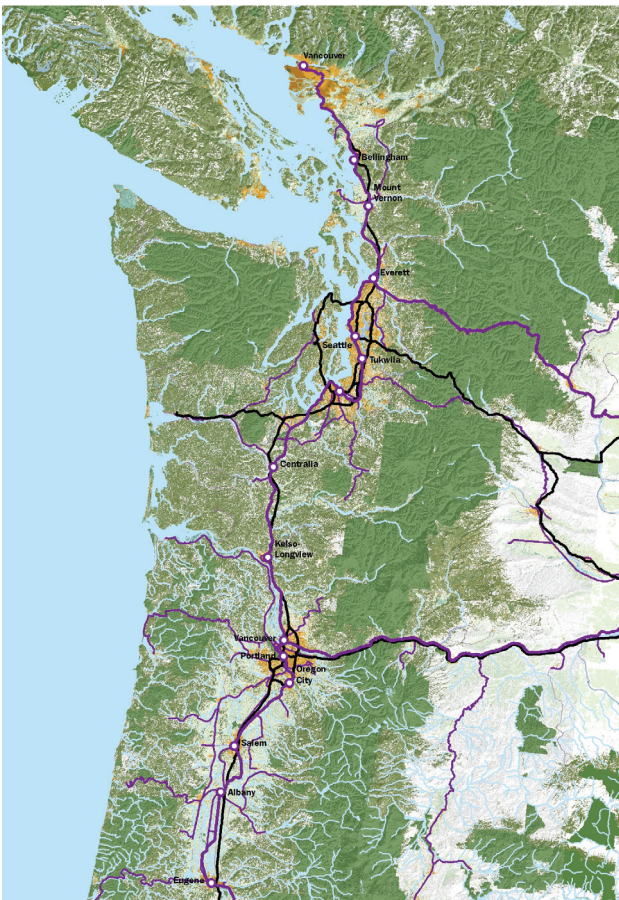




Connecting Cascadia

A High-Speed Rail Vision for the Pacific Northwest



Briefing Book
Metro, Portland, Oregon • July 8-9, 2010



America 2050

America 2050 is a national initiative to develop a framework for America's future growth and development in face of rapid population growth, demographic change and infrastructure needs in the 21st century. A major focus of America 2050 is the emergence of megaregions – large networks of metropolitan areas, where most of the projected population growth by mid-century will take place – and how to organize governance, infrastructure investments and land use planning at this new urban scale.

www.America2050.org



Regional Plan Association

Regional Plan Association (RPA) is an independent regional planning organization that improves the quality of life and the economic competitiveness of the 31-county, New York-New Jersey-Connecticut region through research, planning, and advocacy. Since 1922, RPA has been shaping transportation systems, protecting open spaces, and promoting better community design for the region's continued growth. We anticipate the challenges the region will face in the years to come, and we mobilize the region's civic, business, and government sectors to take action.

RPA's current work is aimed largely at implementing the ideas put forth in the Third Regional Plan, with efforts focused in five project areas: community design, open space, transportation, workforce and the economy, and housing. For more information about Regional Plan Association, please visit our website, www.rpa.org.

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1. Introduction

Welcome

Thank you for joining us in developing a vision for high-speed rail in the Pacific Northwest. On July 8 and 9, we will gather at Metro in Portland to test the transportation, economic, land use, climate change, and livability implications of connecting the Cascadia Megaregion with high-speed rail.

This workshop comes at a critical point in planning efforts for passenger rail in the United States and in Cascadia. The \$8 billion provided in the American Recovery and Reinvestment Act, and a subsequent \$2.5 billion appropriated in the 2010 federal budget, signals the most serious financial commitment to passenger rail in America in decades. The selection of the Pacific Northwest Rail Corridor for a grant award of almost \$600 million puts Cascadia in the top five of key national corridors in the United States.

At the same time, the “livability” partnership among US federal agencies for housing, the environment, and transportation (HUD-EPA-DOT) to promote more sustainable land development patterns is consistent with the goals of Cascadia’s metropolitan regions that for decades have led North America in building “livable communities.” There may be no better megaregion in America to bring together the combination of high-speed rail and livability.

In addition to our workshop, many of our partners are hard at work advancing local, state and provincial coordination to successfully implement the ARRA grant and maintain momentum for passenger rail investment and improvement. Beginning in May of 2009, the Cascadia Center of the Discovery Institute has sponsored a series of high profile train rallies and interlocal compacts with Mayors from Eugene, Oregon to Vancouver, BC. Larger regional and national audiences are being enlisted through the upcoming Pacific Northwest Environmental Region (PNWER) meeting July 16-20 in Calgary, the Rail~Volution conference October 18-21 in Portland, and the Portland meeting of the binational Pacific Coast Collaborative in the fall.

Our workshop on July 8-9 is an opportunity to broaden our focus to explore how high-speed rail can help advance larger goals for Cascadia as a more interconnected, sustainable, and prosperous megaregion. Indeed, only with this larger vision can the megaregion fully leverage local, state, provincial, and national investments in high-speed (and higher speed) rail. Taking two days at the beginning of the process to build support for this vision could pay dividends in the future towards realizing longer term goals. By having the outline of a shared vision in hand, this work will enable Cascadia to move forward in a more coordinated and effective way.

Workshop Objectives

The workshop aims to answer the following questions:

- What vision for Cascadia will high-speed rail help to achieve?
- How can high-speed rail promote a more productive and inclusive Cascadian economy?
- How can high-speed rail underpin and help achieve Cascadia’s land use and livability goals?

- How does high-speed rail integrate with and serve the large and smaller transportation networks that exist or are planned for the megaregion?
- What is the Cascadian-scale governance model and financing strategy that can help us achieve this vision?

To understand the opportunities and implications of high-speed rail in Cascadia, the group will test a high-speed rail scenario in Cascadia against the land use and station area development scenarios, economic strategies, and transportation connections required to optimize high-speed rail investment. The high-speed rail scenario will be evaluated in the context of a “Cascadia Megaregion Planning Framework,” generated by assembling the regional plans and growth strategies of the major and medium-size cities along the corridor, including plans for natural resource protection and land preservation.

To answer the questions above, participants will divide into three working groups:

- **The New Economic Geography:** Ethan Seltzer and Robert Yaro, co-chairs. What are the specific economic implications for large, medium-size and small cities and communities throughout Cascadia? How does high-speed rail promote greater economic productivity, new business relationships, increased tourism, industry clusters and agglomeration in the Cascadia megaregion? What strategies are needed, in addition to the transportation investments to achieve these benefits?
- **Land Use, Climate Change and Livability:** Robert Lane and Pat Condon, co-chairs. How does high-speed rail complement or conflict with existing regional plans and growth strategies for the future of the megaregion? How can we connect high-speed rail investment to other federal programs and goals, such as the HUD-DOT-EPA livability partnership? How can future investment decisions in infrastructure and land development help leverage high-speed rail investment?
- **Network Benefits:** Bruce Agnew and Andy Cotugno, co-chairs. How does high-speed rail integrate with and serve the large and smaller transportation networks that exist or are planned for the megaregion? How can connections among different modes provide greater choice and benefits for passengers and freight?

Background information for each working group is described below.

A Vision for Cascadia

Since the early 1990s, regional planners, civic leaders, and politicians have recognized the promise of an interconnected Cascadia Megaregion. The Cascadia Center of the Discovery Institute led by Bruce Agnew launched its Cascadia Transportation Task Force and Economic Council in 1994 with support from major political leaders including then Vancouver, BC Mayor (now BC Premier) Gordon Campbell, US Senators Mark Hatfield from Oregon and Patty Murray from Washington. The Council’s charter was to promote “conservation, community and commerce” to address issues related to improving passenger rail, the trade corridor, binational tourism and sustainable communities.

The 2010 Olympic Games in Vancouver rekindled interest in Cascadia. From the special Olympic edition of the *BC Business Magazine* came these thoughts:

Cascadia is deeply interconnected. Proponents of the idea maintain that the region can't fully achieve its potential, be it ecological conservation, a strong cultural identity or global economic competitiveness, unless we somehow learn to work together. "Integration of transportation has been hit and miss in the last 15 years, but we've enjoyed an upsurge in the last three or four years," [Cascadia Center's Bruce] Agnew says.

Another proposal in the dreaming stage is to one day build a new rail line for next-generation high-speed trains, which could take passengers from downtown Vancouver to downtown Seattle in about three hours – about an hour faster than the current trains. Vancouver Mayor Gregor Robertson signed a memorandum of understanding with the mayors of Seattle and Portland supporting a high-speed line last spring.

And on the grander issue of Cascadia cooperation and culture, the *BC Business* piece went on to note,

...Vancouver, for example, looks to Portland to learn about streetcars, whereas Seattle is looking at Vancouver to learn about high-rise downtown housing. But perhaps the most valuable lessons that have come out of the relationship have been about how to design sustainable and livable communities.

This will likely give the region a competitive edge as the global economy comes to rely more and more on service-oriented work, [Vancouver's Institute for Sustainable Development's Larry] Beasley says, by drawing valuable creative professionals from around the world. "These people can be anywhere they want to be, and they go to places of quality," he says. "If you look at Vancouver, Seattle and Portland, we are places of quality, and we present ourselves that way; that's our brand..."

Since 2005, Ethan Seltzer has led four graduate planning classes at Portland State University on the Cascadia megaregion, each building upon one another to explore issues of transportation, economic development and specialization, sustainability, and livability. The PSU reports focused on the concept of a Cascadia "Ecolopolis" – a megaregion united not by continuous urbanization, as defines the Boston-Washington Northeast Megaregion, but by a connected network of distinct metropolitan regions and cities separated from each other by working and wild landscapes.

Imagine boarding a high-speed train in downtown Portland. Your coffee steams while you sit down to open your laptop. As the train's speed increases, rivers and snowy volcanic peaks come in and out of view. The city vanishes into a mossy haze of temperate rainforest.

This is Cascadia. It encompasses two states (Oregon and Washington), one province (British Columbia) and an international border (USA/Canada). After just over two hours, the train pulls up amidst the sleek high-rise towers of

Vancouver. Roundtrip your travel tops 600 miles, but high-speed rail will allow you to return to Portland after your meeting in time for dinner.

Fact or fiction? For this tale to become true, the fundamental underpinnings of Cascadia, and the identity of the region as a place, would need to become much stronger and more carefully articulated. From the outside, we are one region. From the inside, it's difficult to get the citizens of the Portland metropolitan region today to embrace the issues (let alone the professional sports teams) of the Seattle and Vancouver, BC metropolitan areas as their own.¹

The Pacific Coast Collaborative, an effort of the California, Oregon, Washington, Alaska, governors and British Columbia premier, was formalized in 2008 with the signing Pacific Coast Collaborative Agreement which declares their intentions to collaborate on a common future in the "Pacific Century." Their priorities include: clean energy, high speed rail linking British Columbia and California, emergency management, regional transportation, research and innovation, and sustainable regional economy.

While these recent studies and collaborations represent steps in the direction of a more interconnected megaregion, the challenge of building and operating high-speed rail will test the limits of cross-border collaboration. Despite the challenge, there are few investments besides high-speed rail with the potential to realize the promise of greater economic integration for the Cascadia Megaregion.

U.S. Megaregions and High-Speed Rail

The growing recognition of megaregions has been driven and led by America 2050, a national program of Regional Plan Association, which is focused on the role of megaregions in shaping a national infrastructure plan for America's future growth. America 2050 has identified 11 megaregions nationwide that contain over 70 percent of US population and employment. These networks of metropolitan areas, connected by business travel, urbanization, economic relationships, and natural systems, are also the perfect size (at approximately 500 - 700 miles across) to be served by high-speed rail.

Only with the fast and convenient ground connections provided by high-speed rail can megaregions realize the productivity benefits of their metropolitan economies acting as integrated units. Our research shows that high-speed rail has the potential to realize the following economic benefits at the megaregion scale:

- **Boosting productivity for service-based businesses through time savings and increased mobility.** Faster, more frequent, reliable connections that enable business trips among economies with complementary specializations can foster more productive megaregions and agglomeration. According to studies performed for England's proposed HS2 line, the time savings accrued by businesses located in central cities connected by high-speed rail will result in higher wages over time.²

¹ Portland State University (2006) "Cascadia Ecolopolis 2.0"

² GreenGauge 21 (2010). High Speed Rail in Britain: Consequences for Employment and Economic Growth. [Accessed March 2010 at <http://tinyurl.com/yeg3tu>]

- **Expanding the scope of labor markets accessed by major employment centers:** Faster rail connections between employment hubs and adjacent, smaller cities and residential areas can deepen labor markets, giving employers access to more workers and providing workers with more and cheaper housing options. Workers may be willing to travel longer distances to their jobs if they are provided with reliable, frequent, comfortable rail service with the opportunity to work aboard the train.³
- **Connecting smaller cities to major employment centers:** Evidence in England shows that bringing towns within two-hour commuting distance to London after England upgraded its rail lines to 125 mile per hour service boosted Gross Value Added (a measure of economic output) for those towns.⁴
- **Focusing development and real estate opportunities around stations:** Rail passenger stations provide focal points for transportation-oriented development, such as new office, retail, and residential development. Focusing development around transportation hubs can reduce the need to drive, enliven and activate communities, and promote energy savings through transportation and building related efficiencies.
- **Making more efficient use of existing infrastructure:** Shifting short-haul air trips and intercity automobile trips to rail can increase capacity for more energy-efficient intercity trips. Particularly in regions with congested airports, shifting regional air trips to rail frees up runway space for longer domestic and international flights.

- **Electricity mix** – A high-speed rail system could replace travel powered by petroleum with travel powered by electricity. The source of this electricity partly determines the overall change in emissions. Currently, the Pacific Northwest relies primarily on low-carbon hydroelectric power, but the rail corridor is not electrified, and there are currently no plans to make that investment.
- **Construction and maintenance** – Building and maintaining a large infrastructure project, like high-speed rail, is an energy intensive process and relies on greenhouse gas-intensive materials such as concrete and steel. These construction inputs must be weighed against the potential for long-term reductions.
- **Highway congestion** – Slower automobile speeds caused by congestion can increase vehicle emissions. The degree to which high-speed rail can eliminate highway congestion partly determines its effectiveness at reducing emissions.
- **Current trip replacement** – High-speed rail may be more likely reduce emissions if it replaces trips taken by airplanes or single-occupant vehicles. It may be less likely to reduce emissions if it replaces trips taken by bus or carpool.
- **New trip generation** – High-speed rail may generate new trips that would not have otherwise occurred. This induced travel demand could lead to additional energy-demand as new capacity needed.

High-Speed Rail and Climate Change

Constructing and operating a high-speed rail system could have a significant impact on the energy consumption and greenhouse gas emissions from transportation in the Pacific Northwest. Thus, the links between high-speed rail investment and climate policy must be a central part of any planning process.

In general, public transportation modes, including rail, are more energy efficient and less greenhouse gas intensive than private automobiles (see Figure 1-A). Accordingly, high-speed rail systems have been promoted for their potential to reduce energy use and emissions. However, a recent study on California's proposed high-speed rail system shows that this benefit is not necessarily a certainty.⁵ Several factors are critical to evaluating whether high-speed rail will increase or decrease greenhouse gas emissions from transportation.

Factors influencing high-speed rail GHG reduction potential:

- **Ridership** – Strong ridership increases the likelihood that per capita emissions are reduced, while low ridership could mean that high-speed rail will actually be worse than the status quo in terms of emissions.

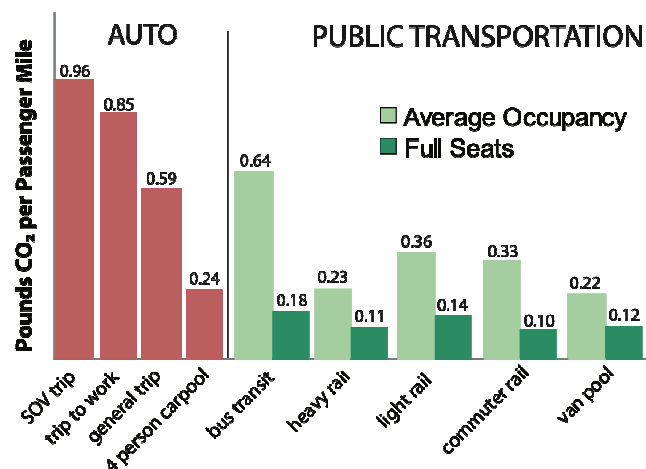


Figure 1-A. Carbon intensity per passenger mile of transportation modes in the U.S. (Source: US DOT, 2010)

Oregon, Washington, and British Columbia have each taken major steps to combat climate change by reducing greenhouse gas emissions. A major source of greenhouse gas emissions in each place is the transportation sector, primarily from private automobiles, trucks, and airplanes (see Figure 1-B).

While high-speed rail may affect greenhouse gas emission, climate change policies in turn a low carbon travel option, it could have a competitive advantage over other modes of transportation that must pay a higher carbon prices for the fuel they consume.

As noted above, electrification of the Amtrak Cascades service was considered in the early 1990s, but ultimately dismissed due its high cost versus traditional diesel locomotives. Diesel trains continue to operate on the corridor today and there are no indications that this will change. Although diesel train engines contribute to greenhouse gas emissions, their operational

³ Martin Prosperity Insight. (2010) "High Costs, High Speeds, Hidden Benefits: A Broader Perspective on High-Speed Rail." Rothman School of Management, University of Toronto.

⁴ Chen and Hall (2010) "The Impacts of High-Speed Trains on British Economic Geography"

⁵ M. Chester and A. Horvath (UC Berkeley). "Life-cycle assessment of high-speed rail: the case of California," *Environmental Research Letters*. Vol 5 (2010).

energy efficiency tends to be higher per passenger mile than automobiles and airplanes since they have such a high passenger capacity. This operational efficiency breaks even with single occupant vehicles at about 56 passengers per train. Current ridership on Cascades service appears to meet this threshold. For example, on an annual basis, the Seattle to Portland route typically averages over 100 passengers per train.

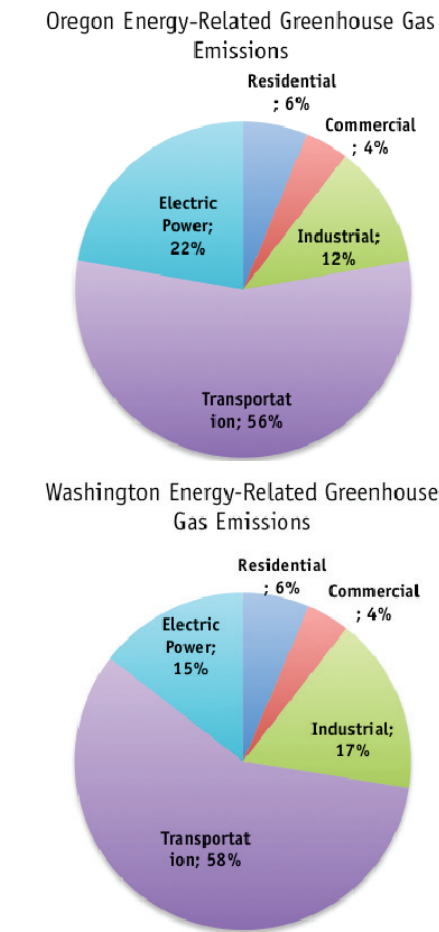


Figure 1-B. Energy greenhouse gas emissions in OR and WA (Source: Energy Information Administration, 2007).

Figure 1-C. Hydroelectric Power as Share of Total Energy Generation

State/Province	Hydroelectric Power (percent of total generation)
BC	90%
WA	70%
OR	58%
Source: EIA 2008; Statistics Canada 2007	

2. The New Economic Geography

Today, the idea of an integrated Cascadia Megaregion economy is just that – an idea. In reality, the knowledge based economies of metropolitan Portland, Seattle, and Vancouver function largely independently, separated by working landscapes of agriculture, logging, and other resource-based industries.

This section will explore what economic benefits could be gained from high-speed ground connections between the major job centers of Cascadia and whether, through high-speed rail, regional economies that function separately today could develop economic relationships tomorrow that would benefit both the metropolitan and rural economies of Cascadia.

Strategies for an Integrated Cascadia Economy

Tapping Portland State University and the Cascadia Center of the Discovery Institute again as sources of inspiration, several strategies they have proposed for developing the Cascadia “brand” are worth recapping here.

- Clusters of Cascadia
- The Cascadia Brand for Agriculture and Specialty Products
- The Two-Nation Vacation: Tourism Strategy

Clusters of Cascadia

PSU’s 2005 study of “Ecolopolis” devoted a chapter on Harvard professor Michael Porter’s theory of industry clusters, describing groups of firms in the same or related industries, which locate in proximity, exchange information, and foster innovation.⁶ These three conditions give rise to greater competitiveness and economic specialization.

The students looked at the structure of regional economies in Cascadia and identified three potential emerging clusters: the “green building” design industry, creative industries, and high tech.

Indications of an emerging green building cluster were attributed to the disproportionate number of LEED-certified building in Cascadia, the specialization of architecture and engineering services in Portland and Seattle, and the presence of a Cascadia Region Green Building Council spanning Portland, Seattle, and Vancouver, BC.⁷ This focus on green buildings is complemented by three regions that have devoted significant attention to growth management policies and public transit investments, underscoring their commitment to sustainability.

To illustrate the emerging creative cluster of Cascadia, the students noted Vancouver’s thriving film industry, dubbed “Hollywood of the North,” which had experience a growth rate of 21 percent in the previous 10 years, and was facilitated by the favorable Canadian exchange rate at the time. Filling out the Cascadia creative suite is Seattle’s thriving music industry

cluster – composed of musicians, producers, live venues, recording studios, equipment, labels and royalties, distribution outlets, and business support. By contrast, Portland, while indeed in possession of an arts scene, was not specialized in employment in performing and visual artists, authors, and musicians.⁸

The emerging hi-tech industry cluster is formed by the presence of companies such as Intel in Portland; Microsoft and Amazon in Seattle; and game box and video software developers in Vancouver. The presence of these major firms are complemented by proximate venture capitalists, spin-off businesses, and academic/ research institutions, such as the not-for-profit Open Source Development Lab, which formed and located in Portland in 2000 to promote the Linux industry of open source software.⁹

The students observe that while these emerging clusters show promise, each one is too small to compete with industry clusters in larger metropolitan regions and megaregions across the world. High-speed rail, they posit, may be a way to achieve a “virtual” cluster at the megaregion scale.

[We found] huge potential for economic clusters in Cascadia, especially when aided by virtual and real infrastructure that could reduce distance to foster interaction among industry players. ... High-speed rail is viewed as a way to speed transportation and avoid traffic congestion in moving people and freight within the region. But shortcomings, such as the cost and fixed location of the route, do not serve all industries well. On the other hand, the growth of high-tech innovations allow distance and time to be compressed in a way that supports and encourages networking and interaction, not just on a regional scale, but on the global level as well.¹⁰

The Cascadia Brand: Agriculture and Specialty Products

A second strategy proposed by Portland State University is enhancing the Cascadia brand of unique agriculture and specialty food products and adopting a megaregion-scale approach to farmland protection.¹¹ Agriculture is a major industry in the Cascadia megaregion. In Oregon, agriculture sells the most products by volume of any industry, accounts for 10 percent of the gross state product, and accounts for one in ten jobs statewide. In Washington, agriculture provides the most jobs by industry in the state and has a food processing industry valued at \$12 billion. In British Columbia, agriculture is the third largest industry in the province, with wholesale sales accounting for \$33 billion annually.

The industry is not just large, but varied, unique, and closely tied to the region’s landscapes, character, and image.

For Cascadia, evocative foods include salmon, berries, hazelnuts, oysters, Dungeness crabs, wines, microbrews (and hops), apples, pears, and dairy products (Tillamook Cheese and

⁶ Portland State University (2005) “Ecolopolis: Making the Case for a Cascadian Supercity; Draft.” Accessed June 2010 at: <http://america2050.org/pdf/ecopolopoliscascadia.pdf> pp 8-19.

⁷ LEED is a voluntary rating system of the U.S. Green Building Council to rate the energy efficiency and environmental sustainability elements of new buildings. For more information: <http://www.usgbc.org/>.

⁸ Portland State University (2005). p. 14-16.

⁹ Ibid. p. 18.

¹⁰ Ibid. p. 19.

¹¹ Portland State University, “Ecolopolis 3.0: Infrastructure and Sustainability in Cascadia.”

smaller, artisanal producers). The promotion of a Cascadian cuisine and its raw ingredients holds the possibility of bolstering the region's identity and providing urban/rural linkages.¹²

regions shown in the chart. Since 2004, the regions with the fastest job growth on the US portion of the corridor were all in Washington: Bellingham, Mount Vernon-Anacortes, and Olympia.

A serious threat to Cascadia's agriculture industry is the loss of farmland to suburban development. While each of the states and British Columbia have growth management strategies and farmland preservation policies, infrastructure investments, such as road building can sometimes work at cross purposes by encouraging development into rural areas. By contrast, high-speed rail reinforces focused development in established urban centers and can be a way of reorienting growth patterns within the urbanized corridor.

The Two-Nation Vacation: Tourism Strategy

In 1996 the Cascadia Center of the Discovery Institute sponsored a successful Cascadia tourism conference in Seattle that highlighted opportunities for co-marketing the region's attractions, such as wineries, gardens, coastal cruising, cultural attractions, and sports events.

Since 2006, the Seattle and Vancouver, BC convention and visitors bureaus have been meeting regularly and considering co-hosting future sporting and cultural events. Based on the success of the 2010 Olympic Games in Vancouver (80 percent of Canadians in a recent Angus Reid poll rate the Olympics as a success) and the need to "cost share" world class events (in 2002, Japan and Korea co-hosted the World Cup soccer tournament); the interest in Cascadia co-hosting events is promising. Enhanced, higher speed intercity passenger rail for international visitors could be a key marketing point.

Political support comes from the highest level. In the Pacific Coast Collaborative announced by the West Coast Governors and BC Premier, support for high speed rail was strong and Washington Governor Gregoire spoke enthusiastically about the "two-nation vacation".

A cooperative partnership of five cities – Vancouver, BC, Seattle, Tacoma, Portland, and Eugene – was formed to highlight the wide array of cultural experiences along the corridor. Through a strategic partnership with Amtrak, this program also promotes the ease and comfort of travel between these points via Amtrak Cascades with partners like Kimpton Hotels and more recently a Japanese tour company for Alaska bound cruise ship passengers. The Cultural Cascades website is organized around the Amtrak service and provides links to tourism websites in Vancouver, Seattle, Tacoma, Portland, and Eugene, along with links to booking tickets on Amtrak.¹³

Economic Indicators and Regional Profiles

Job Growth

Overall, the major metropolitan regions of Cascadia have experienced steady job growth since the early 1990s. Figure 2-A shows indexed employment change from 1990 - 2008 for the regional economies along the US portion of the Cascadia corridor. The chart shows that most of the regional economies exhibited faster job growth than the US average, with the exception of the Longview, Washington metropolitan area, which lagged behind all other

¹² Portland State University (2006) "Cascadia Ecoregion 2.0" pp23-24.

¹³ www.culturalcascades.com

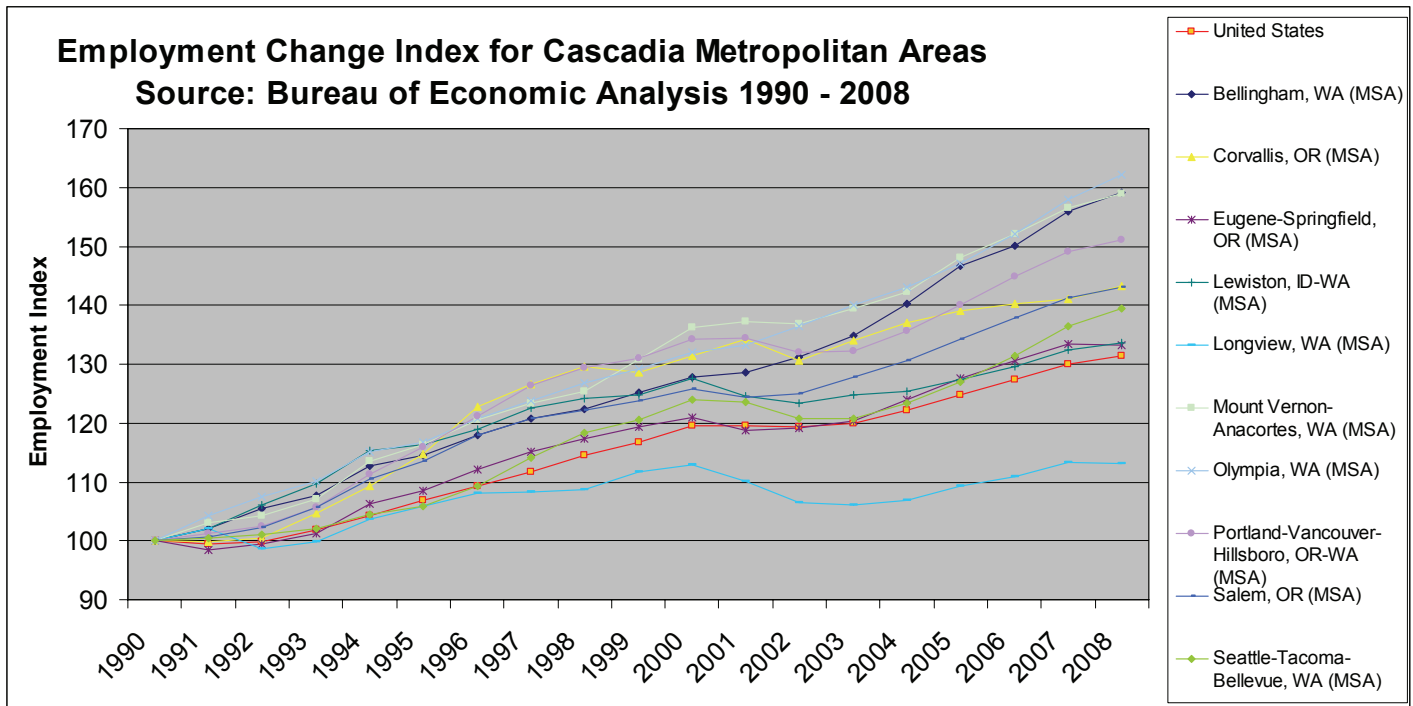


Figure 2-A

Industry Mix and Specialization

The regional economies of Portland, Seattle, and Vancouver (Figures 2-B – 2-D) are similarly focused in service based industries, such as professional and business, financial, education, and health services. Professional and business services account for 16 percent in Portland and Seattle and 14 percent in Vancouver. Financial activities account for about 11 percent of jobs in Seattle and Portland, compared to 7.5 percent in Vancouver. Each of the regions also has a relatively strong share of jobs in trade, utilities and transportation: 16 percent, 18 percent, and 22 percent for Portland, Seattle and Vancouver, respectively. Vancouver has the largest share of jobs in leisure and hospitality at 16.7 percent.

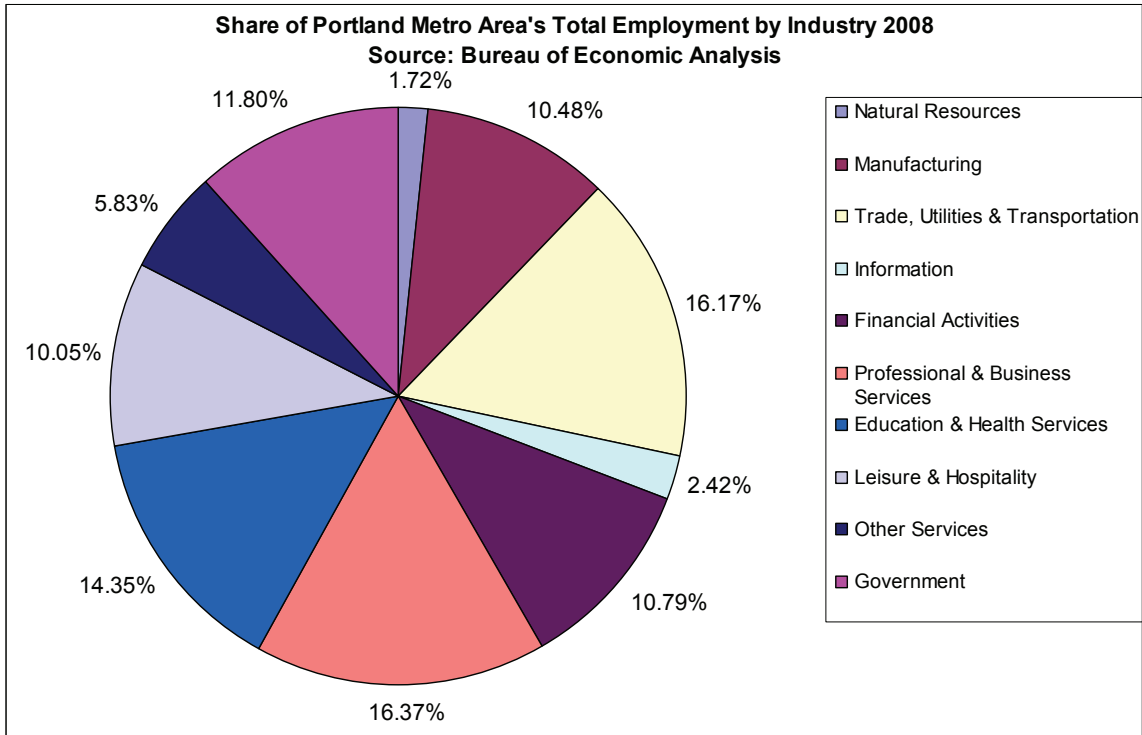


Figure 2-B

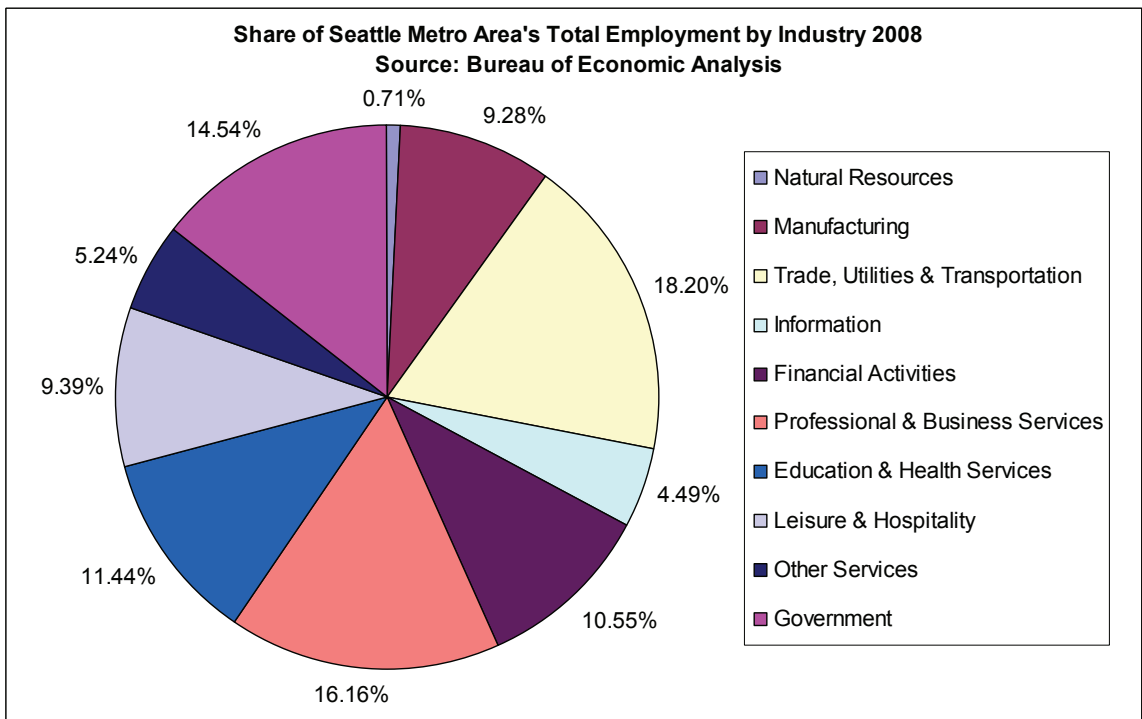


Figure 2-C

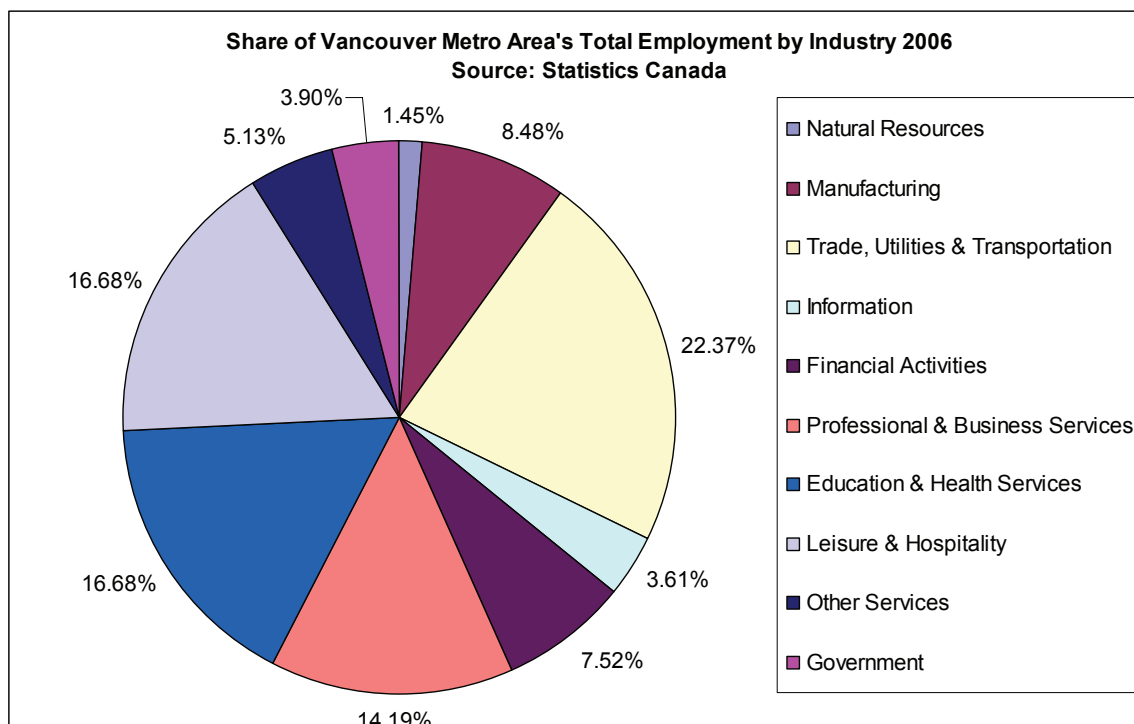


Figure 2-D

We also looked at the specialization of super sectors in the three major regional economies, measured by location quotient over the last 5-6 years for which data was available. Location quotient (LQ) is a tool of economic base analysis that compares local economic activity to a larger area – in this case, all of the United States or all of Canada. If the LQ score is greater than 1.0, the economic is said to be “specialized” in that sector, exceeding local needs and thus exporting local goods or services.

For Portland, the analysis in Figure 2-E shows a slight specialization in education and health services; information, and manufacturing. The slight specialization in financial activities eroded from 2002- 2008, while Portland’s specialization in manufacturing has grown in the same period and is the most specialized sector in the regional economy. This may be attributable to the presence of large computer and electronic component manufacturers in the region, such as Intel.

Seattle (Figure 2-F) presents a different picture than Portland; its most specialized industry is information, though it has lost its degree of specialization from 2002 – 2008, going from an LQ score of 1.78 to 1.2.

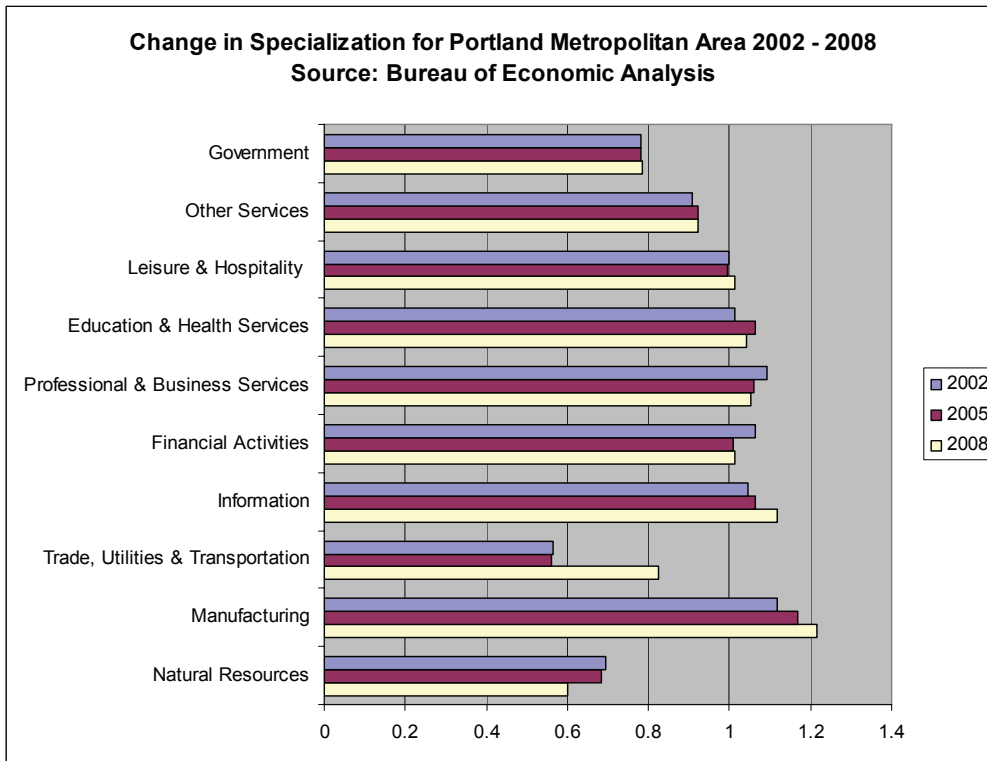


Figure 2-E

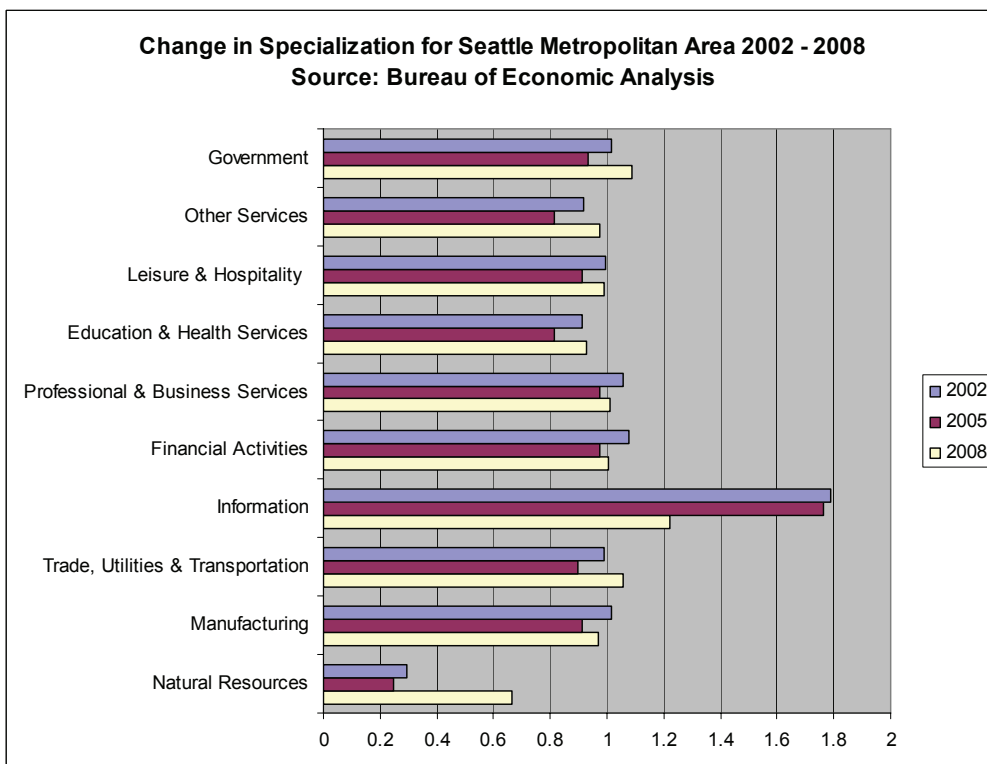


Figure 2-F

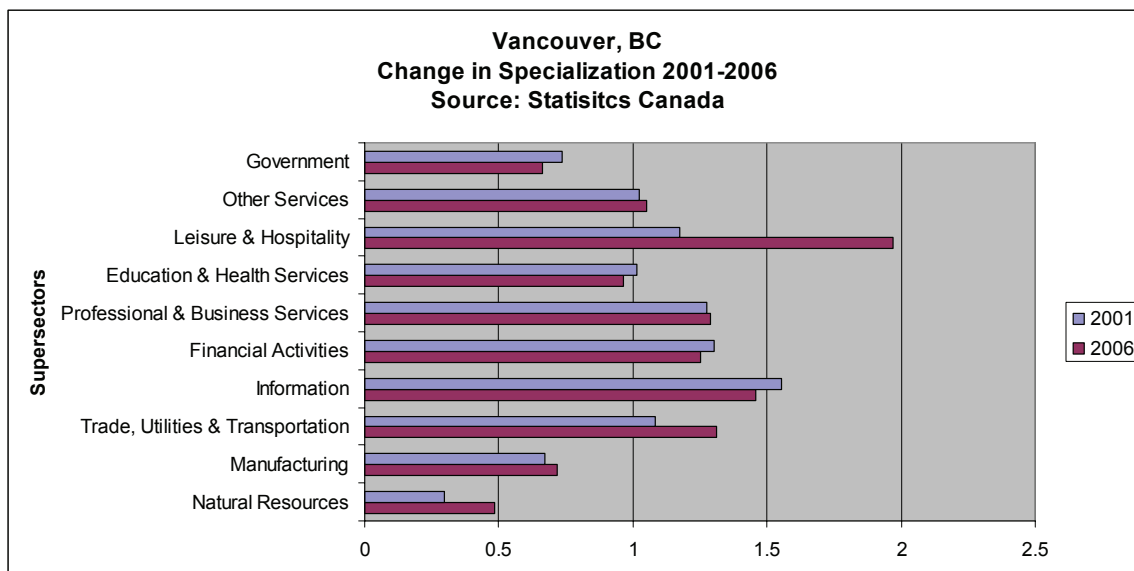


Figure 2-G

Vancouver's regional economy shows the strongest specialization in leisure and hospitality, with a high score of 1.97 in 2006. The rapid growth of the industry since 2001 may be attributable to the preparations in the tourism industry leading up to the 2010 Winter Olympics. The Vancouver regional economy also exhibits specialization in professional and business services, financial activities, information, and trade, utilities and transportation. It should be noted that given Canada's smaller economy than the United States, Vancouver's specializations are more pronounced than its US neighbors in Cascadia.

Regional Snapshots

Total Employment by Regional Economy

Portland-Vancouver-Hillsboro, OR-WA (MSA) 2008	1,388,060
Seattle-Tacoma-Bellevue, WA (MSA) 2008	2,306,396
Vancouver, BC (CMA) 2006	1,104,760

Source: Bureau of Economic Analysis; Statistics Canada

Unemployment Rates 2010

Portland-Vancouver-Hillsboro, OR-WA (April)	10.5
State of Oregon (May)	10.6
Seattle-Tacoma-Bellevue, WA (May)	8.2
United States (May)	9.7
State of Washington (April)	9.1
British Columbia (April)	7.3
Canada	8.1

Source: Bureau of Labor Statistics; Statistics Canada; British Columbia Statistics

3. Land Use, Climate Change and Livability

This section explores the planning, land use, climate change context for high-speed rail, including how to leverage high-speed rail investments by connecting them to regional transportation and land use plans. The following sections provide an overview of existing climate change policies, regional planning efforts, and land use controls throughout the megaregion.

State and Provincial Climate Change Regulations

Oregon

Climate change mitigation is something that Oregon takes very seriously. The state has enacted stringent emissions standards and reduction targets, and has aggressively pursued a diverse portfolio of renewable energies to power its future. The state aims to reduce greenhouse gas emissions to 10 percent below 1990 levels by 2020 and to 75 percent below 1990 levels by 2050. House Bill 3543 established a Global Warming Commission responsible for recommending the best practices for emissions reduction, climate change education, carbon pricing schemes, and other programs that may impact Oregon's climate future.¹⁴

As a function of Oregon's ambitious reduction goals, the state has also enacted reporting requirements on all businesses throughout the state and provides guidance as to how to measure greenhouse gas emissions.

Oregon's 2009 renewable portfolio standard requires power utilities to use 25 percent renewable sources by 2025. As discussed earlier, the energy powering high-speed rail services is a critical factor in the climate change benefits of high-speed rail.¹⁵

The state is also a member of the Western Climate Initiative, which is pursuing regional implementation of carbon pricing schemes.

Washington

The Revised Code of Washington contains several measures aimed at mitigating the effects of climate change, including: statewide emissions reduction targets and standards for electric utility emissions. Washington state law now stipulates that the state must reach 1990 emissions levels by 2020 and 50 percent below 1990 levels by 2050.¹⁶ These targets are slightly less ambitious than those in Oregon; nonetheless, they demonstrate a commitment to challenging the climate and energy status quo.

As with Oregon, Washington is a member of the Western Climate Initiative and is looking into carbon pricing mechanisms as a method of reducing emissions and incentivizing the use of alternative energies.

Washington, in its Energy Independence Act, requires electric utilities to produce 15 percent of their energy using renewable sources by 2020.¹⁷ While

not as aggressive as Oregon's requirement, it will contribute to electrified passenger rail becoming even more environmentally attractive.

British Columbia

The province of British Columbia has the most stringent set of environmental laws in the megaregion, including eight significant pieces of climate legislation that have been passed since 2007. In addition to emissions reduction targets and renewable portfolio standards, British Columbia has enacted a carbon tax and has authorized the creation of a cap and trade system for carbon emissions.¹⁸

The carbon tax currently stands at \$15 per tonne of CO₂ emitted and is levied at the wholesale level. This means that gasoline, coal, diesel, natural gas, jet fuel, propane are all taxed at the purchase of the product. All industries and consumers are affected and all of the revenue from the carbon tax is designated to be returned through tax cuts. None of the funds currently go toward transportation or the development of renewable energy technologies. This is slightly different from the carbon legislation that is being considered in the United States, where cap and trade and carbon tax proposals may exempt certain industries and contain provisions for both renewable energy investment and consumer tax rebates. By 2012, British Columbia's carbon tax is scheduled to increase to \$30 per tonne.¹⁹

The cap and trade system is not yet implemented; however the framework for its implementation is in place. British Columbia is waiting on guidelines, rules and regulations from the relevant agencies.

Planning and Growth Strategies in Major Metropolitan Regions

Portland, Oregon

"Metro" is Oregon's elected regional planning council.²⁰ It is chartered with significant authority over land use planning and economic development in 25 cities and 3 counties in the Portland region. Metro expects the Portland metropolitan area's population to grow from 1.9 million today, to anywhere from 2.9 to 3.2 million people by 2030. Employment is expected to grow from about 970,000 jobs to anywhere from 1.2 to 1.7 million jobs by 2030.²¹

Oregon has a long history of regional planning. In the early 1970s the state began planning for the future by adopting urban growth boundaries, which limit the expansion of urban development. Portland's urban growth boundary was adopted in the early 1980s. The state has also enacted several legally binding "goals" that require coordinated regional planning and include provisions for sustainability and livability. Cities and counties in Metro's planning area must modify their growth plans based on Metro's determinations for expected growth in housing and employment.

Oregon has also developed concepts of "rural" and "urban" reserve areas. Currently being debated in each of the municipalities, urban reserves would

¹⁴ Oregon Revised Statute 468A.205 URL <http://landru.leg.state.or.us/ors/468a.html>

¹⁵ http://www.oregon.gov/ENERGY/RENEW/RPS_home.shtml

¹⁶ The Revised Code of Washington 70.235 URL

<http://apps.leg.wa.gov/RCW/default.aspx?cite=70.235&full=true>

¹⁷ Revised Code of Washington 19.285. URL

<http://apps.leg.wa.gov/rcw/default.aspx?cite=19.285&full=true#19.285.040>

¹⁸ British Columbia Ministry of Environment: "Legislation and Regulations." URL <http://www.env.gov.bc.ca/cas/legislation/index.html>

¹⁹ British Columbia Ministry of Environment: "About the Carbon Tax." URL <http://www.fin.gov.bc.ca/tbs/tp/climate/A4.htm>

²⁰ <http://www.oregonmetro.gov/>

²¹ Metro (2009): "2009-2030 Urban Growth Report." Employment Analysis, Residential Analysis (pgs. 27, 98)

be created with looser development restrictions and the potential to be incorporated into a modified urban growth boundary, while much stricter development restrictions would be put in place for the new category of “rural reserve.”²² Once land is designated as part of a rural reserve it may not be changed for at least 40 years. If widely enacted, these will be the strongest protection of natural resource lands that can be found in the Cascadia Megaregion. Most other metropolitan regions have exceptions to the rules for protected natural lands.

Transportation planning has also been an integral part of Metro’s responsibilities since 1983. In particular, the Portland metropolitan area has expanded light rail, commuter rail, streetcars, and bike paths as ways of encouraging targeted growth through transit-oriented development. Metro has come up with a new draft transportation plan through the year 2035 that attempts to move the region further away from auto dependency, and which targets growth to designated centers and corridors.

Key challenges the Portland region has identified include: the impacts of climate change, lack of affordable housing, an aging population, and the general cost and availability of land.

²² Oregon Department of Land Conservation and Development (Updated June 21, 2010): “Metro Urban and Rural Reserves.” URL http://www.oregon.gov/LCD/metro_urban_and_rural_reserves.shtml

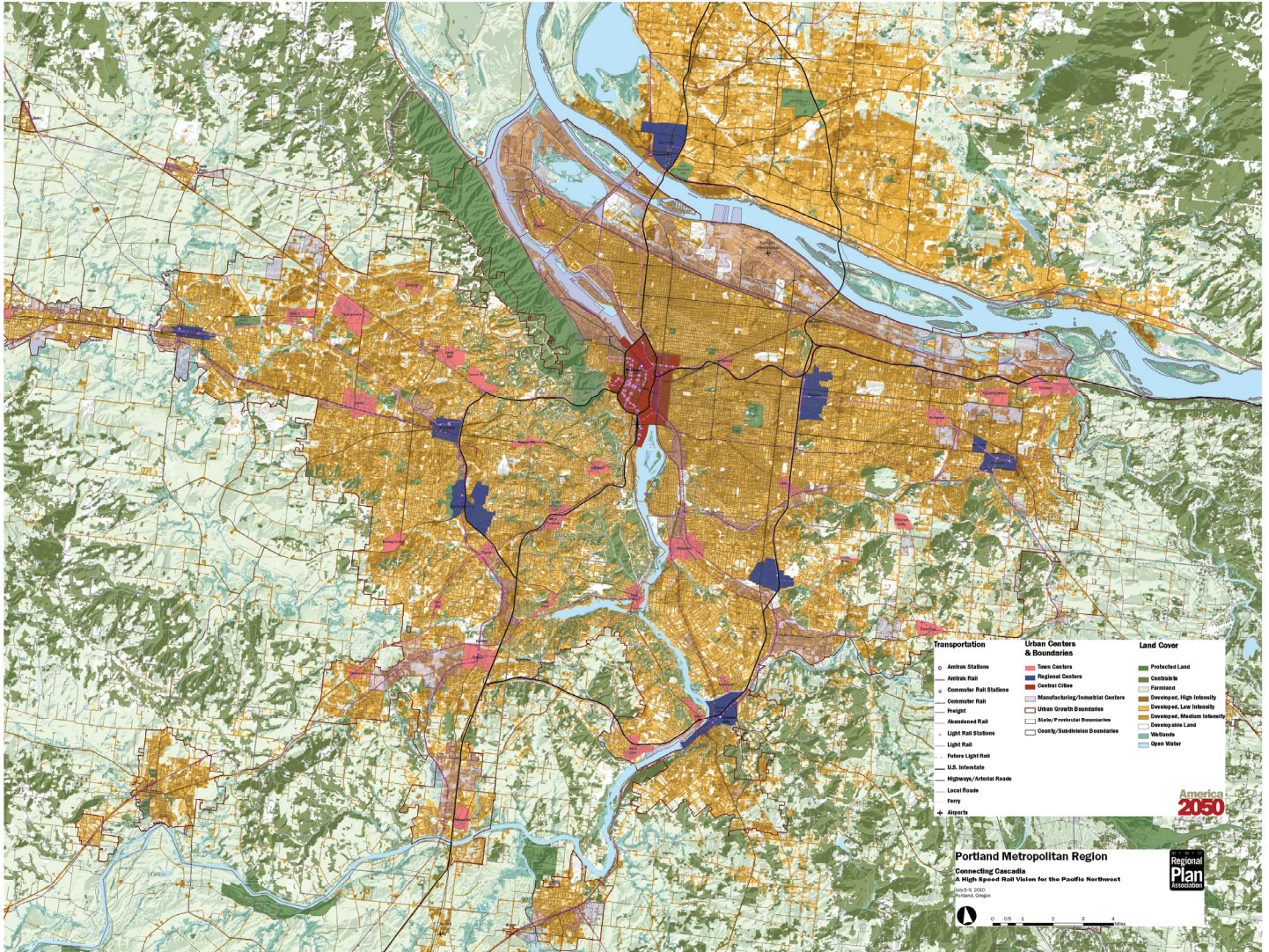


Figure 3-A: Portland Metropolitan Region

Puget Sound Region, Washington

The Puget Sound Regional Council²³ expects the region's population to grow from 3.3 million residents in the year 2000 to over 5 million residents by the year 2040. Total employment is also expected to increase from about 1.8 million to 3 million by 2040.²⁴ Such drastic changes in population and employment require significant adjustments in land use policy and the Puget Sound region already has a robust framework to build upon.

The early 1990s marked the beginning of Washington's serious attention to regional planning efforts. The Growth Management Act (1990) established statewide rules and guidelines for county land use planning and development. As such, all counties in the state were required to designate urban growth boundaries, rural areas, and protected "critical" lands necessary for the protection of natural resources and sensitive ecosystems.²⁵ These designations were built into each county's mandatory "comprehensive plan" and were based off an aggregation of guidelines set by Washington's Department of Commerce. The vision for the Seattle metropolitan area also includes designations for manufacturing and industrial activity.

Large sections of the *Growth Management Act* expire in 2011 and counties may begin to reexamine their land designations as they prepare to accommodate the next 20 to 30 years of growth. The Puget Sound Regional Council aims to encourage the state legislature to pass updated rules and guidelines outlined in its *Vision 2040* plan. *Vision 2040* includes an emphasis on multi-county planning coordination; mixed density urban development with access to forms of transportation other than the automobile; and protection of "natural resource" and "critical" areas.

Historically, the Puget Sound region has experienced an explosion of auto-dependent development. Lack of affordable housing has forced many workers to live far away from their places of employment.²⁶ However transit oriented development (TOD) has been picking up speed. The voters recently approved \$18 billion in new spending on increased light rail and commuter rail capacity.²⁷ In addition, the Regional Council has adopted guidelines for the designation of high capacity transit centers and regional growth centers.

Currently, the Puget Sound region faces several challenges that *Vision 2040* attempts to address. Vesting – or the 'grandfathering' in of older development rights after the implementation of a new comprehensive plan — has been a significant issue, particularly in "rural" and "resource" land designations. The expansion of suburban housing and public infrastructure into rural areas has also damaged the intended character of the land designation. Future plans aim to address the issues associated with vesting and suburban development by implementing development transfer and development rights purchase schemes.²⁸ The loss of farmland and other resource lands to vested development rights lowers the overall health of the Puget Sound region and forces produce and food to travel longer distances before reaching store customers.

Housing is also a key challenge for the region; it has become increasingly difficult for people to find affordable housing options near their places of employment. The regional council estimates that commutes will become even longer, emissions will be higher, and infrastructure will deteriorate faster if the region neglects to make changes.

²³ <http://www.psrc.org/>

²⁴ Puget Sound Regional Council (December, 2009): "Vision 2040." Population and Employment Forecast (p. 3)

²⁵ Legislation can be found on the State Legislature's website. Descriptions pulled from "Vision 2040," the PSRC's Regional Growth Plan.

²⁶ PSRC's "Vision 2040." (p. 67)

²⁷ Yardley, William (July 31, 2009): "After Years of Debate, Light Rail Trains Enter Town." The New York Times. URL

<http://www.nytimes.com/2009/08/01/us/01seattle.html>

²⁸ PSRC's "Vision 2040." (pgs. 54, 63)

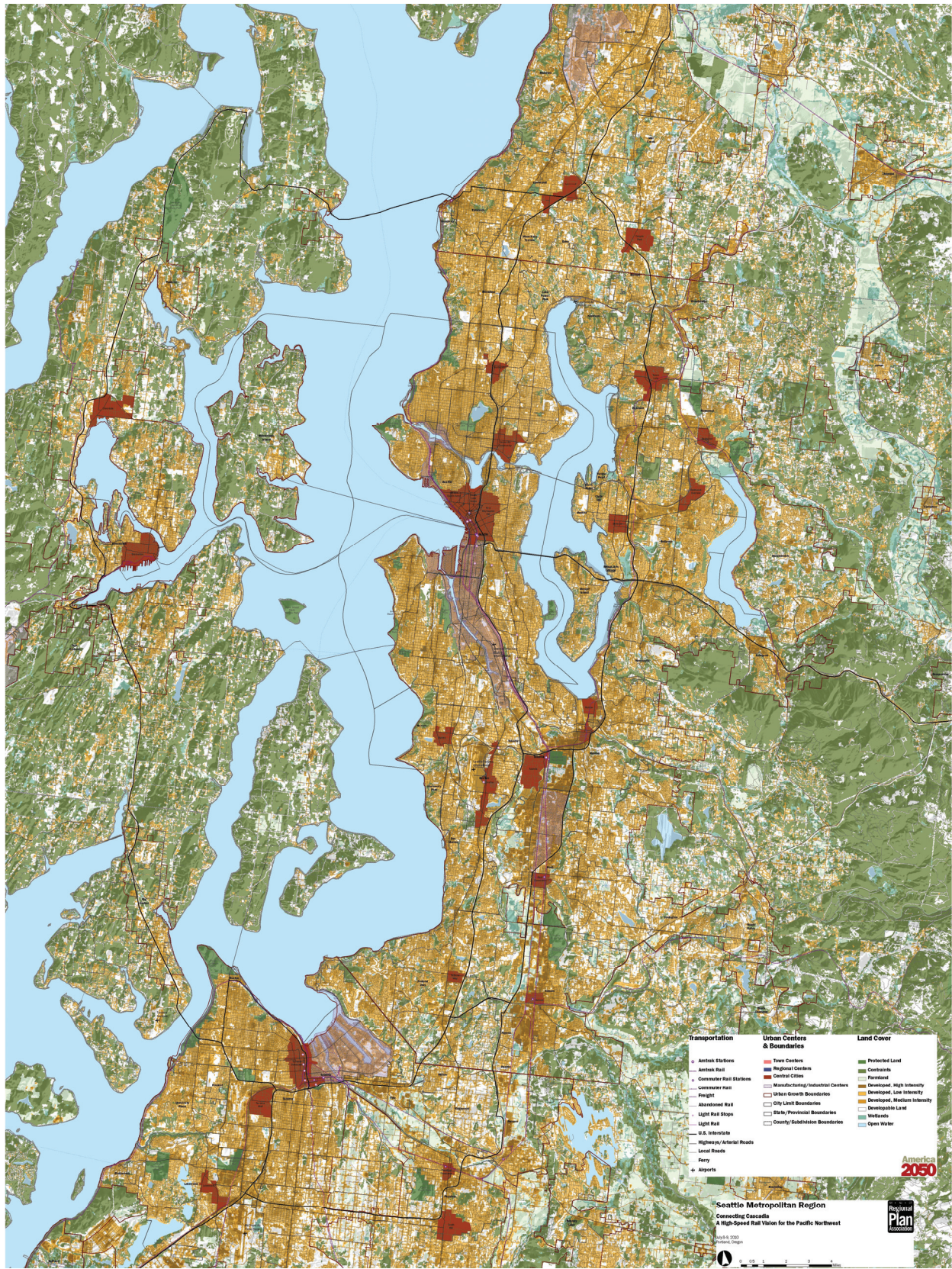


Figure 3-B: Seattle Metropolitan Region

Vancouver Metropolitan Area (British Columbia)

Metro Vancouver expects the metropolitan area population to grow from 2.2 to 3.4 million residents and for total employment to grow from 1.15 to 1.75 million jobs in the region by the year 2041.^{29 30}

The current regional plan of Metro Vancouver, enacted in 1996, has a regional-level designation called the “Green Zone”. Municipalities that wish to pursue urban development in the Green Zone must first get permission from Metro Vancouver. The Green Zone consists of regionally significant conservation and recreation lands, as well as agricultural lands. At the provincial level, British Columbia has a system of Agricultural Land Reserves that occupy roughly 17 percent of Metro Vancouver’s land area.³¹

As the region attempts to accommodate its anticipated growth, Metro Vancouver is tasked with coordinating the planning proposals of the communities and local governments in the Vancouver metropolitan area. There are several planned designations, as shown in the table below.³²

Inside Urban Containment Boundary (UCB)	Outside Urban Containment Boundary (UCB)
Urban Centers	Conservation and Recreation Lands
General Urban	Agricultural Lands
Industrial	Rural Lands
Mixed Employment	
Frequent Transit Development Corridors	

Metro Vancouver, TransLink, Port Metro Vancouver and other authorities have worked in concert to draft the region’s transportation plan, *Transport 2040*. The emphasis is on transit growth around urban centers and designated frequent transit development corridors. Specifically, TransLink’s goals are to promote bicycling and walking, to decrease emissions, commute times, and traffic fatalities by increasing transit options and choices.

Metro Vancouver has arrived at several goals to be met over the next 30 years, as expressed in its Regional Growth Strategy. They include: maintaining livability and increasing sustainability while accommodating future growth; the protection of the natural environment and agricultural lands; and building healthy communities. The region fears the loss of farmland and what it might do to the local health and wellness. Access to affordable housing for employees in urban centers is also a concern.

²⁹ <http://www.metrovancouver.org/Pages/default.aspx>

³⁰ Metro Vancouver (Draft 2009). “Regional Growth Strategy.” (p. 62)

³¹ Email discourse with Senior Regional Planner at Metro Vancouver.

³² Metro Vancouver’s draft “Regional Growth Strategy.” (p. 10)

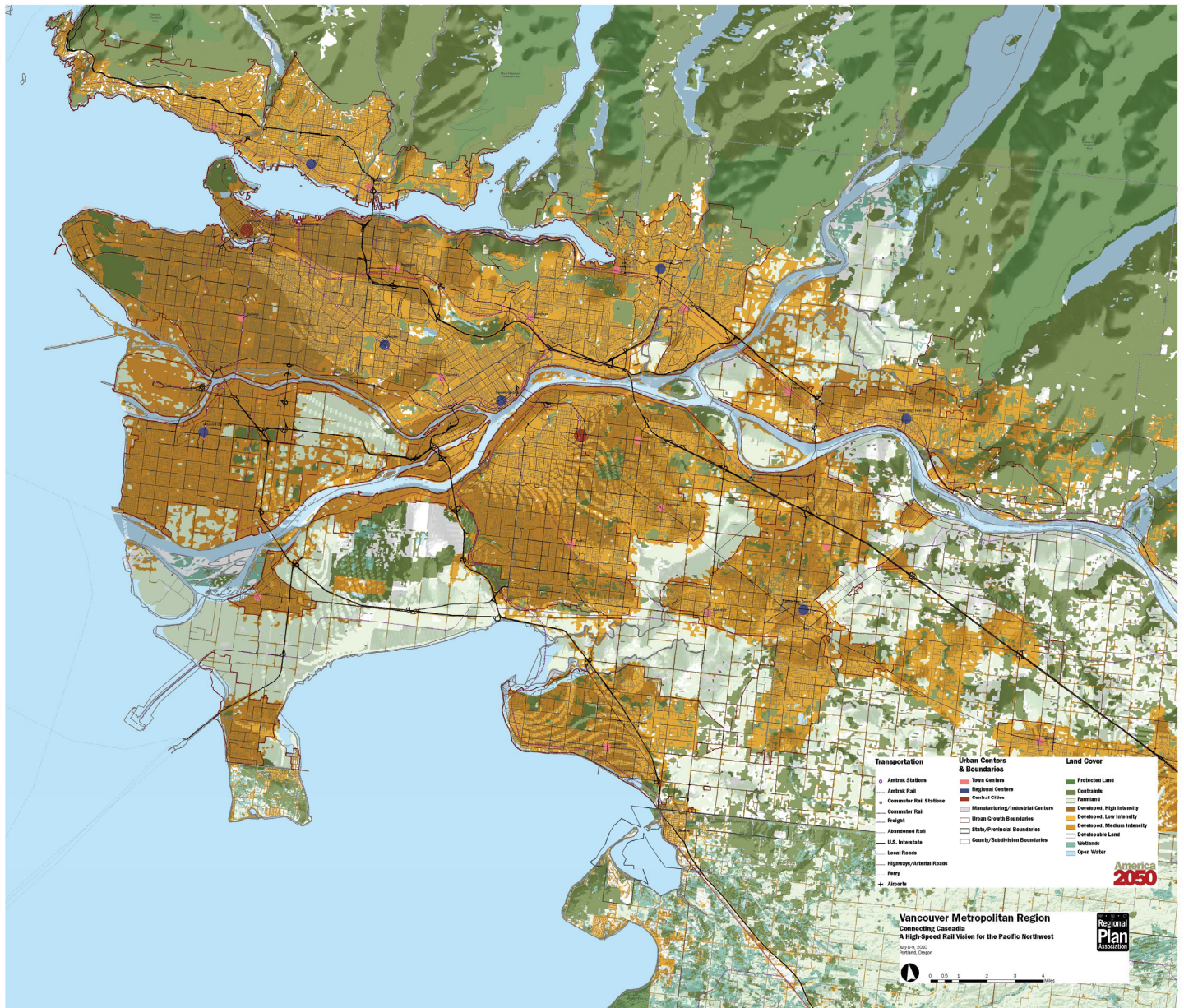


Figure 3-C: Vancouver BC Metropolitan Region

Smaller Metropolitan Planning Organizations and Regional Transportation Planning Organizations

Salem – Keizer / Willamette Valley SKATS, Oregon

The SKATS regional transportation planning organization expects population to grow from about 214,000 in the year 2000 to 300,000 in the year 2031. Local area employment in the region is also expected to increase from about 92,000 to 129,000 by 2031.^{33 34}

As is required for all municipalities in Oregon, the Salem-Keizer region established an urban growth boundary and periodically updates its regional plan to keep up the changing state and local priorities. SKATS is responsible for generating the region's regional transportation strategic plan for the next twenty years and for updating this plan every few years.

The Salem-Keizer region has a fairly extensive bus service, with more than two dozen different lines, in addition to private transportation options. Fifty percent of bus riders are commuters and ridership has been steadily increasing since 1985. Carpools and ridesharing services have also been implemented in the region.³⁵

Though it should be noted that this RTPO has no authority over local area zoning, SKATS' regional transportation plan for 2030 includes an emphasis on: compact development, with increased densities allowed near transit corridors; infill development; housing in closer proximity to places of employment; and pedestrian-friendly, bicycle-friendly urban design.

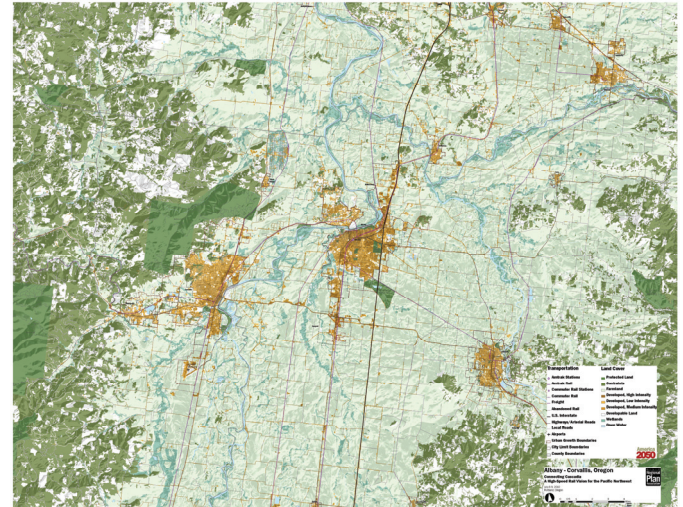
Corvallis, Oregon

The Corvallis planning area had a population of 64,000 as of 2006, according to the Oregon State Population Research Center. Corvallis is also home to Oregon State University and its 19,000 students — an important factor when considering the expansion of transportation options in the region. In 2006 the Corvallis RTPO prepared *Destination 2030*, its latest update to the transportation plan.³⁶

Currently, Corvallis operates about 8 bus routes. There are also park-and-ride lots in service and up to 80 miles of dedicated bicycle facilities in the planning area. *Destination 2030* lists 5 different strategies through which the planning area can attempt to accommodate future growth. There is the “no-build” approach, the transportation demand management (TDM) approach, the “capacity expansion” approach, the land-use management approach, and what they have dubbed the “multi-prong” approach.³⁷ Under each of these strategies, different goals are either accomplished or set aside. The county currently pursues a combination of the multi-pronged and TDM approaches.

The recommended policies in Corvallis's 2030 transportation strategy include: the construction of roadway connectivity only when it reduces total vehicle miles traveled; the promotion of higher residential density; the

provision of new modes of transportation to reduce reliance on single occupancy vehicles; the requirement of transit connectivity to new developments; the expansion of park-and-ride facilities; and the coordination of land use and transportation decision-making processes.³⁸



Albany-Corvallis, Oregon

Central Lane (Eugene), Oregon

The Eugene “urbanized area” had a total population of 242,000 as reported by the 2008 American Community Survey. According to Central Lane's long-term regional transportation plan, the population of the planning area is expected to grow 38 percent by 2031 and employment is expected to grow by 46 percent in the same period.^{39 40}

Eugene's Amtrak station is the southern most station of Amtrak's Cascades service on the Pacific Northwest Rail Corridor. It experienced approximately 51,181 boarding and alightments in 2009.

Currently, the Lane Transit District operates an extensive bus system in the Eugene-Springfield urban areas, complete with more than a dozen park-and-ride facilities. The authority has also begun a Bus Rapid Transit line with plans for expansion of this mode of transport in the future. At the moment, however, the transit district plans service cutbacks due to declining revenue from a payroll tax cut in the area.⁴¹ Central Lane is home to the University of Oregon, which operates its own campus bus service for students and faculty.

Central Lane's current Regional Transportation Plan has been adopted and it includes the following goals: an emphasis on nodal development, which they define as a type of mixed use land designation that encourages residential proximity to employment; a push for higher density development surrounding transit corridors; multimodal transit improvements for new developments; and overall increased transit accessibility, convenience and attractiveness.⁴²

³⁸ “Corvallis Area Metropolitan Transportation Plan” (p. VIII-6)

³⁹ Central Lane MPO (November, 2007): “Regional Transportation Plan.” (p. I-2)

⁴⁰ http://www.thempo.org/prog_proj/index.cfm

⁴¹ Lane Transit District. URL

<http://www.ltd.org/search/showresult.html?versionthread=ae2002c067fd6300cef01103b533e721>

⁴² Central Lane MPO (November, 2007): “Regional Transportation Plan.” (p. III 73-76)

³³ <http://www.mwvcog.org/transportation/skats/rtsp.asp>

³⁴ Salem-Keizer Area Transportation Study (2007): “2031 Regional Transportation Systems Plan” (Chapter 3, page 2)

³⁵ Salem Keizer Area Transportation Study (2007): “2031 Regional Transportation Systems Plan” (Chapter 13).

³⁶ <http://www.corvallisareampo.org/TransportationPlan.html>

³⁷ “Corvallis Area Metropolitan Transportation Plan” (p. VII-1)

The challenges that they foresee in accommodating future growth are related to traffic congestion and increased VMT.

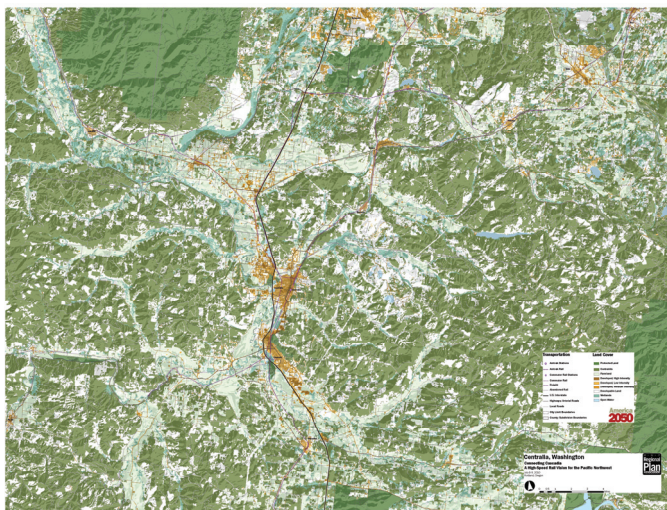
Cowlitz-Wahkiakum Council of Governments, Washington

The population of Cowlitz County is expected to increase from 99,000 in 2008 to about 140,000 in 2028.⁴³ The planning area includes a five-county region for which CWCOC is the lead planning agency. This five-county planning partnership also includes Lewis County, which is home to the city of Centralia. Lewis County's population is expected to rise from about 75,000 people to 93,000 people in the same 20 year period.⁴⁴

As is the case with the Puget Sound region, the Growth Management Act (1990) requires each of the five counties to designate urban growth boundaries, rural areas, and "critical" lands necessary for the protection of natural resources and sensitive ecosystems. The Growth Management Act also contains a conformity requirement, which is meant to ensure that local transportation elements are consistent with land use elements of the local Comprehensive Plans.⁴⁵

The CWCOC planning area contains four transit agencies, each with relatively low farebox recovery percentages (with respect to the rural state average) and relatively high contributions from other revenue sources.⁴⁶ Centralia is also home to an important port facility, an airport and has a rail station served by Amtrak, with approximately 19,393 boardings and alightments in 2009.

CWCOC's draft regional transportation plan for 2028 includes 8 goals and 21 different policies to meet those goals. Among the 21 policy proposals, there are provisions for livability, freight rail expansion, transportation demand management strategies, and land use.



Centralia, Washington

Southwest Regional Transportation Council (Vancouver), Washington

This MPO/RTPO includes a three-county region on the Southern end of Washington, including Clark County, which has the fifth highest population in the state. Clark County is home to the city of Vancouver (population 160,800) in extremely close proximity to Portland, Oregon.⁴⁷

Clark County, in particular, has benefited from its proximity to the Portland metropolitan area, seeing robust population and employment growth over the last 30 years. In its most recent metropolitan transportation plan, there is an emphasis on bi-state cooperation because Clark County shares a border with Oregon. This type of collaboration will be essential for the successful implementation of HSR in Cascadia.

C-Tran is Clark County's transit agency, which in June 2010, approved a 20-year transportation plan that calls for the addition of more urban bus lines and light rail in downtown Vancouver.⁴⁸

Recent adopted comprehensive plans for the cities in the RTPO include provisions for concentration of development within the urban growth areas and for limiting sprawl. The amount of passenger cars in Clark County increased by 128 percent between 1980 and 2005, whereas the population only increased 104 percent.⁴⁹ Southwest Regional Transportation Council recognizes that auto-dependency and loss of agricultural and critical lands are serious concerns for the future.

Skagit County Government and Skagit Council of Governments RTPO, Washington

The Skagit planning area was home to more than 110,000 residents as of 2005. The population target for the county by 2025 is about 149,000.

Skagit Transit operates 14 bus routes and recently opened several park-and-ride facilities. Ridership numbers and other demographics are not readily available. TIGER economic stimulus grants are currently helping Skagit County make several improvements to its transit system.

Whatcom Council of Governments (Bellingham), Washington

Whatcom County is home to about 180,000 residents and 73,000 of these individuals live in the city of Bellingham. Bellingham is projected to grow to 104,000 residents by 2022. The city is also home to Western Washington University, with its 12,000 students and 2000 faculty members.^{50 51}

Recognizing that the city will not be able to build itself out of future congestion problems, Bellingham has turned to an emphasis on development for livability in its transportation plan. This means that affordable housing would be located closer to the city's employment centers, and that individuals would have more transportation options, including increased more sidewalks.

⁴⁷ Southwest Regional Transportation Council (2008): "Metropolitan Transportation Plan: Clark County." (Chapter 2, p. 5)

⁴⁸ C-Tran: "Board of Directors Adopt C-Tran 2030." URL http://www.c-tran.com/20_year_plan_update2.html

⁴⁹ Southwest Regional Transportation Council (2008): "Metropolitan Transportation Plan: Clark County." (Chapter 2, p. 11)

⁵⁰ Whatcom Council of Governments (June, 2007): "Whatcom Transportation Plan." (Chapter 1, p. 12)

⁵¹ Population Forecast: URL <http://www.wcog.org/Data/Demographic-Data/Future/299.aspx>

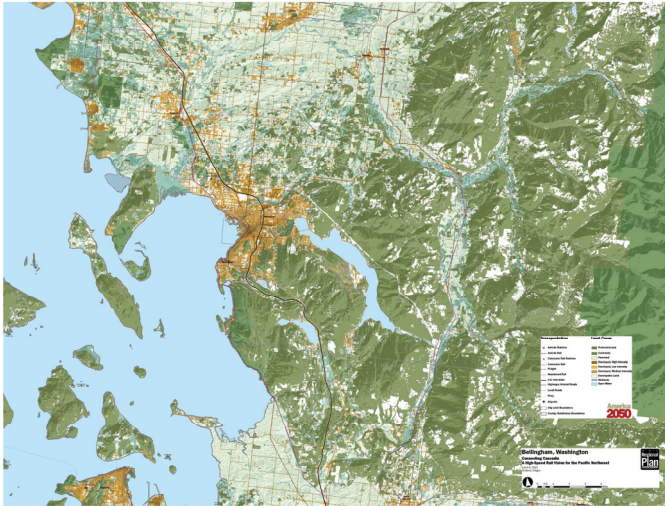
⁴³ <http://www.cwcog.org/publications.htm#planning>

⁴⁴ Cowlitz-Wahkiakum Council of Governments (Draft 2008): "Regional Transportation Plan." (p. 16-17)

⁴⁵ <http://apps.leg.wa.gov/RCW/default.aspx?cite=36.70A.070>

⁴⁶ Cowlitz-Wahkiakum Council of Governments (Draft 2008): "Regional Transportation Plan." (p. 75)

The city plans on augmenting modes other than single occupancy vehicles to 25 percent by 2022. Currently the Whatcom Transit Agency operates a total of 40 transit routes throughout Bellingham and the smaller adjacent towns, but ridership only makes up two percent of all modes of transit usage.⁵² Amtrak and BNSF both operate out of facilities in Bellingham.



Bellingham, Washington

Thurston Regional Planning Council

Thurston County's population is expected to grow from about 255,000 people in 2009, to 373,000 people in 2030. Employment numbers are expected to grow from 125,000 in 2008 to 184,000 in 2030.⁵³

As is the case for all counties in Washington, Thurston is in compliance with and may even exceed the land use and transportation mandates put forth by *The Growth Management Act* (1990). In its 2007 "Buildable Lands" report, Thurston states that residential density per acre has consistently been above what has been "the rule of thumb" for the rest of the state, and that they expect densities to increase to 4.4 homes per gross acre. The report also finds that there is enough zoned urban area to accommodate projected growth for the next 20 years without annexing land that currently has protected status.⁵⁴

With more than 20 routes in addition to dial-a-ride services and park-and-ride facilities, Thurston County has a relatively large transit system. Buses connect to the Amtrak station and shuttles connect several downtown areas in the county. The county's transportation plan is highly similar to those of other Washington counties; it calls for coordination of land use and transportation planning, a focus on transportation demand management policies, freight mobility, and a diversity of transportation options. The plan also requires the state to participate in any partnerships necessary to bring about high-speed rail in the region.⁵⁵

⁵² Whatcom Council of Governments (June, 2007): "Whatcom Transportation Plan." (Chapter 1, p. 14)

⁵³

<http://www.trpc.org/programs/estimates+and+forecasts/demographics/statistics+at+a+glance.htm>

⁵⁴ Thurston Regional Planning Council (2007): "Buildable Lands Report." (p.5)

⁵⁵ Thurston Regional Planning Council: "2025 Regional Transportation Plan" (Chapter 3, p. 30)

4. Network Connections

History & Overview

In 1992, the US Department of Transportation's Federal Railroad Administration (FRA) designated the Pacific Northwest Rail Corridor (PNWRC) as a high-speed rail corridor. The 466-mile long rail corridor stretches from Eugene, Oregon to Vancouver, British Columbia. Following this designation, Washington State legislation required Washington State Department of Transportation (WSDOT) to develop "high-quality intercity passenger rail service ... through incremental upgrading of the existing [Amtrak] service." At the time, there was a single Amtrak train running each day from Portland to Seattle. Since then however, Washington State, along with Oregon, BNSF, local transit agencies, and federal partners have invested over \$700 million in the intercity rail service along the corridor, making incremental improvements that have added trains and stations along the way.⁵⁶ In 1999, regional Amtrak service along the corridor was rebranded as Amtrak Cascades.

Currently, Amtrak Cascades serves two round trips per day from Eugene to Portland, four round trips between Portland to Seattle, and two daily trips between Seattle and Vancouver, BC. Ridership has nearly quadrupled, from less than 200,000 annual passengers in 1994 to over 700,000 today. The vast majority of passengers currently board either in Portland or in Seattle.

Washington State Department of Transportation has been very active in planning a long-term vision for the regional rail service based on incremental improvements to the existing Amtrak Cascades service.



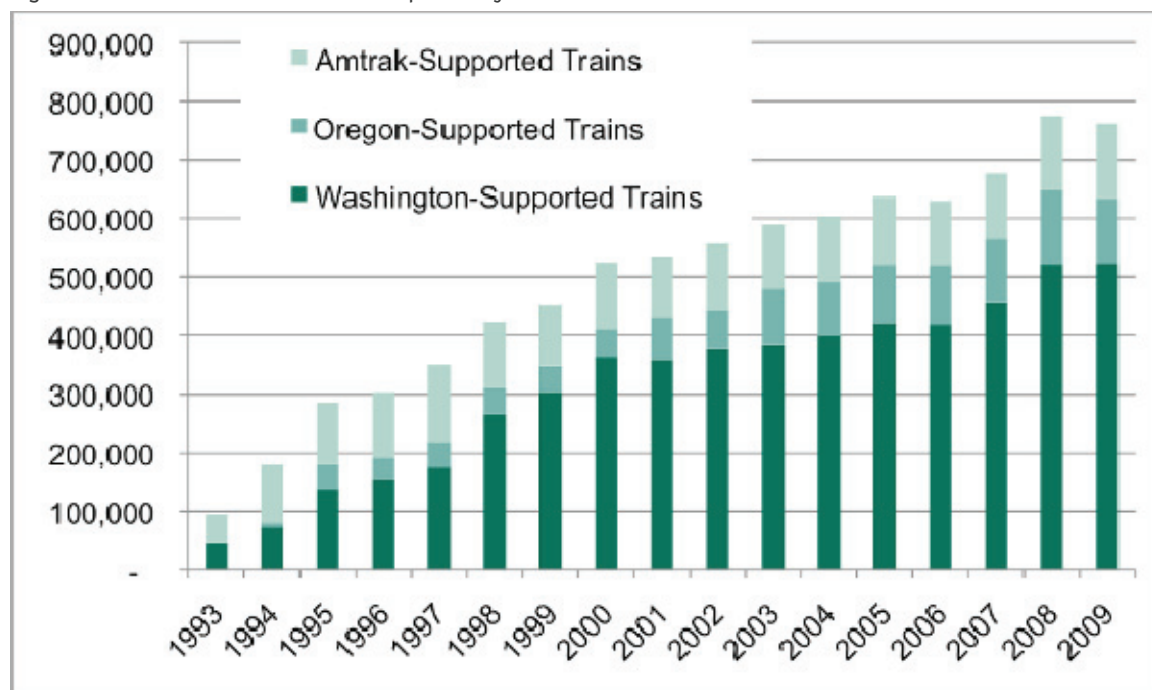
Figure 4-A. Amtrak *Cascades* route and stations
(Source: WSDOT)

⁵⁶ Washington State Department of Transportation, Amtrak Cascades Long-Range Plan, February 2006.

Figure 4-B. Station names and populations for the Amtrak Cascades rail corridor

Station/City	City Population	Metro Population (MSA)
Vancouver, BC	628,621	2,318,526
Bellingham, WA	76,130	200,434
Mount Vernon, WA	30,800	119,534
Stanwood, WA	5,590	--
Everett, WA	103,500	3,407,848
Edmonds, WA	40,900	3,407,848
Seattle, WA	602,000	3,407,848
Tukwila, WA	18,170	3,407,848
Tacoma, WA	203,400	3,407,848
Olympia/Lacey, WA	45,250 / 39,250	250,979
Centralia, WA	15,570	74,741
Kelso/Longview, WA	145/441	101,966
Vancouver, WA	164,500	2,241,841
Portland, OR	582,130	2,241,841
Oregon City, OR	30,710	2,241,841
Salem, OR	156,955	396,103
Albany, OR	49,165	116,584
Eugene, OR	157,100	351,109
Sources: Oregon city population estimates for July 2009 reported by Portland State University Population Research Center. Accessed June 11, 2010: http://www.pdx.edu/prc/ . Washington city population estimates for April 2009 reported by Washington State Office of Financial Management. MSA population estimates for July 2009 from U.S. Census Bureau. Vancouver 2009 population estimates from Ministry of Citizens' Services, Government of British Columbia		

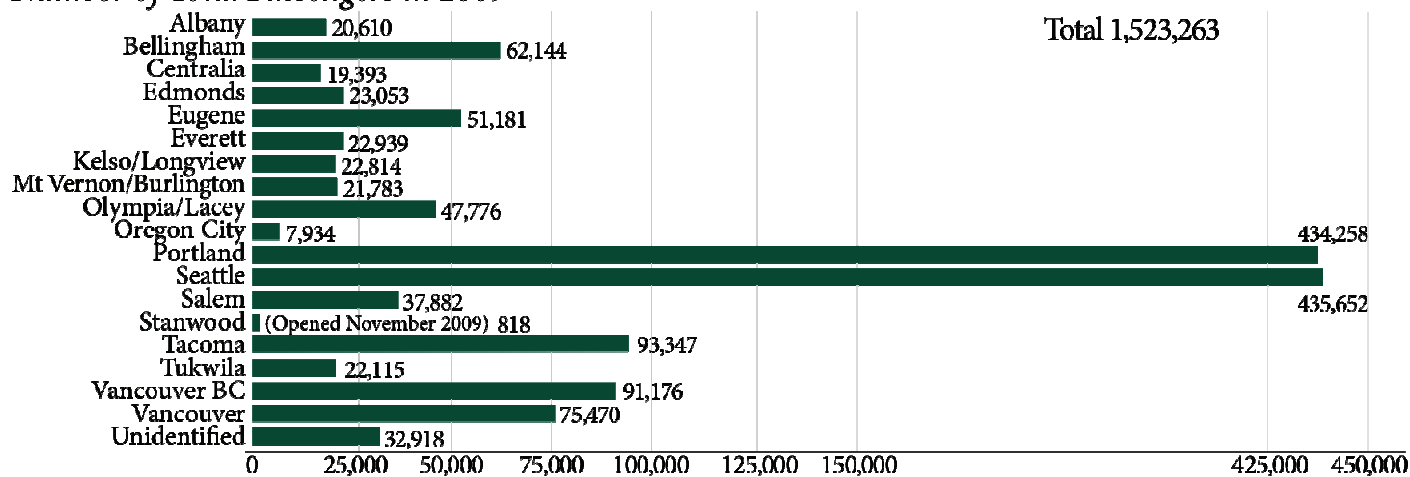
Figure 4-C. Amtrak Cascades Ridership History



Reproduced from WSDOT State Rail & Marine Office presentation, June 2010.

Figure 4-D

Total On-Offs Vancouver, BC to Eugene, Oregon Number of Total Passengers in 2009



Data Source: Amtrak and WSDOT State Rail and Marine Office

Figure reproduced from WSDOT Amtrak Cascades 2009 Performance Report

Current Equipment (Trains and Tracks):

The current fleet of train sets for Amtrak Cascades was built from 1996 to 1998 by Renfe Talgo of America. The electric-diesel locomotives in use are capable of speeds up to 124 mph, but track and safety constraints limit them to maximum of 79 mph on the corridor. Talgo equipment utilizes “tilt technology” allowing it to travel around corners at a faster rate than traditional Amtrak equipment. Each train set has 12 cars – a relatively fixed number since adding or removing cars requires substantial labor. Thus, the train set cannot be easily adjusted to react to short-term changes in ridership. The model of train car used by Amtrak Cascades is no longer in production and has been replaced with a new model that meets current US regulations.

The Oregon DOT recently allocated \$37 million to purchase new model Talgo train sets in a piggyback order with Wisconsin DOT. The equipment will be used between Portland and Eugene and replaces Talgo equipment on loan from WSDOT.

Intercity passenger rail service in the Pacific Northwest operates on right-of-way owned by two different freight rail companies: Union Pacific and Burlington Northern Santa Fe (BNSF). UP owns the line from Eugene to Portland and BNSF owns the line from Portland to Seattle and Vancouver.

Currently, the Union Pacific line in Oregon serves 20-25 freight trains and 6 Amtrak trains per day. Future increases in population (projected increase of 41 percent by 2030) and freight traffic (projected increase of 80 percent by 2030) in the Willamette valley have led to concerns about congestion on this line.⁵⁷ One possible solution under study is to move passenger rail service to the parallel Oregon Electric Line. Union Pacific and BNSF own right of way on this line, which is leased to Portland and Western Railroad and partly shared with Portland’s commuter rail service.

BNSF has been an active partner in developing the Pacific Northwest passenger rail line. From 1994 to 2005, BNSF made over \$9 million in capital investments on its portion of the line. In 2003, BNSF and WSDOT came to a legal agreement on the 20-year PNWRC plan regarding which improvements will be constructed and how costs will be shared between parties. This was the first agreement of its kind between a state and a rail company. It is BNSF’s position that intercity passenger rail service expansion can be accommodated as long as their freight business is not adversely impacted.⁵⁸ Currently passenger service delays BNSF freight rail in Washington by 305 hours per week, though this is expected to improve through the planned investments.

It should be noted that building new rail alignments in this region is difficult due to the challenging topography.

Future Planning and Investments

WSDOT and ODOT Rail Plans

A comprehensive strategy for improved passenger service on the existing corridor is outlined in the 2006 Amtrak Cascades Long

Range Plan (covering year 2003 through 2023), and the 2008 Mid-Range Plan (year 2010 to 2017), published by WSDOT State Rail and Marine Office.⁵⁹ The vision presented in these documents is to continue making incremental investments such as upgrading tracks and stations, alleviating bottlenecks and purchasing new train sets. Among other benefits, these changes are expected to increase service from 4 to 13 daily trips between Portland and Seattle, increase train speeds from 79 mph to 110 mph service, and reduce the trip time from 3:30 hours to 2:30 hours. Along with these investments, annual corridor ridership is projected to increase from about 500,000 in 2005 to nearly 3 million by 2023. Oregon Department of Transportation (ODOT) also published a long-term rail plan in 2001,⁶⁰ though it is less focused on passenger rail.

American Recovery and Reinvestment Act Funding

Washington State and Oregon DOTs received a grant from the American Recovery and Reinvestment Act (ARRA) High-Speed Intercity Passenger Rail (HSIPR) Program for about \$598 million, the fifth-largest grant given for this program. Most of the funding (\$590 million) went to Washington State. The subset of projects in Washington’s application was largely outlined in the Washington State DOT Mid-Range plan (2010-2017) for the corridor (see Figure 4-E). According to the Federal Railroad Administration, these improvements will add two round trips between Seattle and Portland, decrease trip times by 5 percent and increase on-time performance to 88 percent. Eight million dollars in ARRA funding also went to Oregon DOT to rehabilitate Union Station and conduct preliminary engineering work on two rail projects in north Portland.

In addition to improvements to intercity rail service, some of these projects will have local benefits too. For example, a new rail connection in Tacoma, WA will be able to extend Sounder commuter rail service south to Lakewood, WA. Similarly, track improvements at King Street station in Seattle will facilitate simultaneous movements of Sound Transit and Amtrak trains.

⁵⁷ Oregon Department of Transportation, ODOT Intercity Passenger Rail Study, 2009.

⁵⁸ Washington State Department of Transportation, *Amtrak Cascades Mid-Range Plan*, December 2008.

⁵⁹ These reports can be accessed at the following URL:

<http://www.wsdot.wa.gov/freight/publications/PassengerRailReports.htm>

⁶⁰ Oregon Department of Transportation, *Oregon Rail Plan*, 2001.

Figure 4-E. Comparison of WSDOT's ARRA Application and Mid-Range Plan

Projects in WSDOT's HSIPR (Track 2) application	In PNWRC Mid-Range Plan (2010-2017)
Block 1	
Blaine – Swift Customs Facility Siding	
Cascades Corridor Reliability Upgrades – South (Nisqually to Vancouver WA)	*
Cascades Corridor Reliability Upgrades – North (Everett to Blaine)	*
Everett - Storage Track	
Seattle (King Street Station) – Seismic Retrofit	
Tacoma – D to M Street Connection	
Tacoma – Point Defiance By-Pass	*
Vancouver – West Side Associated Trackage	
Vancouver – New Middle Lead	
Vancouver – Yard Bypass Track	*
Amtrak Cascades – New Train Set	*
Block 2	
Kelso Martins Bluff -- New Siding	*
Kelso Martins Bluff -- Toteff Siding Extension	
Kelso Martins Bluff -- Kelso to Longview Junction	*
Seattle – King Street Station Track Upgrades	*
Amtrak Cascades – New Train Sets	*
Amtrak Cascades – New High Speed Locomotives	*
Advanced Signal System – Positive Train Control	

Comparing Current Plans to High Speed Rail

Looking beyond the investments currently planned or under way through existing plans and ARRA funding, we can consider potential scenarios for a world-class high-speed rail in the Cascadia corridor. The current long-range plan for the corridor is expected to bring trains up to speeds of 110 mph on the corridor by 2023. However, a true high-speed rail system reaching speeds of 220 mph (average 125 mpg) may be able to provide trips between Seattle and Portland in just over an hour.

	Current Amtrak Cascades Service (round trips; trip time)	With ARRA Investments	Long-Range Plan*	High Speed Rail Scenario**
157 miles Van-couver ↑ Seattle	2 / day; 4:25 hrs	2 / day; 3:55 hrs	4 / day; 2:37 hrs	12 / day; 1:35 hrs
187 miles ↑ Port-land	4 / day; 3:30 hrs	6 / day; 3:20 hrs	13 / day; 2:30 hrs	26 / day; 1:30 hrs
124 miles ↑ Eugene	2 / day; 2:35 hrs	2 / day; 2:35 hrs	6 / day; 1:55 hrs	12 / day; 1:00 hrs
	0.8 million riders	??	3 million riders	4-6 million riders
	Approximate Investment:	\$598 million	\$6,500 million	??

Figure 4-F. Comparison of Multiple Scenarios of Service on Pacific Northwest Rail Corridor.

* Based on mid-point estimates from both the recent updates to the ODOT 2001 Oregon Rail Plan and WSDOT 2006 20-year Rail Plan.

** Assumes high speed rail service with average speeds of 125 mph between Eugene and Seattle and 100 mph service between Seattle and Vancouver. Frequency represents one train per hour with two during peak hours between Seattle and Portland. Ridership estimates are based on WSDOT Long-Range plan projections. Scenario ridership is not a modeled estimate but a plausible scenario based on available intercity market travel data, assumed train frequencies and load factors.

Cascadia Rail Station Transit Connections

Since high-speed rail brings passengers directly into the city center without their cars, the success of high-speed rail will depend in part on how many of a region's destinations are focused in the city center or accessible by connecting public transit. The adjacent chart (reproduced from WSDOT's PNWRC Mid-range Plan), summarizes the transit connections in each stop along the Amtrak Cascades corridor. The following sections provide more extensive descriptions of the local transit networks in Seattle, Portland, Vancouver, BC, Eugene, and Northwest Washington. In addition to existing transit networks, several transit expansion projects are already in the construction or planning phases in these cities. Furthermore, each of these cities has created a long-term plan to make significant future transit investments along specific corridors and transportation hubs. These future projects are worth special consideration. If, and when, these projects are completed, they could help determine the effectiveness of high-speed rail in the region.

Station	Transit Connections
Fairhaven Station, Bellingham, WA	<ul style="list-style-type: none"> • Whatcom Transportation Authority • Greyhound • San Jane Island Commuter • Alaska Marine Highway System • Taxi
Skagit Station, Mt. Vernon	<ul style="list-style-type: none"> • Skagit Transit • Greyhound • Taxi
Everett Station, Everett	<ul style="list-style-type: none"> • Everett Transit • Sound Transit • Community Transit • Greyhound • Northwestern Trailways • Taxi
King Street Station, Seattle	<ul style="list-style-type: none"> • King County Metro • Sound Transit • Greyhound • Northwestern Trailways • Washington State Ferries • Victoria Clipper • Community Transit • Taxi
Tukwila Station, Tukwila	<ul style="list-style-type: none"> • Seattle Express • Sound Transit • Metro Transit • Taxi
Tacoma Amtrak Station, Tacoma	<ul style="list-style-type: none"> • Pierce Transit • Sound Transit • Tacoma Link Light Rail • Greyhound • Washington State Ferries • Northwestern Trailways • Taxi
Centennial Station, Olympia/Lacey	<ul style="list-style-type: none"> • Intercity Transit • Taxi
Union Depot, Centralia	<ul style="list-style-type: none"> • Twin Transit • Taxi
Kelso Multimodal Transportation Center, Kelso	<ul style="list-style-type: none"> • CUBS (Community Urban Bus Services) • Taxi
Vancouver Station, Vancouver, WA	<ul style="list-style-type: none"> • C-Tran (Clark County Transportation Benefit Area) • Taxi

Source: WSDOT

Portland's Transit System

Current System

Tri-Met, the public transit agency in greater Portland, provides light rail (MAX), bus, and commuter rail (Westside Express Service, WES) throughout Portland and the surrounding suburbs. The system comprises 52.6 miles of light rail track and 14.7 miles of commuter rail and serves 324,000 daily riders.⁶¹ MAX light rail service connects the downtown with important destinations such as the Portland Exposition Center, and Portland International Airport. Tri-Met also integrates with the downtown Portland Streetcar owned by the City of Portland. Amtrak Cascades currently stops at Portland Union Station, located at north end of the Portland Transit Mall, and is within walking distance to each of Portland's MAX lines and the streetcar system.

Planned and Future Service

- **Streetcar expansion (Eastside Loop and extension to Lake Oswego):** Construction is already under way to bring the streetcar across the Willamette river and form a loop connecting downtown Portland with destinations such as the Lloyd District, Oregon Convention Center, and the Central Eastside Industrial Districts. Transit service to Lake Oswego is currently being studied. One proposed option is to extend the streetcar system south from downtown Portland.
- **Columbia River Crossing:** Planning is under way to replace the I-5 Bridge across the Columbia River. A proposed design option would include a light rail crossing, extending the MAX Yellow Line north to Vancouver, WA.
- **Portland Milwaukie Light Rail:** Light rail extension from PSU in Portland, south to downtown Milwaukie is currently in the design and planning stages. Expected completion is 2015.
- **Red Line Extension:** In the coming years, Red Line MAX, east of Portland, will be extended to reach Willow Creek.

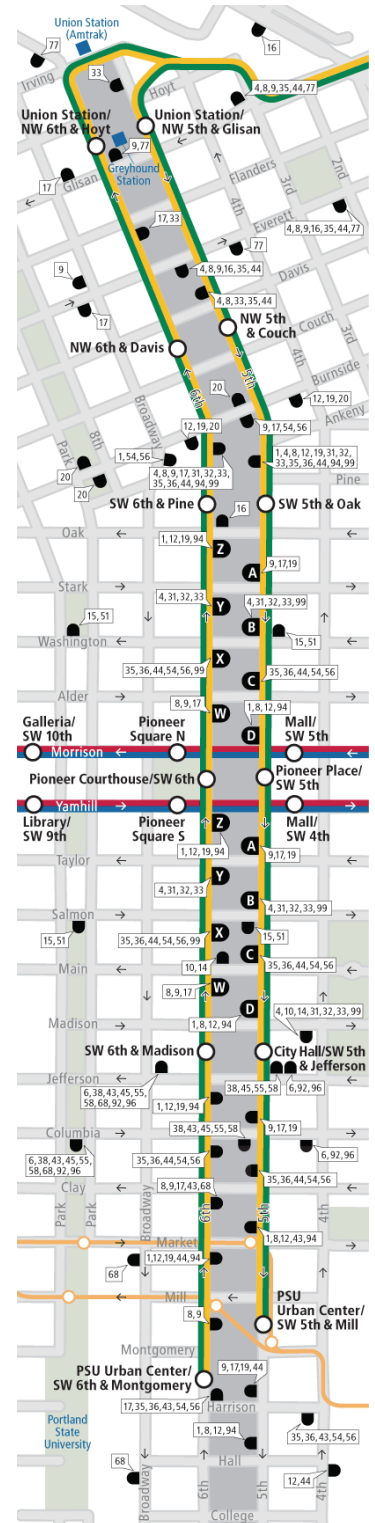


Figure 4-G. Portland's Transit Mall and downtown core
(Source: Tri-Met)

⁶¹ Tri-Met, 2009



Figure 4-H. Current Tri-Met transit service in the Portland metro area (Source: Tri-Met)

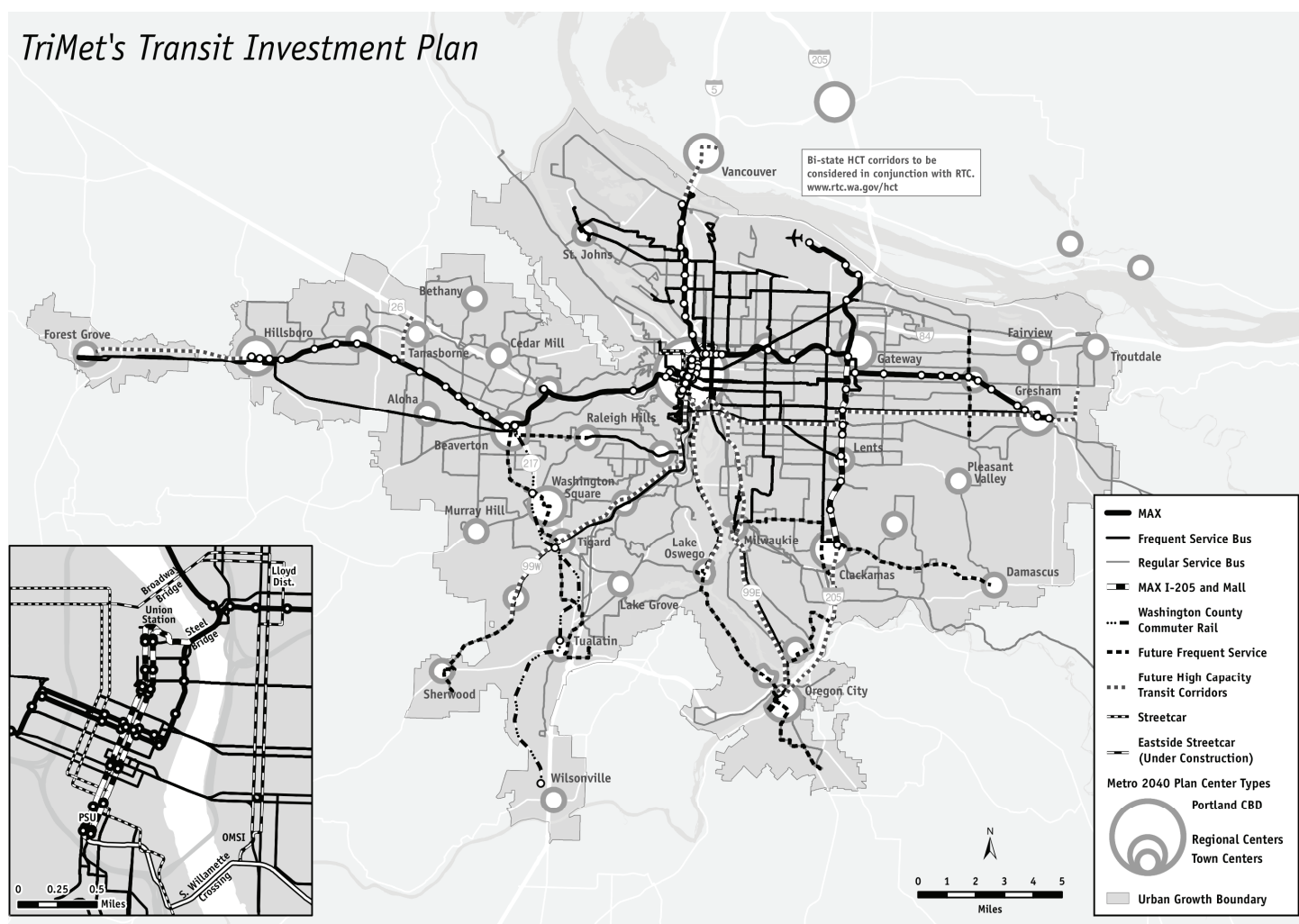


Figure 4-I. Tri-Met Transit Investment Plan as of FY 2010 (Source: Tri-Met)

Seattle's Transit System

Current System

Sound Transit is the regional transit authority in Seattle, and has a daily ridership of about 72,000.⁶² The authority's services include light rail, commuter rail, and express bus routes between the city and surrounding suburbs. The Sounder – the commuter rail system – consists of two lines, one running south to Tacoma, and another running north to Everett. The Link Light Rail system operates on two separate tracks: 1) Central Link from downtown Seattle to Sea-Tac Airport, for which service began in 2009, and 2) Tacoma Link from Tacoma's theater district to the Tacoma Dome near the Amtrak station. Puget Sound also has an extensive ferry system with landings in Downtown Seattle, Edmonds, Mukilteo, and Fauntleroy. The city of Seattle also opened a streetcar system in 2007, running from the Westlake transit hub north along Lake Union.

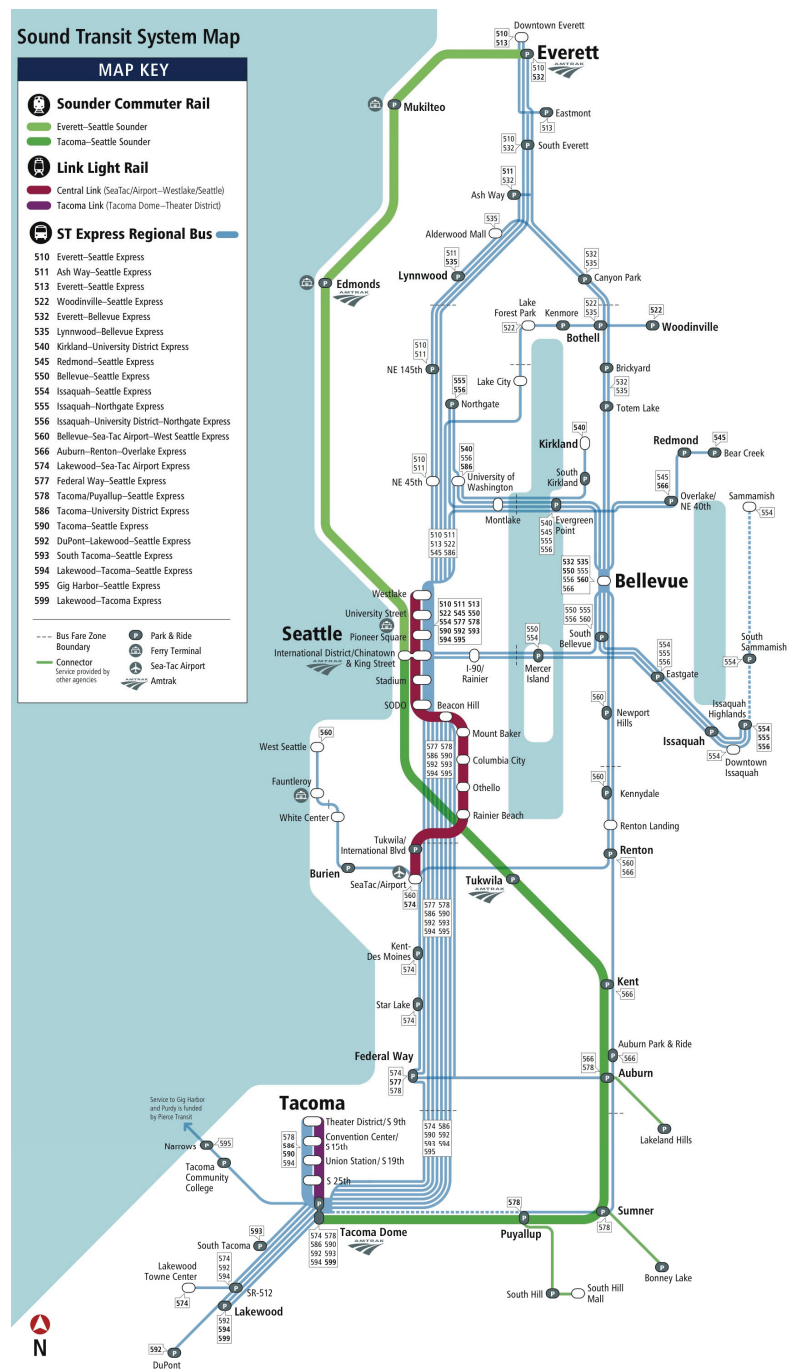


Figure 4-J. Existing transit connections in Seattle-Tacoma
(Source: Sound Transit)

⁶² American Public Transportation Association (APTA), 2009.

Planning and Future Service

The Seattle Department of Transportation has identified five multi-modal hubs within the Puget Sound region. These multi-modal hubs are located at King Street Station, Ferry Terminal, Westlake, University District, and Northgate. In 2006, Puget Sound voters approved the University Link extension to the Light Rail, north to University of Washington by 2016. In 2008, Central Puget Sound voters passed a ballot measure approving nearly \$18 billion for the Sound Transit 2 investment plan. All projects are expected to be completed by 2023 and will add to the region's transit service. Specific projects in Sound Transit 2 include:

- A northern light rail extension from University of Washington to Northgate and Lynnwood,
- A southern light rail extension from Sea-Tac Airport to Redondo/Star Lake
- An eastern light rail extension from downtown Seattle to Bellevue, continuing to Overlake Transit Center in Redmond.
- Bus rapid transit on the SR 520 corridor from Redmond to Bellevue, University of Washington and Downtown Seattle.
- A streetcar connector at First Hill in Downtown Seattle.

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Sound Transit 2: A Mass Transit Guide

Sound Transit 2: A Mass Transit Guide

1

Sound Transit 2

A MASS TRANSIT GUIDE

The Regional Transit System Plan for Central Puget Sound



Figure 4-K

Vancouver, BC

TransLink, the regional transportation authority in the greater Vancouver, B.C. area, provides extensive light rail, commuter rail, and bus services throughout the region. The three Skytrain light rail lines comprise 42.7 miles of track, with daily ridership of 345,000. The Main Street Skytrain Station is located adjacent to the Pacific Central Station served by Amtrak Cascades. The Skytrain Waterfront Station, in the heart of downtown Vancouver, provides links to West Coast Express commuter trains and the Vancouver SeaBus ferry. In 2009, Vancouver added its third light rail line – the Canada Line, connecting downtown Vancouver with the Vancouver International Airport. TransLink also provides extensive bus service throughout the region with several Bus Rapid Transit routes, known as B-Lines, linking transit hubs.

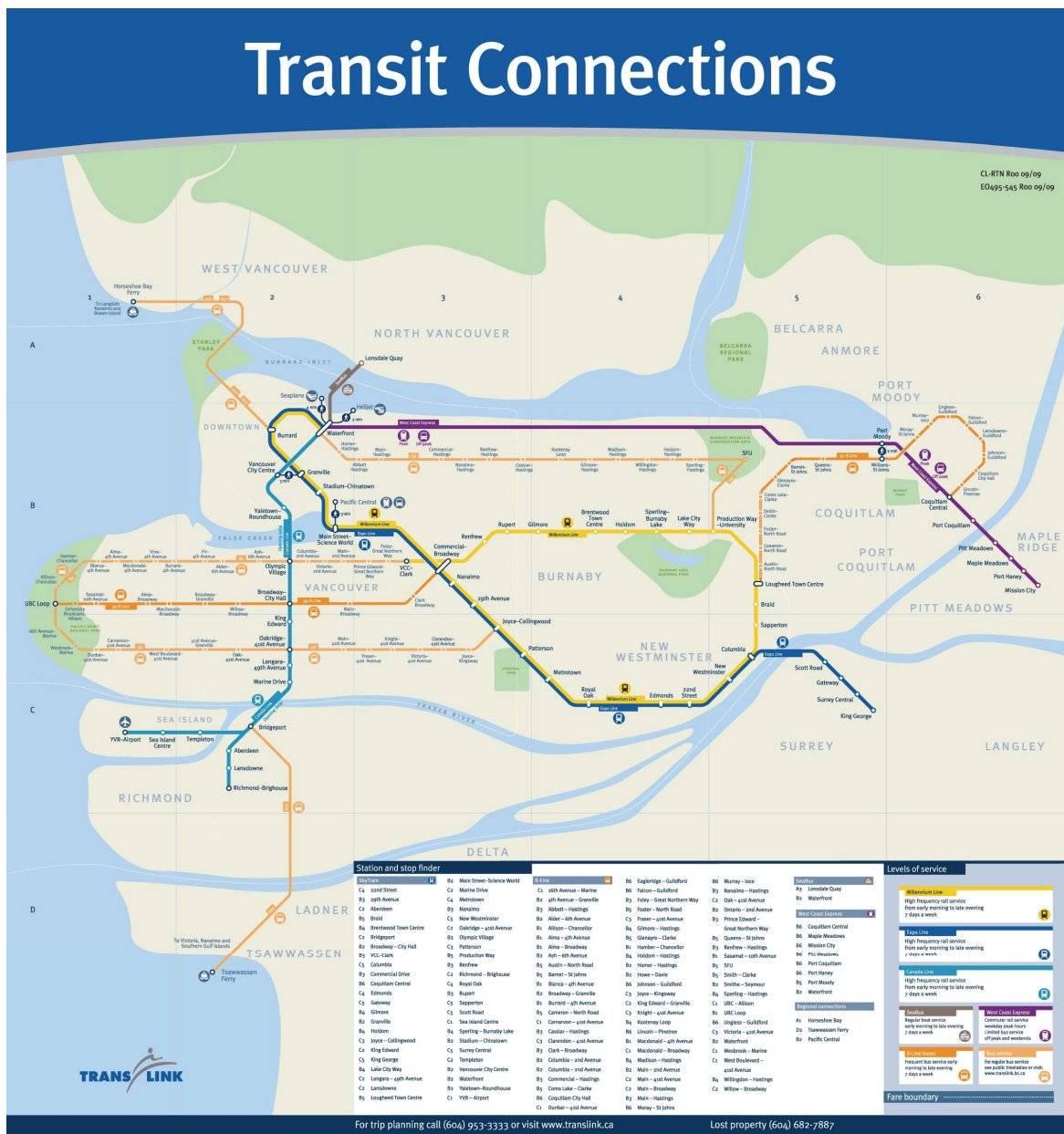


Figure 4-L. Existing transit connections in Vancouver, BC (Source: TransLink)

Eugene-Springfield, OR

Lane Transit District, in Lane County, Oregon has developed an extensive bus rapid transit system called the EmX, across three major corridors in the Eugene area. The Franklin corridor extends east from downtown Eugene towards Springfield, the West Corridor extends from downtown Eugene towards West Eugene, and the Gateway line extends north from Springfield (see Figure 4-M). The system features high-frequency service along dedicated right-of-way with transit signal priority and pre-board fare collection.

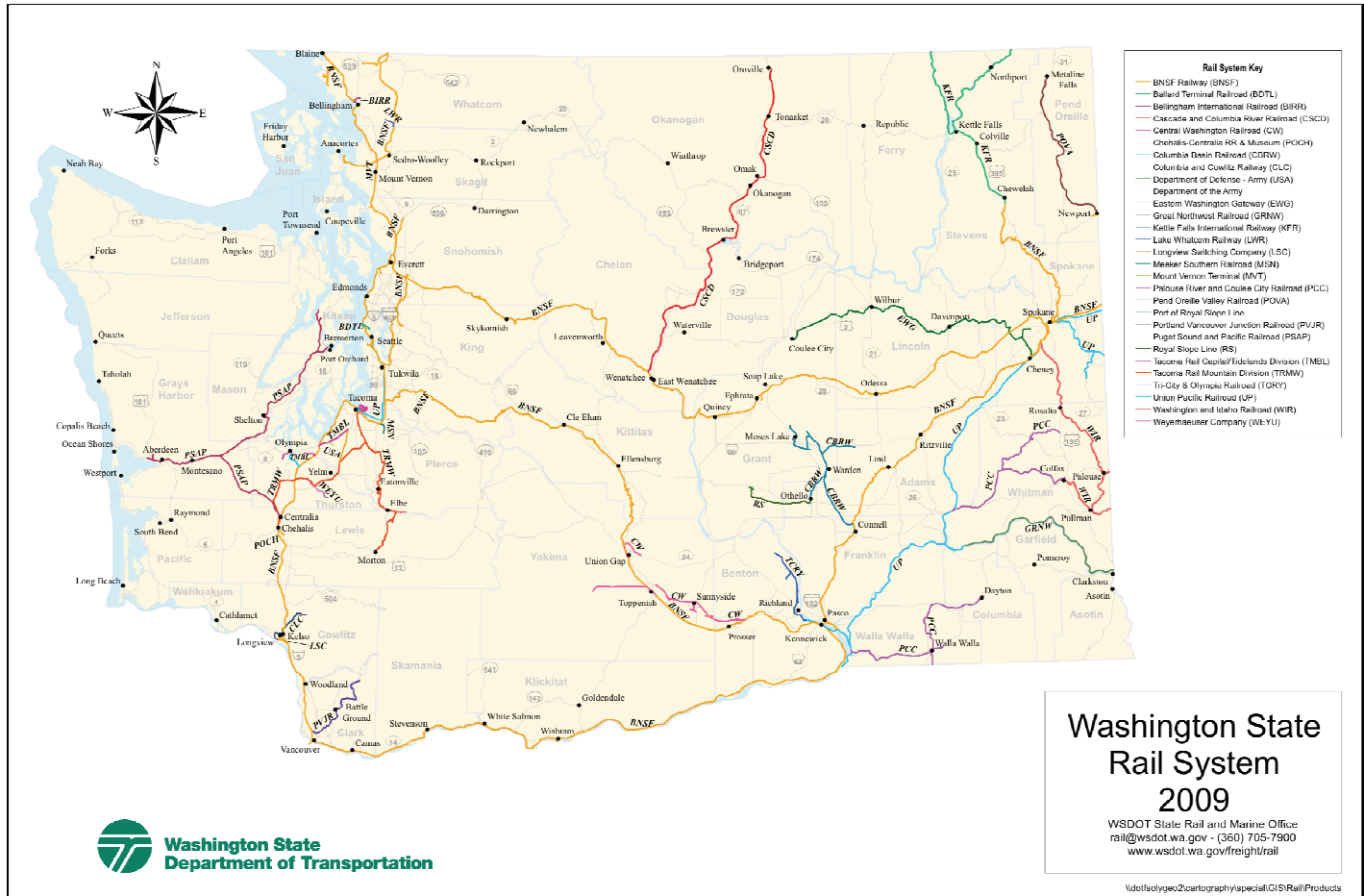
Figure 4-M



Northwest Washington

The North Sound Connecting Communities Project, in collaboration with Whatcom Council of Governments, has made efforts to bolster intermodal transit connections in Northwest Washington (see Figure 4-N). The region is characterized as having a strong intercity bus ridership.

Figure 4-N



Long-Term Transit Corridor Proposals

In addition to planned projects for the near term, metropolitan planning organizations in each of the three primary cities have identified long-term target corridors for transit investment. Each of these is accompanied by a concept map, which is shown below for the three metros.

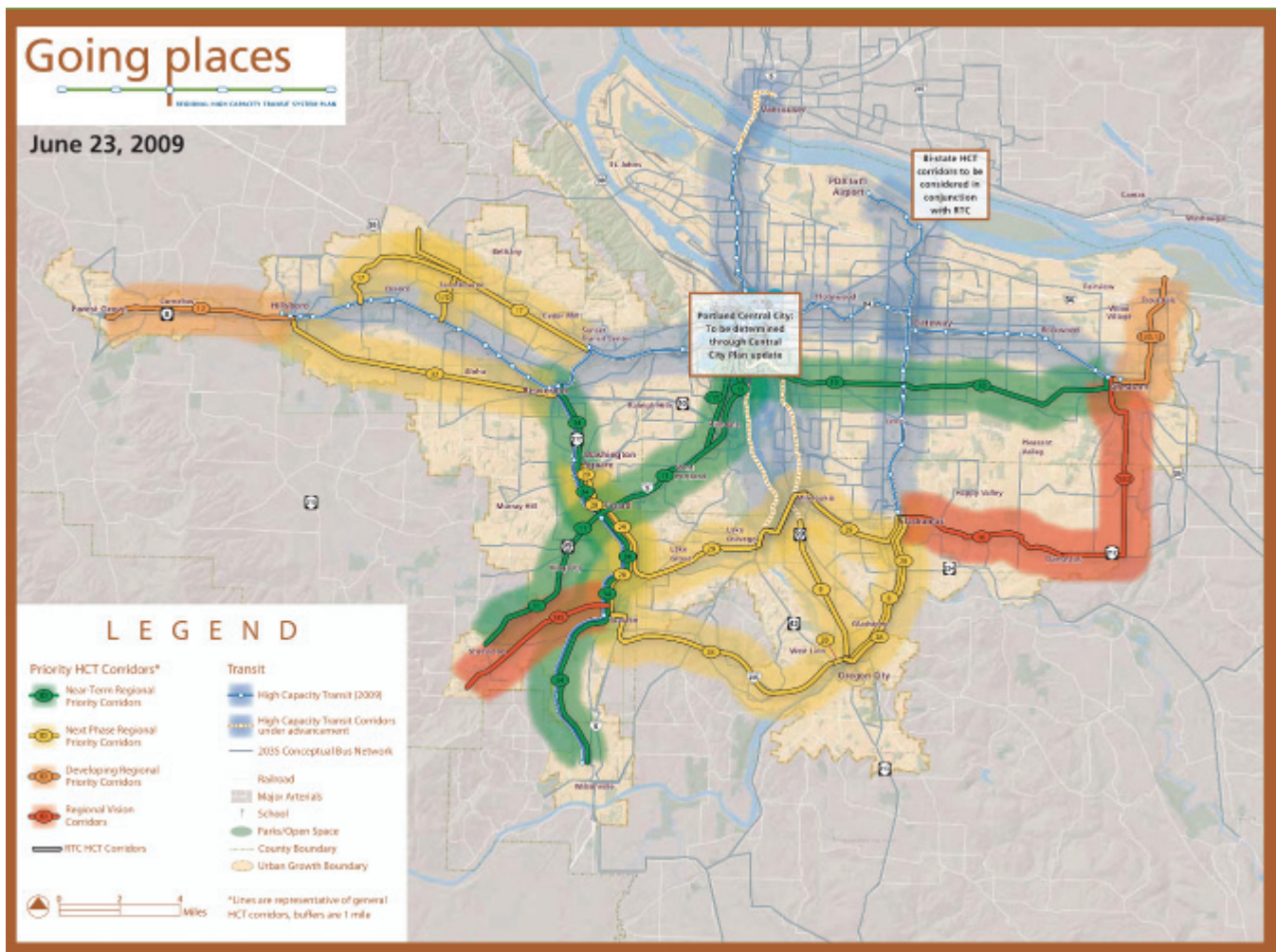


Figure 4-0. Oregon Metro's 2035 Regional Transportation Plan -- High Capacity Transit System Plan (March 2010) for Portland, OR (Source: Oregon Metro)

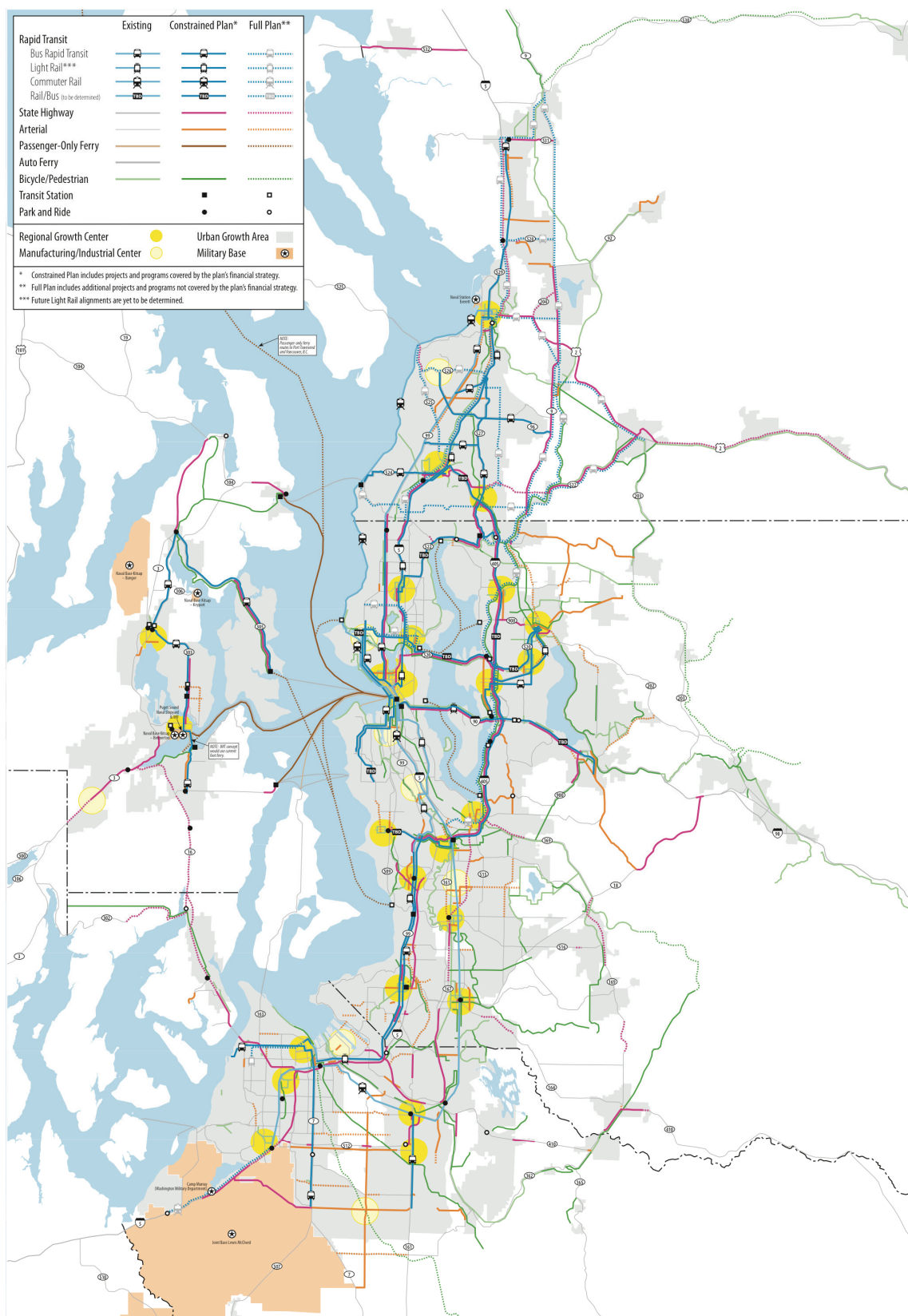


Figure 4-P. Puget Sound Regional Council's Transportation 2040 Plan for Seattle-Tacoma, WA (Source: PSRC)



Concept of Potential Frequent Transit Network

Figure 4-Q. TransLink's Transport 2040 strategy (2008) for Vancouver, BC (Source: TransLink)

Smaller Municipalities for Workshop Discussion

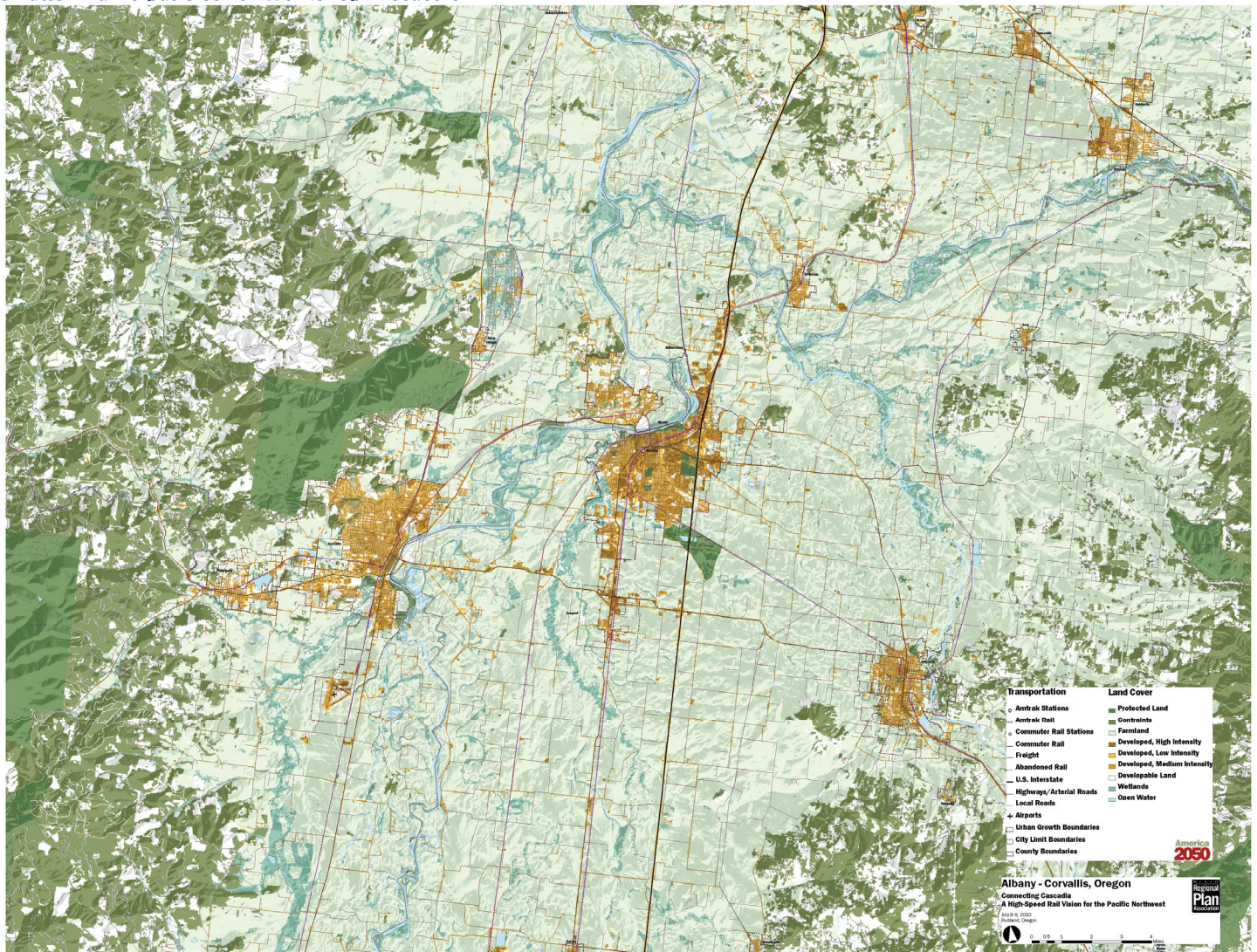


Figure 4-R: Albany-Corvallis Metropolitan Region

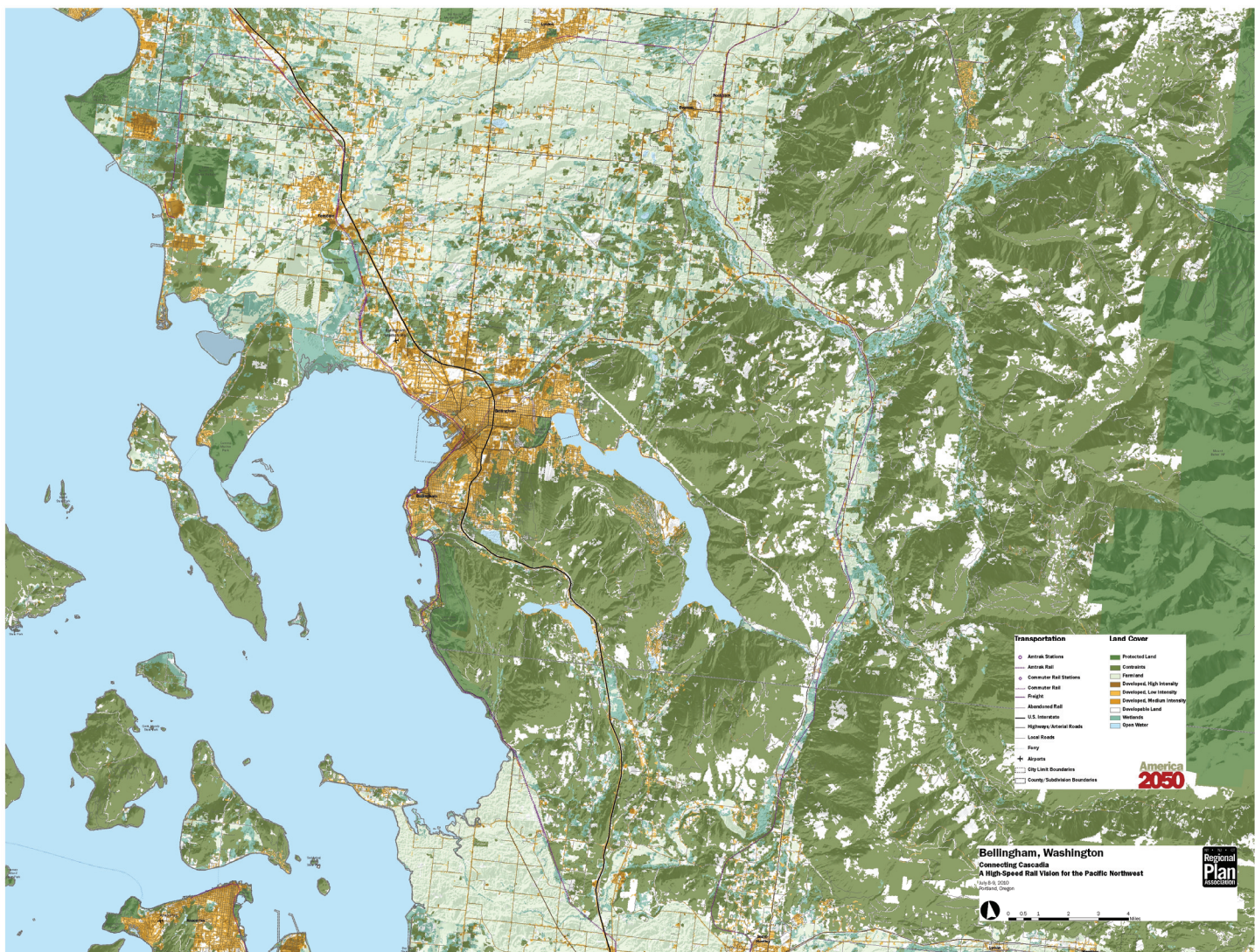


Figure 4-S: Bellingham Metropolitan Region

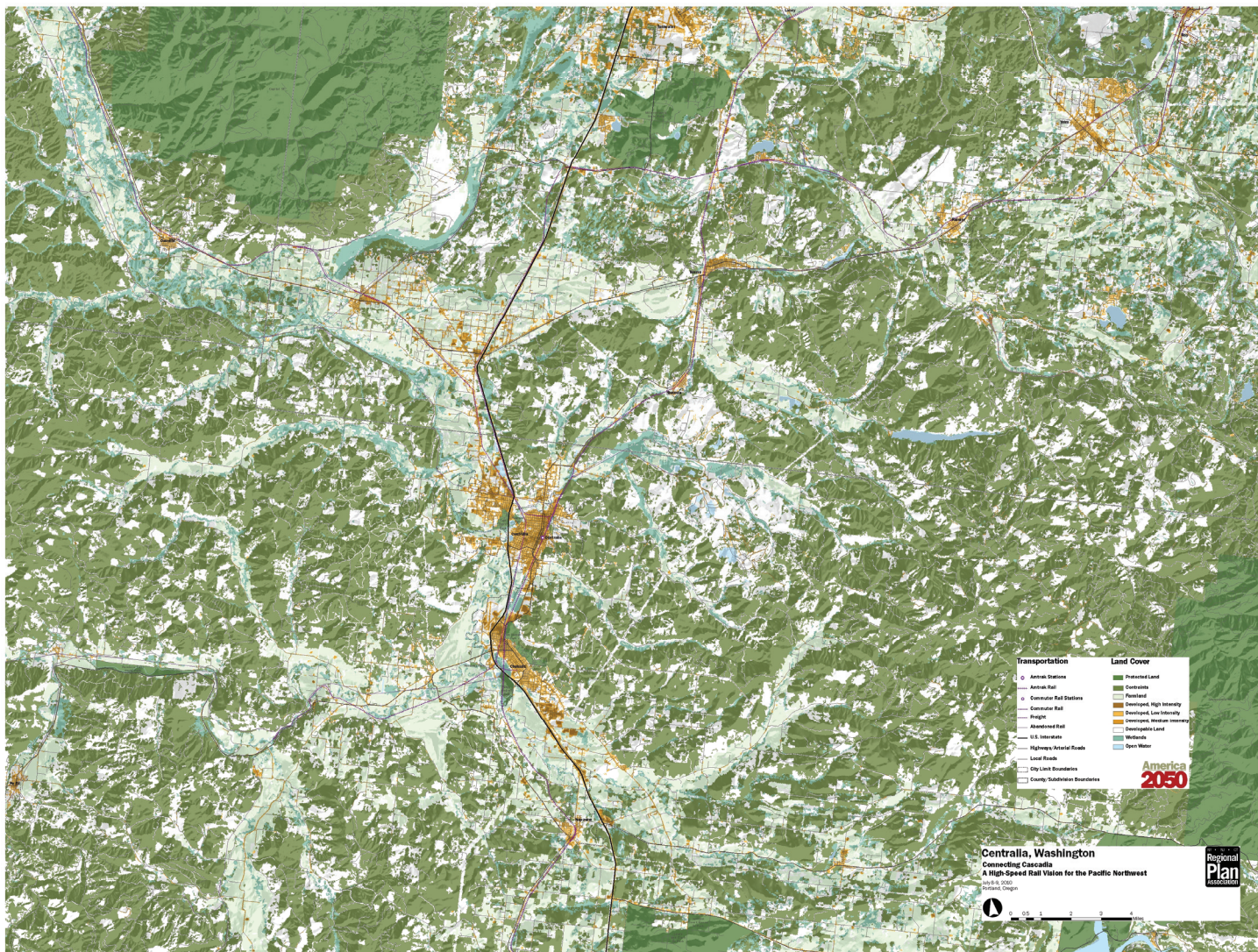


Figure 4-T: Centralia-Chehalis Metropolitan Region

Intercity Travel Markets in Cascadia

Northwest Washington State

Current Ridership:

Rider survey data collected by Amtrak reveals some characteristics of the current intercity rail passengers in Cascadia. Typically, passengers on Amtrak Cascades are high income, educated adults. A vast majority of riders (81 percent) use the service for leisure trips, opposed to business trips. The market for intercity rail in the region is currently unsaturated, meaning that the demand for service (number of riders) never meets the supply offered (number of seats). However, transportation experts believe that additional trip frequencies will be able to boost ridership by attracting business travelers. This shift is expected to occur once train frequency reaches a threshold of approximately 8-10 daily round trips.

Future Ridership:

The WSDOT Amtrak Cascades 2006 Long-Range and 2008 Mid-Range plans each provide some insight into the future market demand for intercity rail travel. These reports describe a model developed to help predict ridership and revenue from future PNWRC investments and level of service. The model first considers total intercity travel demand based on population and employment projections near Amtrak stations. The model then predicts market share of each mode for travel between city pairs based on service availability and cost. Some of the results of these modeling efforts are summarized below:

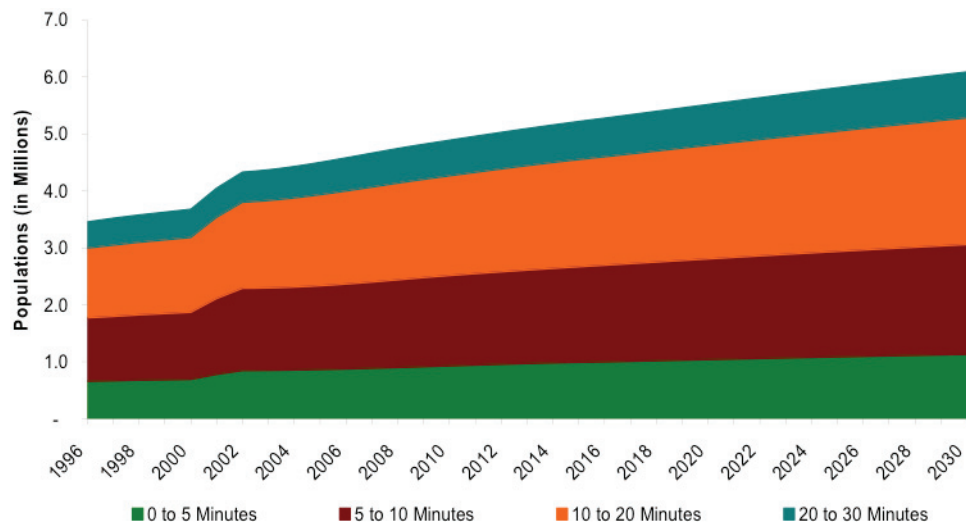
Figure 4-R. Travel market estimations table copied from WSDOT Amtrak Cascades Ridership and Revenue Forecasts Technical Report (2006).

Estimate 2002 Travel Market Size				
MAJOR TRAVEL MARKETS		Business	Non-Business	Total
Seattle	Portland, OR	1,440,638	5,018,949	6,459,587
Seattle	Vancouver, BC	203,449	1,248,331	1,451,780
Vancouver, BC	Portland, OR	14,287	111,234	124,531

Additional population growth in the region is expected to bring more people within a short distance of the existing rail corridor and could serve to increase ridership. Other factors that are likely to impact ridership have been included in the model, such as the price of fuel.

Figure 4-S. Drive-Time Populations for Amtrak Cascades Stations: Seattle to Portland Segment

**Exhibit 4A-4: Drive-Time Populations for Amtrak Cascades Stations
Seattle to Portland Segment**



Source: WSDOT Amtrak Cascades Mid-Range Plan Appendix 4

5. Governance Structures and the Implementation of High Speed Rail

Given the multi-state, multi-national character of the Cascadia Corridor, the creation of an effective governance structure to design, build and manage capital improvements and service is paramount to its long-term success. In Cascadia and across the United States, intercity passenger corridors traverse many jurisdictions; they require planning and input from dozens, if not hundreds of different municipal and state entities, and they are subject to the concerns and requirements of numerous stakeholders and interest groups. The efficacy of these new governance structures in managing all of these stakeholders will make a difference in the success or failure of high-speed rail in the United States.

Choosing the right governance structure for high-speed rail has everything to do with what we will call “political-contextual” factors in the region. In other words, we must understand how large-scale transportation projects have historically been chartered in this area of the country, and we must be careful not to assume that just because one type of authority or charter works in another region, that it will work for Cascadia.

America 2050 has identified several types of governance structures that Cascadia may wish to consider as it develops the most effective model suited for its unique characteristics.

State and Municipal Authorities

Authorities, which operate like private corporations, are generally expected to raise their own funds and to pay for their own projects without state or local appropriations. These authorities are often chartered with special privileges, tax exemptions and various restrictions on their activities. Authorities are also eligible to apply for federal, state and local grants, just as a corporation would be. The supposed benefits to an authority is its arm’s length distance from government and its corporate-like structure, but it may also be governed by leaders that are appointed by state and local executives. The authorities listed below are examples at the state and municipal level.

Florida Rail Enterprise

The Florida Rail Enterprise was established in 2009 with the mandate to plan, construct, operate, and maintain Florida’s high-speed rail system. This entity also has the authority to “acquire corridors, coordinate development and operation of publicly funded passenger rail systems and contract with other entities.”⁶³ Florida was recently awarded \$1.25 billion in American Recovery and Reinvestment Act high-speed rail grants. The previous rail authority had laid most of the groundwork for Florida’s progress thus far.

An entity like this may not be enough to coordinate high-speed rail development in two states and one Canadian province — as would be required in Cascadia. Three different state authorities could potentially manage a larger high-speed rail project, but this would seem far from ideal with respect to construction and management efficiency.

California High-Speed Rail Authority

This authority was created in 1996 and made permanent in the state code in 2002. Analogous to the Florida Rail Enterprise, the California High-Speed Rail Authority was chartered with the license to build, operate and maintain high-speed rail service on a 500-800 mile corridor between Anaheim, Los Angeles, San Francisco and Sacramento.⁶⁴

California was recently awarded \$2.25 billion in stimulus funds for its high-speed rail program and over the next few years we will begin to see how the Authority apportioned and manages these funds.

Joint Powers Authorities (JPA)

A Joint Powers Authority, or JPA, is an entity permitted under some laws of various states and municipalities that allows for cooperation and collective action between public authorities, utilities, or local governments. California, in particular, makes significant use of these governance structures. JPAs work like standard authorities in that they are generally expected to generate their own financing for the projects they undertake.

Oregon state law allows for the creation of JPA-like entities between three or more cities or utility districts. These joint operating agencies are meant for the development of utility properties for the generation, distribution and marketing of electricity.

Washington state law also establishes state and municipal power to create joint operating agencies and even has legislation that directs where funding should go if public money is needed for a particular joint project (RCW 43.09.285, 1967).

The Capitol Corridor Joint Powers Authority

The Capitol Corridor Joint Powers Authority is a partnership between six different transit agencies in eight different Californian counties, with additional support provided by Amtrak, Union Pacific Railroad, Caltrans and others. The authority operates rail service on a 170-mile corridor and provides connecting bus services for increased transit access.

The governing arm of the joint powers authority consists of two representatives from each county and officials from several transit agencies and metropolitan planning organizations.⁶⁵

The establishment of such a joint powers authority in each state might serve as one of many pieces to a larger, multi-state governance structure for high-speed rail in Cascadia

⁶⁴ California High-Speed Rail Authority (2010): “About.” URL <<http://www.cahighspeedrail.ca.gov/about/default.asp>>

⁶⁵ The Capitol Corridor Joint Powers Authority: “About the CCJPA.” URL http://www.capitolcorridor.org/about_ccjpa/

⁶³ Florida Rail Enterprise (2009): “Florida High-Speed Rail.” URL <http://www.floridahighspeedrail.org/Home_Page.html>

The Transbay Joint Powers Authority

This authority's mandate is to collaborate with several city agencies to design, build, operate and maintain an intermodal terminal and rail extension, and an adjacent transit-oriented neighborhood. The TJPA was created by the city and county of San Francisco with license from the state code of California pursuant to Chapter 5, Division 7, Title 1, Section 6500; which allows for the establishment of such entities.

Pertinent to high-speed rail development, the TJPA has power to make and enter into contracts; to incur debts and obligations; to acquire personal property; to receive contributions and donations of assets; to apply for and receive grants; and to designate and delegate responsibilities of the board to its member organizations and agencies, or a third party.⁶⁶

Multi-State Compacts

Similarly to the aforementioned intra-state authorities, multi-state compacts have been established in the past that create authorities or other entities. The most famous example of a multi-state compact is the NY-NJ Port Authority. Cascadia may consider this type of governance structure given that the proposed high-speed rail project spans two US states and one Canadian province. However, just because a particular governance structure has worked for New York and New Jersey does not mean that it will work for Oregon, Washington and British Columbia. Notable obstacles include that multi-state compacts require federal legislation in addition to the approval of each participating state legislature.

The Port Authority of New York and New Jersey

The Port Authority was established in 1921 with legislation by Congress as the first interstate agency in the country. New York and New Jersey designed the authority's governance to be composed of six commissioners, three appointed by the governors of each state. Though the authority operates independently from the state appropriations process, the governors retain the right to veto actions of the board.⁶⁷

The Authority maintains an open meetings and open information policy in its bylaws. Authorities do not have the same privileges as private for-profit corporations in this respect.

The advantage to an authority is that it is financially self-sustaining. The Port Authority's reliable stream of revenue from tolls, transit fares, airport user fees, rent and other services, allows it to self-finance its operations and to issue debt for the construction of new capital projects in the region. The Authority is currently undertaking several projects including the construction of the Freedom Tower at the World Trade Center site and the Access to the Region's Core commuter rail tunnel under the Hudson River. The disadvantages to such an organization may be that the voters feel like they lack any control over the projects that get decided on.

Success of a similar program in Cascadia would require a dedicated stream of funding as well — either through taxes, tolls, fees or other revenue collection mechanisms.

The Delaware River and Bay Authority is a similar compact chartered by Congress and the legislatures of Delaware and New Jersey in 1962.

Regional Commissions / Authorities

Regional commissions and authorities are chartered by the federal government and may be subject to approval by the member states. These governance structures have different levels of responsibility and vastly varied mandates.

Appalachian Regional Commission

Created by an act of Congress in 1965, ARC is a regional economic development agency that represents a partnership between federal, state and local governments.⁶⁸ The ARC awards funds and grants to projects based on the amount appropriated by Congress each year. State and local agencies, economic development corporations, local governing boards, nonprofits and others are often recipients of the Commission's funds.

Such a commission might be created in addition to the high-speed rail governance structure that is decided upon for Cascadia for the purposes of distributing federal appropriations to stakeholders in the high-speed rail construction process.

The Great Lakes Commission

Initiated by joint state legislative action in 1955, the Great Lakes Commission eventually received official Congressional approval in 1968. The agreed purpose of this commission is to promote safe and efficient development and conservation of the water basin and its natural resources. The governments of Québec and Ontario have also signed on as associate members of the commission through a declaration of partnership.⁶⁹

This commission is an example of a strong binational development and conservation compact. Such a model may be appropriate with respect to Cascadia's rail development ambitions because these will require significant cooperation from British Columbia. However, the Great Lakes Commission is not an authority that has experience managing large capital projects; it is mainly a policy research organization and advisory body.

The Tennessee Valley Authority

The TVA is a not-for-profit corporation owned by the federal government that operates without taxpayer subsidy and participates in electricity distribution, land management, and economic development in its 7-state region.⁷⁰ While not directly applicable to high-speed rail in Cascadia, the TVA serves as a testament to the possibility of a certain level of collaboration between more than two states.

⁶⁶ The Transbay Joint Powers Authority (2010): "About the TJPA." URL <http://sf.gov.org/site/frame.asp?u=http://www.transbaycenter.org>

⁶⁷ The Port Authority of New York and New Jersey (2008): "The By-Laws of the Port Authority of New York and New Jersey." URL

<http://www.panynj.gov/corporate-information/pdf/by-laws-pa.pdf> (pgs. 5, 9)

⁶⁸ The Appalachian Regional Commission: "About ARC." URL <http://www.arc.gov/about/index.asp>

⁶⁹ The Great Lakes Commission: "About the Great Lakes Commission." URL <http://www.glc.org/about/>

⁷⁰ The Tennessee Valley Authority: "About the TVA." URL <http://www.tva.gov/abouttva/index.htm>

Binational Cooperatives

The Great Lakes St. Lawrence Seaway System

This binational cooperative facilitates the joint operation and protection of the locks and waterways between the Port of Montreal and Lake Erie. The seaway within Canadian territory is managed by a Canadian not-for-profit corporation and the section within US territory is managed by a chartered government corporation and the Department of Transportation. The three entities collaborate closely in the seaway's daily operations.⁷¹

Such a cooperative may not be the best model for high-speed rail in Cascadia, as the management of the St. Lawrence Seaway has required no major capital projects or expansions that meet the scale of what would be necessary for intercity rail investment. Additionally, it would seem inefficient and cumbersome to have three different entities manage high-speed rail in Cascadia, as is the case with the St. Lawrence Seaway.

The Pacific Coast Collaborative

In an agreement signed by five different jurisdictions made without approval from national legislative bodies, the Pacific Coast Collaborative represents an agreement of US states and British Columbia to collaborate on important issues facing the entire Pacific Coast. The agreement includes the governors of California, Oregon, Washington, Alaska and the Premier of British Columbia.⁷²

The Pacific Coast Collaborative acts as a forum for the sharing of ideas and a platform for future cooperative action, possibly on a larger scale. A similar entity was created in 1992 between Washington and British Columbia called the British Columbia/Washington Environmental Cooperation Council.

For-Profit

Private, for-profit corporations may also be selected to build and manage Cascadia's high-speed rail. Assuming that neither the state nor the for-profit corporation has the money to finance an entire high-speed rail system without issuing debt, the question becomes whether the corporation itself will issue the debt, or whether the state will issue the debt and transfer the funds by contract to the designated corporation or corporations.

The National Railroad Passenger Corporation (AMTRAK)

Amtrak is a for-profit corporation designated by the federal government as the *de jure* intercity passenger rail service provider. Amtrak ought to be considered as at least one of the major entities responsible for the construction, operation and maintenance of high-speed rail in Cascadia for several reasons. Amtrak is an experienced American rail operator; it has a good working relationship with America's freight railroad companies; it has managed other major capital projects before; and it has significant knowledge of the Cascadia corridor already.

Potential disadvantages of using Amtrak as the governance structure for high-speed rail in Cascadia are: its public image is less than favorable; it relies on Congressional appropriations for operating subsidies; and any profits from high-speed rail in Cascadia may be used to bolster the rest of Amtrak's system and may not be reinvested in Cascadia.

⁷¹ The Great Lakes St. Lawrence Seaway System: "Management of the Seaway." URL <http://www.greatlakes-seaway.com/en/management/index.html>

⁷² The Pacific Coast Collaborative. URL <http://www.pacificcoastcollaborative.org/Pages/Welcome.aspx>

State Commissions

Many states have created commissions to study the best methods for high-speed rail implementation within the vote of one legislative chamber. The mandates for these commissions are generally limited in scope.

Illinois's high-speed rail Commission

is tasked with recommending the best governmental structure for a public-private partnership to design, build, operate, maintain, and finance a high-speed rail system for Illinois and the Mid West.⁷³ The Illinois state legislature created this commission in March 2010.

Midwest Regional Rail Initiative

The Midwest Regional Rail Initiative is a collaborative effort for preserving, improving, and expanding passenger rail services within a multi-state region consisting of the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin.⁷⁴

The initiative's steering committee will consist of appointees from the respective states listed in the pertinent Memorandum of Agreement. The steering committee will be an advisory body for the governance structure, or "lead agency" that is eventually established to handle the new infusion of \$2.5 billion into Midwest high-speed rail development.⁷⁵

Non-Profit Associations and Funds

Generally, these are member-based, nonprofit advocacy organizations. They tend to have little authority, if any at all. These types of organizations are not likely to provide adequate governance for high-speed rail construction and management, but have been important advocates for passenger rail improvements and funding. Examples include the Midwest High Speed Rail Association, the Business Alliance for Northeast Mobility, or the Great Lakes Protection Fund.

⁷³ Illinois High-Speed Rail Commission (2010): "Senate Bill 2571." Illinois General Assembly. (Section 30) URL <http://www.tva.gov/abouttva/index.htm>

⁷⁴ Minnesota Department of Transportation (Updated 2005): "Midwest Regional Rail Initiative." URL <http://www.dot.state.mn.us/passengerrail/onepagere/midwest.html>

⁷⁵ Midwest Regional Rail Initiative (2010 draft revision): "Memorandum of Agreement for the Conduct of MWRRI." Acquired through Daniel Krom at MN DOT.

6. Financing High Speed Rail

Overview

Drawing on experience from projects worldwide, high-speed rail development typically requires long lead times and very high upfront costs. Passenger fares have generally been insufficient to finance capital and operating costs, requiring additional funding through public subsidies. As a result, sustained funding commitments that last through political cycles are critical to the success of high-speed rail.

Financial viability of high-speed rail is significantly affected by the cost of the project. Costs tend to be lower if there is existing right-of-way and the corridor is flat and straight, reducing the need for tunnels or bridges. This could be a considerable challenge in Cascadia where topography is a major concern.

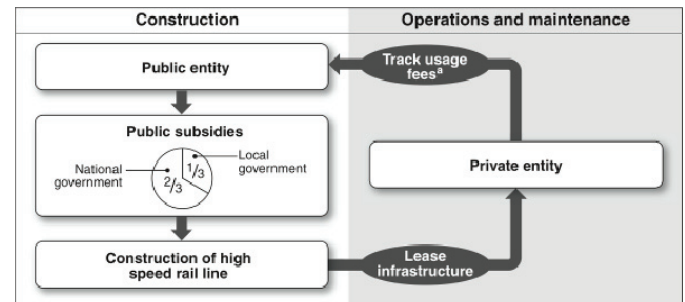
Public funding sources for high-speed in the United States are currently limited, though there has been some recent federal support. These existing options, and potential future sources, are detailed below. Furthermore, there has been some international and domestic experience with private investment sources, though none of these has been successful without significant public commitment.

International Case Studies⁷⁶

Japan

In Japan, most of the upfront cost for high-speed rail was paid by national government, though some of the initial construction was financed by an \$80 million loan from the World Bank. In 1987, Japan reformed its rail system and adopted a model where national and local governments subsidize the upfront capital costs and lease or sell the rail system to private companies (see Figure 6-A below). Operating costs are not subsidized and instead, the private companies pay a usage fee to the national government based on projected ridership. Japan was the first country to build a high-speed rail system and to date only the first few lines (those built in the 1960s and 70s) have managed to recoup their construction cost through ticket revenue. Japan has also used commercial development around stations to help underwrite some of the construction costs.

Figure 5: Public and Private Sector Roles In High Speed Rail Development and Operation in Japan



Source: GAO.

Figure 6-A

Spain

Spain's original high-speed rail line, from Madrid to Seville, opened in 1992 and currently tickets have been able to cover the operating cost but have not been able to repay the capital cost. The majority of funding for this line was contributed by the national government. Subsequent lines have been funded from the national government, the European Union, and Adif – the state entity responsible for high-speed rail infrastructure management. Some experts believe that the ability of Spain to cover even the operating costs is uncertain for future lines.

France

Most of the construction of high-speed rail in France was funded by the national government, through the state-owned company Société Nationale des Chemins de Fer Français (SNCF). Since joining the European union, funding has come from additional sources including regional governments, and Réseau Ferré de France, the public enterprise responsible for managing high-speed rail infrastructure.

As mandated by EU directives, the responsibility for capital construction and operations must be controlled by separate entities. France and Spain each support two nationalized companies to fulfill these roles. France and Spain are both considering financing models where private companies assume the risks of building the rail lines, however these models have not yet been successfully adopted.

United Kingdom

The United Kingdom has recently begun the process of selling HS1, the subsidiary controlling Britain's high-speed line connecting London to the Channel Tunnel.⁷⁷ Ownership of HS1 includes a concession to receive revenues from track access charges paid by train companies using the line including Eurostar, which operates services between London and European cities.

⁷⁶ Background on international case studies of high-speed rail in Japan, Spain, and France were drawn from the following report: US Government Accountability Office, High Speed Passenger Rail: Future Development Will Depend on Addressing Financial and Other Challenges and Establishing a Clear Federal Role, March 2009. <http://www.gao.gov/new.items/d09317.pdf>

⁷⁷ UK Department for Transport, "UK Puts High Speed Rail Up For Sale," Gov Monitor. 22 June 2010. Accessed June 25, 2010: http://www.thegovmonitor.com/world_news/britain/uk-puts-high-speed-rail-up-for-sale-34070.html

Federal Funding Sources

Federal Grant Programs

In 2008, Congress enacted the Passenger Rail Investment and Improvement Act (PRIIA), which established the High-Speed Intercity Passenger Rail (HSIPR) program and authorized \$1.5 billion annually from 2009-2013 for high-speed rail corridor development. PRIIA also authorized a separate funding stream for Amtrak.

The American Recovery and Reinvestment Act (ARRA), passed in 2009, appropriated \$8 billion to the HSIPR program, which included a mix of large capital projects for true high speed rail (such as those in Florida and California), as well as incremental corridor improvements (such as the \$598 million grant given to Washington and Oregon for the Pacific Northwest Rail Corridor).

In December 2009, Congress passed the 2010 Transportation Housing and Urban Development appropriation bill. This set aside an additional \$2.5 billion for the HSIPR Program for FY 2010, in addition to approximately \$65 million in remaining FY 2009 funds. On June 28, 2010 The Federal Railroad Administration began soliciting applications for \$2.1 billion of the 2010 funds for continued development of high-speed rail corridors. An additional \$245 million will also be available for individual construction projects on high-speed rail corridors.

It's important to note that unlike other transportation projects funded through dedicated sources such as the gas tax, federal grants for high-speed rail have been appropriated from the general fund, thereby putting them in competition with funding for a wide range of other programs. This puts significant uncertainty on the amount of federal funding for high-speed rail that can be expected each year, since it must be appropriated from the general fund each time. Uncertainty of state funding streams could put additional strain on projects. For example, California High Speed Rail Authority funding has fluctuated each year from as little as \$1 million as much as \$14 million due to changes in annual appropriation from the state legislature.⁷⁸

Additionally, although HSIPR program represents the first commitments to high-speed rail in the United States. These commitments still fall far short of individual project needs. For example, total project cost for high-speed rail from Los Angeles to San Francisco is expected to be approximately \$40 billion⁷⁹ compared to the \$2 billion it received from ARRA. Thus, additional funding from sources such as state and local governments will certainly be necessary.

Future Federal Funding Sources

With the upcoming reauthorization of the federal transportation bill, there may be opportunities for new, dedicated sources of funding for high-speed rail projects. Some potential sources of funding under consideration might include a portion of the gas tax, or some kind of road user fee.

Legislation on climate change has recently passed in the House of Representatives and been introduced in the Senate. If enacted, the bill would generate revenues from carbon taxes or permit sales. Both House and Senate

⁷⁸ US Government Accountability Office, High Speed Passenger Rail: Future Development Will Depend on Addressing Financial and Other Challenges and Establishing a Clear Federal Role, March 2009. <http://www.gao.gov/new.items/d09317.pdf>

⁷⁹ Ibid.

versions of climate legislation have specified some of this new revenue to go towards transportation projects.

Federal Loan Programs

Many potential high-speed rail project sponsors have sought financing through the Transportation Infrastructure Finance and Innovation Act (TIFIA). This program provides federal credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to finance surface transportation projects of national and regional significance. These loans are not exclusive to rail projects, but they have historically provided about \$122 million annually, leveraging \$2 billion in credit assistance.⁸⁰

The Railroad Rehabilitation and Improvement Financing (RRIF) program provides another source of loan guarantees that has potential use for high-speed rail. Through this program, the Federal Rail Administration is authorized provide up to \$35 billion in loans to acquire, improve, establish or rehabilitate intermodal or rail equipment or facilities.⁸¹

State Funding Sources/ Current Rail Corridor Funding in Cascadia

The cost to operate Amtrak Cascades service is jointly funded by the states of Washington and Oregon, as well as Amtrak. Funding from the state of Washington comes from taxes collected from the sale of new and used motor vehicles, car rentals, and vehicle weight fees. These funds are directed to Washington State DOT's intercity passenger rail program by the Governor and the state legislature.⁸² This contribution pays for service between Portland, Seattle, and Vancouver, BC. Meanwhile, Oregon's legislature dedicated fees from custom license plates to passenger rail operation in 2007.⁸³ Oregon's contribution has funded the service from Eugene to Portland, and this year the state approved purchase of two additional train sets.

A breakdown of historical capital investments for the Portland to Vancouver segment is shown in the table below.⁸⁴

Figure 6-B.

⁸⁰ Ibid.

⁸¹ Federal Railroad Administration, Railroad Rehabilitation & Improvement Financing (RRIF). Accessed June 25, 2010, <http://www.fra.dot.gov/Pages/177.shtml>

⁸² Washington State Department of Transportation, "Finance". Accessed June 2010: <http://www.wsdot.wa.gov/Finance/>

⁸³ Oregon Department of Transportation, Rail. Accessed June 2010: <http://www.oregon.gov/ODOT/RAIL/index.shtml>

⁸⁴ Reproduced from the Washington State Department of Transportation, Amtrak Cascades Long-Range Plan, February 2006.

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	\$12.6 million
Total Capital Investment	\$608.7 million

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

Funding Source	Amount
State of Washington	\$155.0 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

Private Funding Sources

Public Private Partnerships have some potential to reduce the public financial risks of construction and to increase operating efficiency, but they have proven to be limited in their ability to satisfy upfront capital needs. In the California and Florida high-speed rail projects, the private sector has shown interest in financing part of the project's construction, but in both cases, they still required significant financial and political commitments from the public sector. Additionally, the benefits of reduced public risks and reduced costs that a private company can offer are dependent on having an experienced procurement agency on the public side.

Public-private arrangements are usually formed on the basis that private entities would be able to recoup their cost from operations. However, this requires strong ridership upon project completion and financing hinges on robust ridership forecasts.

High-speed rail projects that are entirely privately funded have been unsuccessful to date. Projects such as the once proposed Texas TGV and the currently pursued Desert Xpress have unsuccessfully sought private funding.

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