor is not limited to weekday commute periods. Some parts of I-5 see recurring congestion on the weekends as well because of high traffic volumes. Construction and special events, such as sporting events and concerts, also frequently cause localized congestion. In some cases, construction on specific sections of I-5 can last multiple years. For instance, the projects in the Revive I-5 Program will result in recurring construction delays into the 2030s. A Federal Highway Administration analysis of traffic impacts on highways from special events calculated that travelers in Portland experienced 750,000 to 1.5 million hours of cumulative travel delay annually due to special events, with the average traveler experiencing 38 hours of delay per year.[20] In addition, traffic incidents anywhere in the corridor can cause long delays for travelers.

Increasing population and employment growth have led to increased congestion on I-5. Expanding I-5 to eliminate congestion is not a viable option in the multiple metropolitan regions served by the PNWRC. A preliminary estimate of the cost to address congestion by adding lanes to I-5 in the central Puget Sound area between Olympia and Everett suggests that it would cost around $100 billion (in 2017 dollars) just to construct

[14] Federal Fiscal Year 2022
[15] Office of Financial Management, Forecast of the State Population December 2021 Forecast, December 2021
[16] Office of Financial Management, Population by age and sex, November 2021
[17] Berkshire Hathaway Travel Protection, Research: millennials spend more and travel more than any other age group, September 18, 2019
[18] Pew Research Center, How Millennials today compare with their grandparents 50 years ago, March 16, 2018
[19] Federal Fiscal Year 2022
[20] Federal Highway Administration, Planned Special Events – Economic Role and Congestion Effects, August 2008

the new lanes.[21] That cost does not account for increased demand, expanding connecting roads, or mitigation for the negative effects of building the new lanes.[22] Amtrak Cascades service provides intercity travelers in the corridor an alternative to congested conditions on I-5.

Exhibit 3 Annual person miles traveled and hours of vehicle delay on I-5 in 2019

Location	Annual person miles traveled (2019)	Annual hours of vehicle delay (2019)
Federal Way-Seattle-Everett[23]	2.7 billion	4.6 million
Olympia-Tacoma-Federal Way[24]	1.6 billion	2.4 million

3.3 Barriers to transportation system connectivity

Rail passenger trips start and end somewhere other than the train station. Riding a passenger train is typically just one part of a journey, with passengers using another mode of travel to get to or from the train station. Seamless connections with other modes are important to integrate passenger rail into the statewide transportation system to make it an even more viable, convenient option for travelers.

The transportation system in the PNWRC is complex, with many entities involved. Amtrak Cascades shares the tracks with multiple freight railroads and with commuter rail service in the central Puget Sound region. The rail stations in the corridor have different owners, mostly local government entities such as cities, transit agencies, and port districts. The stations are each served by different combinations of other transportation services, including local transit agencies, intercity bus services, and private shared transportation services. Serving both sides of the border with Canada brings additional complexity. The complexity of the system can be a burden, and sometimes a barrier, to travelers using it. Creating seamless connections in the transportation system will require continued cooperation between these entities to minimize the effect of its complexity on travelers.

3.3.1 Rail station connectivity

Connectivity refers to the collective influence of land use, transportation system infrastructure, and the availability of transportation services on the options for passengers to access or leave the rail stations. A multimodal connectivity analysis of Amtrak Cascades stations was performed for the 2019 Washington State Rail Plan that evaluated the quality of existing station access. The goal of the analysis was to identify opportunities for increasing station accessibility to the stations without the need to increase the parking supply. The types of gaps identified included incomplete pedestrian and bicycle networks around stations, lack of availability of travel options, and land use not conducive to supporting ridership. Connections at stations need to be safer and easier to use to maximize their benefits. Improving multimodal connectivity at stations would increase the viability and convenience of intercity passenger rail for travelers.[25]

3.3.2 Passenger experience

Another aspect of connectivity is the ease of passengers moving between transportation services. Moving between services can be challenging for passengers and the experience could be improved. Factors affecting this include wayfinding, access to real-time information, schedule coordination, as well as the experience of planning and paying for travel on multiple services. For example, Mobility-as-a-Service (MaaS) enables travelers to plan,

[21] WSDOT, 2022 State of Transportation presentation, House Transportation Committee, January 10, 2022
[22] WSDOT, Developing a resilient transportation system for a rapidly changing world, January 10, 2022
[23] WSDOT, Central Puget Sound Interstate 5 Corridor – Dashboard, accessed July 7, 2022
[24] WSDOT, Multimodal Mobility Dashboard - South Puget Sound Region, accessed July 7, 2022
[25] Multimodal connectivity at stations will be addressed in more detail as planning work continues after the Preliminary Service Development Plan is completed.

book, pay for and use multiple types of transportation services through a website or an application on a mobile device. It is becoming indispensable for many people as a convenience that makes travel easier.

As technology evolves to become further integrated into our connected lives and transportation options proliferate, improving the passenger experience by making it easier to move between Amtrak Cascades and other modes of transportation would make intercity rail a more desirable travel choice and attract more riders.[26]

3.4 Reduced greenhouse gas emissions

Washington state law requires that greenhouse gas emissions in the state be reduced to 27 million metric tons annually by 2040.[27] Transportation is the largest contributor of greenhouse gas emissions in Washington, accounting for 39% of emissions statewide in 2019. Transportation emissions in 2019 were 40.3 million metric tons (MMT) of carbon dioxide equivalent, an increase of 4.48 MMT compared to 2018.[28]

Intercity passenger rail can help reduce greenhouse gas emissions by supporting increased land use density in communities that concentrates activities close together and encouraging greater use of other energy efficient modes (bicycle, bus, other rail systems, etc.) This can provide benefits even as the electrification of passenger vehicles increases, by reducing the demand for electricity and the need for related infrastructure investments.

3.5 Economic vitality of station communities

Economic vitality is one of Washington's transportation system policy goals.[29]

Passenger rail improvements enhance economic vitality by supporting tourism and business travel in communities. As Washington's fourth-largest industry, tourism is a key sector of the state's economy.[30] Passenger rail stations can be an important community gateway for visitors. Passenger rail brings paying customers who help increase local economic activity.

Improved passenger rail service can also encourage and enhance development around stations, which often serve as a transportation hub for an area. With frequent, reliable service and connections to major destinations -- including job centers, educational institutions, hospitals, and tourist attractions -- rail stations can strengthen existing development as well as support new planned development. Passenger rail service can support local transit-oriented development, economic development, and affordable housing goals, and close coordination with local jurisdictions can maximize the potential benefits.

3.6 Transportation system equity

Initiatives at the federal (Justice 40[31]) and state (HEAL Act[32]) levels have placed an increased focus on equity in transportation planning. Passenger rail service can play an important role in an equitable transportation system by actively engaging members of disadvantaged communities throughout the planning process. Historically, some transportation planning decisions have negatively affected low-income and minority communities, resulting in issues such as pollutant emission disparities and limited access to transportation systems. By contributing to emission reductions, passenger rail can help address disproportionate effects the transportation system has on disadvantaged populations. Passenger rail can also improve accessibility for underserved

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[26] Passenger experience enhancements will be addressed in more detail as planning work continues after the Preliminary Service Development Plan is completed.

[27] RCW 70A.45.020 Greenhouse gas emissions reductions—Reporting requirements

[28] Washington State Department of Ecology, Washington's greenhouse gas inventory

[29] RCW 47.04.280 Transportation system policy goals

[30] Washington State Department of Commerce, Washington's key sectors – tourism, accessed July 6, 2022

[31] US Department of Transportation, Justice40 Initiative

[32] Washington State Department of Ecology, Healthy Environment for All (HEAL) Act

populations that can make it easier to reach services and opportunities. Ensuring these benefits are realized will require incorporating equity as a priority throughout planning and development of Amtrak Cascades improvements.

3.7 Future rail corridor capacity and reliability

With increases in Amtrak Cascades service, it is critical to ensure that rail corridor capacity is maintained so people and goods can be efficiently moved within the PNWRC.

The PNWRC accommodates multiple uses. Nearly all the PNWRC in Washington is privately owned by BNSF Railway and it is an important part of its freight hauling network. The corridor is especially important for Washington's coastal ports that rely heavily on freight shipments to and from inland locations. The Northwest Seaport Alliance is the seventh largest container port in the United States, handling nearly 3.4 million TEUs in 2022.[33] Also, Washington ports moved more than 20% of the nation's agricultural exports in 2022.[34] The Pacific Northwest is the second largest grain exporting region in the United States.[35] Much of this freight volume is handled by rail to or from the ports. Ensuring that freight movement stays fluid as passenger service is added or changed is critical for Washington's economy. The PNWRC is also used by other passenger rail services. Sound Transit uses the corridor for routes from Seattle to Everett and Lakewood, while Amtrak operates long distance trains on the corridor. These services also need to ensure reliably for their passengers.

Rail corridor capacity is one component of ensuring Amtrak Cascades provides reliable service, along with careful train traffic dispatching to coordinate train movements. WSDOT, Amtrak, and BNSF entered into a legally binding Service Outcome Agreement (SOA) when WSDOT invested nearly $800 million in American Recovery and Reinvestment Act (ARRA) and High-Speed Intercity Passenger Rail (HSIPR) funds to improve the corridor. The agreement requires an on-time performance of 88% and sets a ceiling for BNSF-responsible delay minutes on specific segments of the rail line. WSDOT, BNSF, and Amtrak have been working together to improve on-time performance and achieving the 88% target on a consistent basis and will continue to do so. While adding rail corridor capacity can be an important part of ensuring the efficient movement of people and goods, careful and constant stewardship by the service partners (WSDOT, Amtrak, BNSF, and Sound Transit in the Washington segment of the PNWRC) will be needed to ensure rail corridor capacity is utilized effectively and passenger rail service is recognized as a reliable method of travel.

[33] Marine Insight, Top 10 Largest And Busiest Container Ports In The United States, May 24, 2023
[34] US Department of Agriculture, Agricultural Marketing Service, U.S. Agricultural Port Profiles

[35] U.S. Grains Council, U.S. Grains Council Grains Importer Manual, Chapter 5, May 2022