Puget Sound Regional Council

REGIONAL TRANSPORTATION PLAN 2022–2050

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~~January~~ April 2022

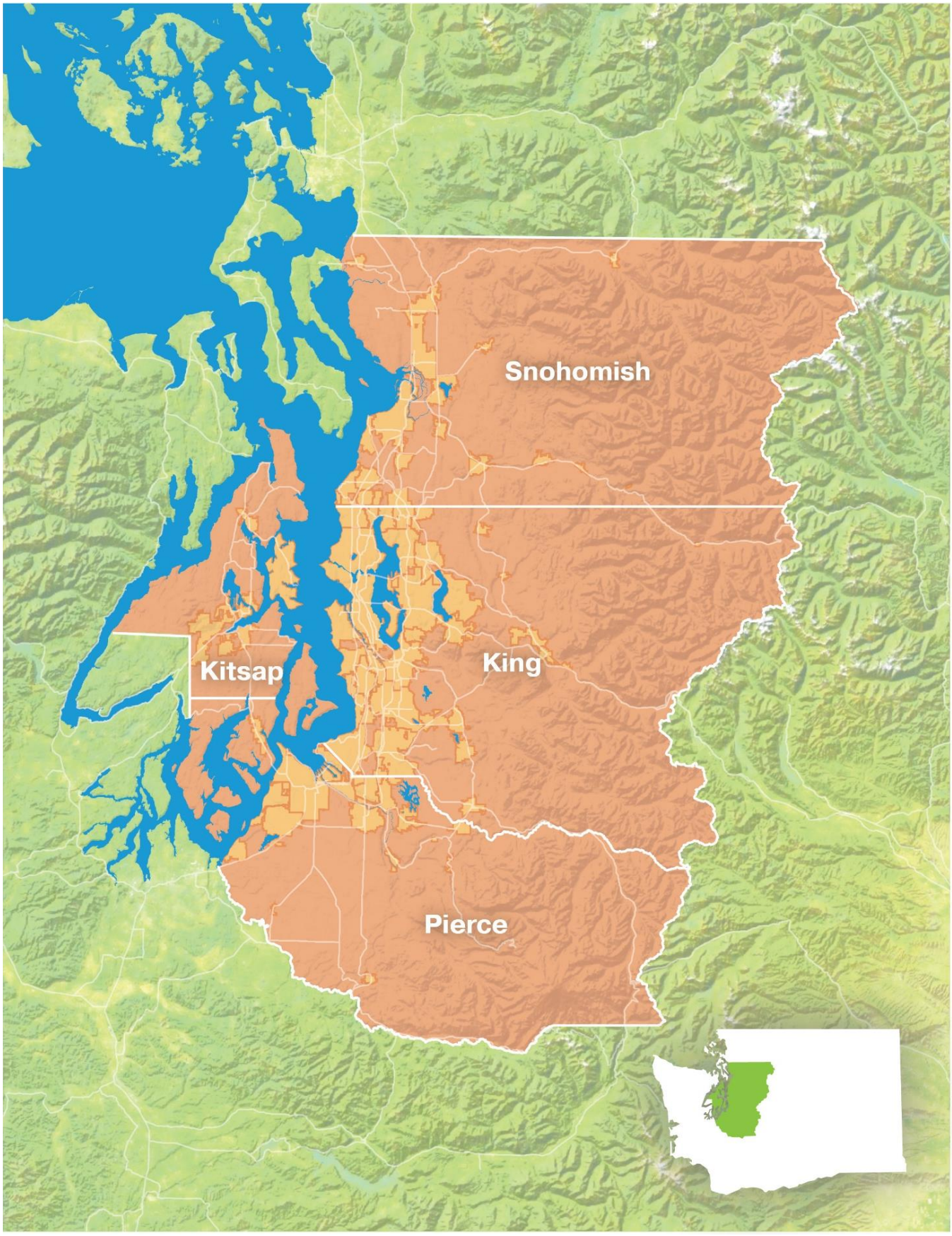
Puget Sound Regional Council

REGIONAL TRANSPORTATION PLAN 2022–2050

As amended and recommended for adoption by the Transportation Policy Board – April 14, 2022

Please note that Table of Contents and Figure references have not yet been updated

Figure 1 - Central Puget Sound Region



The Central Puget Sound Region

The central Puget Sound region is the largest metropolitan region in the Pacific Northwest. It includes King, Pierce, Snohomish and Kitsap counties and their 82 cities and towns, covering nearly 6,300 square miles. The region's geography is diverse, and includes urban, rural, and resource lands. Numerous hills, mountains, and lakes provide significant variety to the topography of the region, which ranges in elevation from sea level at Puget Sound to over 14,000 feet at Mount Rainier.

The region comes together at the Puget Sound Regional Council to make decisions about transportation, growth management, and economic development, under authority embodied in state and federal laws. PSRC maintains a common vision for the region's future, expressed through three connected major activities: VISION 2050, the region's growth strategy, the region's long-range regional transportation plan, and the regional economic strategy. At PSRC, transportation projects compete for over $250 million a year in federal funds.

PSRC provides data for policy making and regional planning. PSRC is designated under federal law as the Metropolitan Planning Organization (required for receiving federal transportation funds) and under state law as the Regional Transportation Planning Organization. PSRC also supports the work of the region's federally designated Economic Development District (EDD).


Roosevelt Station
1

Table of Contents

List of Figures

Appendices

Available at www.PSRC.org

Appendix A	Transportation System Inventory
Appendix B	Coordinated Mobility Plan
Appendix C	Maintenance and Preservation
Appendix D	Regional Capacity Project List and Administrative Procedures
Appendix E	Public Outreach and Engagement
Appendix F	Regional Equity Analysis
Appendix G	Air Quality Conformity Analysis
Appendix H	System Performance
Appendix I	Modeling Tools
Appendix J	Financial Strategy

Summary - A Transportation Plan for the Future

Imagine the year 2050 in the central Puget Sound region. More people than ever before will have convenient options for traveling around the region, whether it's jumping on light rail or walking safely to a bus stop. Instead of driving alone on congested highways, more residents will have the choice to walk, bike or take transit to get to work, school and all the places they want to go.

This Regional Transportation Plan describes the investments and policies needed to create that safe, clean and efficient transportation system essential to the region's quality of life, health and economy. As the region continues to grow, this plan will improve mobility and ensure that all people equitably benefit from the region's transportation system.

VISION 2050, the adopted growth management, environmental, economic, and transportation strategy for the central Puget Sound region, sets the foundation for long-range transportation planning, establishing a goal for a clean, integrated multimodal system for a rapidly growing region.

The Regional Transportation Plan lays out a set of steps that are designed to support VISION 2050 and to create a world-class transportation system. The plan helps to move people and goods, improve the quality of air and water, achieve greenhouse gas reduction goals, and strengthen the region's economy. The plan's ambitious programs will advance equity, help grow economic opportunity for everyone, invest in neighborhoods, and foster the innovation that is the region's hallmark.

A Growing Region

By 2050, the region will grow by another 1.6 million people—the equivalent of another two Seattles. The region has a plan for this growth called VISION 2050, an ambitious blueprint for how to improve the region's communities as we grow. It is about making life better for all people in the region.

Building on VISION 2050

GOAL: The region has a sustainable, equitable, affordable, safe, and efficient multimodal transportation system, with specific emphasis on an integrated regional transit network that supports the Regional Growth Strategy and promotes vitality of the economy, environment, and health.

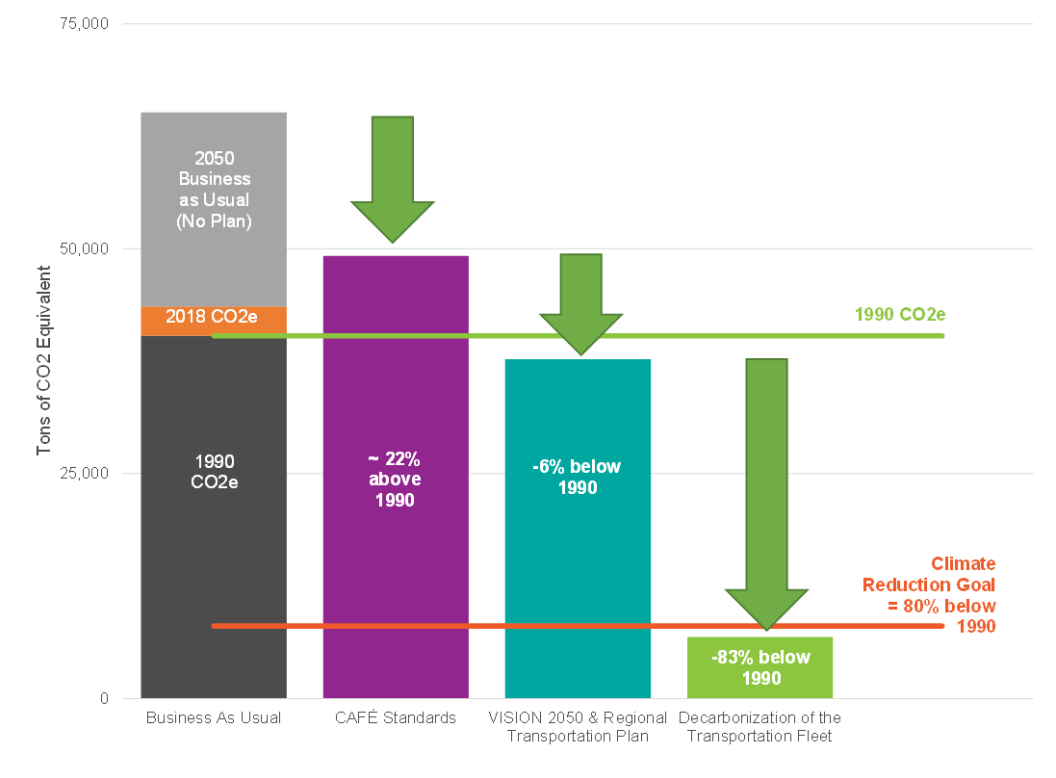
- VISION 2050 (PSRC 2020)

Addressing challenges and opportunities

Reducing greenhouse gas emissions

Climate change is an urgent environmental, economic, and equity threat being addressed at all levels, from the local to an international scale. The region's leaders have committed to taking actions to reduce greenhouse gas emissions and create a sustainable urban region. Together with VISION 2050, full implementation of the Regional Transportation Plan puts the region on track to substantially reduce greenhouse gas emissions and to achieve regional climate goals.

Figure 2 – Steps to Reducing Greenhouse Gas Emissions and Meeting Climate Goals



Improving safety for all users

The safety of the system for all people is an increasingly critical concern as the region continues to grow and transportation infrastructure and services are more heavily used. Safety impacts every aspect of the transportation system, covering all modes and encompassing a variety of areas from facility design to security to personal behavior. This cross-cutting issue – one of the key policy focus areas both in VISION 2050 and identified by PSRC's Transportation Policy Board – is addressed throughout all relevant sections of the plan. The plan further identifies future work and collaboration for regional partners to take a safe systems approach towards meeting safety goals.

Investing in growing communities

The Regional Transportation Plan is closely integrated with the VISION 2050 Regional Growth Strategy and its goals of 65% of population and 75% of employment growth near high-capacity transit. It lays out a vision for a multimodal transportation system that serves both existing communities and areas where we expect significant population and employment growth.

Expanding transit and travel choices

The region's voters have committed to the most extensive high-capacity transit expansion programs in North America. At the same time, state lawmakers have voted to complete key transportation corridors, such as I-405, SR 509, and SR 167, providing access to major job and trade centers. With implementation of the Regional Transportation Plan, by 2050 59% of households will be within ½ mile of an integrated high-capacity transit system, and transit ridership is expected to more than triple. The region's light rail, commuter rail, fast ferry, and bus rapid transit lines will expand into one of the country's largest high-capacity transit networks, with an emphasis on connecting centers and high-capacity transit station areas. There is a once in a generation opportunity to fundamentally change the region's transportation system, leverage these investments by focusing affordable, green development around them, and dramatically reduce the need to drive alone to meet daily needs.

Figure 3 – Regional Policy and Plan Framework

By 2050, residents will find it easier to get around using a broader mix of transportation choices than just driving alone. Expanded express toll lanes will help us use existing highways more efficiently and move more people. Local streets, roads, and paths will provide pedestrians and cyclists convenient access to local destinations and the transit network. Upgrades to roadways will make sure they provide safe routes for a variety of users, and completion of important missing highway links to job centers, ports, and airports will support the economy and freight and goods movement. As guided by VISION 2050, regional policy prioritizes transportation investments that support regional growth and manufacturing/industrial centers and emphasizes completing regional transportation projects planned through 2050.

Getting ready for what's ahead

Part of a long-range plan is to anticipate transportation needs decades from now. The Regional Transportation Plan seeks to identify the next generation of transportation improvements to further support mobility and consider transformative technologies that will impact transportation patterns and choices.

The Regional Transportation Plan was developed with a greatly enhanced set of data resources, captured in the Transportation System Visualization Tool. This tool features data on various aspects of the transportation system with other regional information such as demographics, regional centers, and transit stations. This interactive tool is complemented by another tool illustrating forecast conditions, including mappable planned transportation investments. These resources were designed to support local jurisdictions as they consider the next wave of transportation investments that will be required to support the updates of local land use plans, required by 2024. This work will, in turn, inform future updates to the plan.

A time of disruption and uncertainty

The COVID-19 pandemic has disrupted every aspect of life for the region's residents, from health to employment to transportation, highlighting and exacerbating inequities in our communities. Impacts and changes to travel have not been uniform across the region, or across different types of transportation. While there is cause for optimism that recovery and a return to pre-pandemic norms is on the horizon, the rate and timing of this return is still unknown. The Regional Transportation Plan looks to the future and includes the goals for the transportation system and meeting the needs of a growing region by 2050. Many projects are underway right now, and future investments are planned to help achieve that system. The Regional Transportation Plan is not a static document but is updated every four years to acknowledge and adapt to changing needs and conditions.

What will the plan deliver?

The plan was evaluated across several key performance measures and with a racial equity lens. Some key findings. By 2050:

Climate. The Regional Transportation Plan's Four-Part Greenhouse Gas Strategy supports the VISION 2050 goal to reduce greenhouse gases that contribute to climate change. It identifies how the plan performs to reduce emissions and action steps to achieve the greenhouse gas reduction goals adopted by the Puget Sound Clean Air Agency. Along with focused growth, extensive transportation choices and pricing mechanisms, the decarbonization of the transportation system will be critical. Following plan adoption PSRC will work with its partners to develop a 2030 transportation network and inputs corresponding to the Four-Part Greenhouse Gas Strategy and conduct a 2030 analysis in alignment with the region's 2030 and 2050 climate goals.

★ By 2050, **Greenhouse gases** will be reduced by over **83% from 1990 levels**

Access to transit. The Regional Transportation Plan supports the VISION 2050 regional growth strategy and planning for vibrant, attractive neighborhoods with access to jobs, schools, and services. Tools and resources help to identify where access to transit can be improved, particularly for bicyclists and pedestrians.

- ★ **Transit boardings will** more than **triple** by 2050.
- ★ **59% of households will live within a ½ mile** of high-capacity transit service.

Equity. The Regional Transportation Plan builds from VISION 2050 goals and policies for racial and social equity, applying an equity focus to all aspects of the plan, including the evaluation of existing and future conditions and the analysis of performance measures and regional outcomes.

- ★ In 2050, areas with higher concentrations of **people of color and people with low incomes will have higher rates of access to high-capacity transit** (82% and 79% respectively) compared to the regional average (59%).
- ★ People of color and people with low incomes will experience **less delay** and **shorter travel times** than the regional average.

Safety. The Regional Transportation Plan emphasizes achieving the state's goal of zero deaths and serious injuries through safety in the design, planning and funding of projects. As part of future work to develop a Regional Safety Plan, ~~C~~continued monitoring of safety data and trends and sharing of best practices and resources will help to improve safety throughout the region. Safety is addressed in each element of the plan, identifying challenges and opportunities for improvements.

- ★ The transportation system will be a **safer system** and **maintained** in a **state of good repair**, with timely **replacement of key bridges and ferries** and a focus on a **safe systems approach**.

Mobility. The Regional Transportation Plan improves transportation choices across all transportation modes, providing more reliability and addressing bottlenecks and congestion through completion of key transportation corridors.

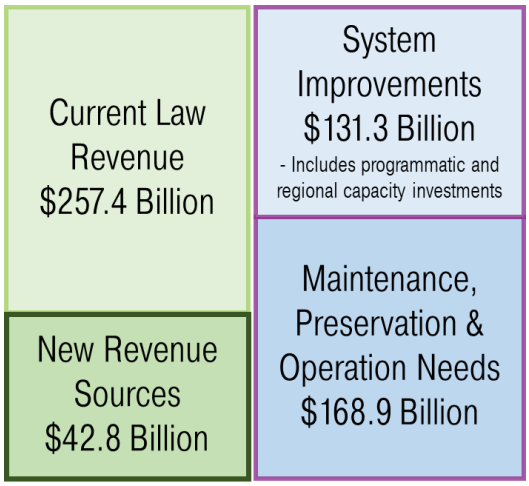
- ★ Households on average will experience a **15% reduction in delay** from current conditions
- ★ Average household vehicle miles traveled (**VMT**) are **reduced** by **-23%**

Local needs and future visioning. The Regional Transportation Plan looks ahead to address future challenges with potential new investments, such as in rail, aviation, and passenger-only ferries. The Regional Transportation Plan and supporting resources will assist and inform the local planning by cities and counties as they develop their local comprehensive plans by 2024.

What is in the draft plan?

The plan anticipates $300 billion of investment over the next 28 years.

- ★ Over half of the plan's total investments – **56%** – are dedicated to maintain, preserve and operate the transportation system.
- ★ The plan also invests in strategic system improvements across modes – of which **70%** is devoted to investments in local and regional transit.
- ★ Demonstrating the integrated and multimodal nature of the transportation system, **48%** of bus passenger volumes and **46%** of total truck miles are on roadways with planned improvements in the Regional Transportation Plan.



Proposed projects in the plan can be found in Appendix D.

How do we make this happen?

The Regional Transportation Plan includes a forward-looking financial strategy that identifies revenue sources to cover projected costs needed to maintain, operate, and improve the region's transportation system through the year 2050. It provides a feasible forecast of how state, regional and local agencies can pay for what needs to be built and maintained through the life of the plan to meet the transportation needs of a region expected to see significant population and economic growth in the coming decades.

Although a substantial portion of the plan (86%) is covered by projected current revenue sources, a 14% revenue gap remains that needs to be filled with new revenue sources. The financial plan identifies a menu of new revenue options that can be reasonably assumed to be available in the future for local jurisdictions, transit agencies, the ferry system, and state highways. An important component of the strategy acknowledges the eventual replacement of motor vehicle fuel taxes with a Road Usage Charge, with an assumption that in the central Puget Sound region an increment of revenues generated would be available for a wide variety of transportation investments, including transit, bicycle and pedestrian infrastructure, and other projects. Difficult legislative decisions will have to be made at a variety of levels to make these new revenues a reality.

A sustainable strategy for mobility and choice

The Regional Transportation Plan was designed to meet the central Puget Sound region's current transportation needs and to prepare for the future. The plan makes significant progress in supporting VISION 2050 and the Regional Growth Strategy, enhances accessibility and mobility choices, improves reliability, safety and security, improves air quality and meets greenhouse gas reduction goals, and provides equitable benefits and improved access to opportunity for all of the region's communities.

Puget Sound Regional Council

REGIONAL TRANSPORTATION PLAN 2022–2050

About the Plan - Introduction

With its many partners and stakeholders, PSRC undertook a two-year process to develop the 2022-2050 Regional Transportation Plan, featuring extensive research, data collection and analysis, board discussions, and public engagement.

The Regional Transportation Plan serves as the region's long-range transportation plan under both federal and state law and was developed as the functional implementation plan for VISION 2050, the region's growth management, transportation, environmental, and economic strategy adopted in October 2020.

The plan lays out a regional strategy for the wide variety of investments and services that make up a region's transportation system. The construction and operation of transportation projects and services are implemented by separate cities and towns, counties, transit agencies, and state agencies, as identified in their local comprehensive plans, transit agency plans, and transportation improvement programs. The plan provides the integrating framework to ensure that these thousands of projects from hundreds of implementers are coordinated and working together. Detailed information about project design, performance, benefits, and potential impacts are developed by these implementers.

The plan was informed by two years of public engagement and outreach to PSRC's members, community members, community-based organizations, and other stakeholders to identify key issues, priorities, and concerns.

The plan charts a course for investing in transportation to help achieve VISION 2050's overarching goal of providing an exceptional quality of life and opportunity for all, connected communities, a spectacular natural environment, and an innovative, thriving economy through 2050 and beyond.

It lays the region on the path to reducing greenhouse gas emissions and meeting the regional climate goals, will help create a healthier, safer, more equitable system with access to a vastly expanded high-capacity transit network, and sets the stage with new data, tools, and guidance for the upcoming updates of local comprehensive land use and transportation plans expected by 2024.

The Regional Transportation Plan is organized in the following sections:

An Integrated Multimodal Transportation System

An efficient and fair transportation system must serve diverse demands. Adequate sidewalks and paths should provide safe walking routes to local destinations. High-quality infrastructure should provide convenient routes for those who want to bicycle. Well-maintained roads, highways, and bridges provide routes for cars, buses, freight haulers, and delivery trucks, as well as cyclists and pedestrians. And fast and frequent high-capacity and local transit should be connected to these other modes of transportation and link important concentrations of jobs and housing and other regional

amenities. All of these components should work together providing diverse mobility options in an integrated system. Chapter 1 provides an overview of today's multimodal transportation system and identifies planned improvements and investments to prepare for the coming decades. Each section of the chapter identifies key issues, future needs and emerging topics and, where relevant, cross-cutting issues affecting multiple parts of the regional transportation system such as safety, equity, and climate.

Responding to People, the Environment, and VISION 2050

The Regional Transportation Plan must address the current and emerging travel needs identified by people in the region. Chapter 2 has summaries of what PSRC learned through public engagement and outreach during plan development.

Chapter 2 also addresses how the plan and the region's adopted four-part greenhouse gas strategy lay out a path to achieving adopted climate goals. Safety of the transportation system and human health outcomes are also contained in this chapter.

PSRC has a robust data and analysis program that applies state of the art practices to evaluate plan performance against priority policy objectives for transportation. Chapter 2 also has performance data for a variety of measures across multiple geographies, including the entire four-county region, each of the four counties, designated centers and regional geographies as identified in VISION 2050. These measures respond to federal requirements for performance-based planning and a Congestion Management Program.

Analysis of performance data pays particular attention to equity and equitable outcomes for areas of the region containing higher numbers of specific population groups: Black, indigenous, and people of color, people with low incomes, older adults, youth, people with disabilities, and people with limited English proficiency.

Federal and State Requirements

The Regional Transportation Plan serves as the region's long-range transportation plan under federal and state law. The RTP meets the substantive and procedural requirements of Title 23 Section 450.324 of the Code of Federal Regulations and Section 47.80.030 of the Revised Code of Washington. This includes development of a financial plan demonstrating that sufficient reasonably expected revenues will be available over the next three decades to operate and maintain the system as well as pay for the proposed infrastructure investments. The RTP also addresses the federal planning factors as identified in Title 23 Section 450.306(b).

Paying for the Plan

The Regional Transportation Plan includes a forward-looking financial strategy that identifies revenues to cover projected costs needed to maintain, operate, and improve the region's transportation system through the year 2050. It provides a feasible forecast of how state, regional and local agencies can pay for what needs to be built and maintained through the life of the plan to meet the transportation needs of a region expected to see significant population and economic growth in the coming decades. Chapter 3 reviews the financial resources and tools needed to implement the plan.

What's Ahead?

As a long-range plan, the Regional Transportation Plan lays the groundwork for regional conversations about emerging, big ideas for transportation investments and infrastructure that may lie far in the future, even beyond the current long-range plans of PSRC members. Investments such as Interregional High-Speed Rail, passenger only ferries, new commercial aviation capacity, potential additional regional high-capacity investments, and reimagining infrastructure are discussed in Chapter 4.

The plan has information about implementation actions and processes to coordinate transportation planning at all levels of government. Chapter 4 also describes how the plan can be amended, the relationship between the plan and federal funds available through PSRC's competitive project selection processes, project implementation through the region's Transportation Improvement Program, and local policy and plan review and certification processes required under the state Growth Management Act. Action and implementation steps for PSRC and other partners identified throughout the plan are also summarized in this chapter.

Chapter 1 – An Integrated Multimodal Transportation System

The Regional Transportation Plan envisions an integrated system that supports the goals of VISION 2050, which calls for increased investment in transportation to support a growing population and economy. VISION 2050 emphasizes investing in transportation projects and programs that support local and regional growth centers and high-capacity transit station areas in particular. These policies emphasize the importance of public transit to achieving the VISION 2050 regional growth strategy.

Over the last few years, the region has made significant progress in building out its integrated multimodal transportation system. The Alaskan Way Viaduct was demolished and replaced with a tunnel under Seattle's central waterfront. New, fast, passenger-only ferry service now connects Kitsap County with downtown Seattle, and new ferry terminals have opened, including a long-planned facility in Mukilteo. Community Transit's Green Line provides a second bus rapid transit corridor in Snohomish County, and the Northgate extension to Sound Transit's 1-line opened three new light rail stations. Major rail-roadway separation projects have been completed to eliminate bottlenecks and improve safety. And new bike and pedestrian connections, such as the Grand Avenue Park pedestrian bridge in Everett, provide improved access to transit stations and local amenities. WSDOT is nearing completion of a 20-year project to extend I-5 HOV lanes into Pierce County, connecting a vital network of the region's managed highways. These investments, and many others like them, will create and sustain the integrated transportation system that will be necessary for the region to thrive.

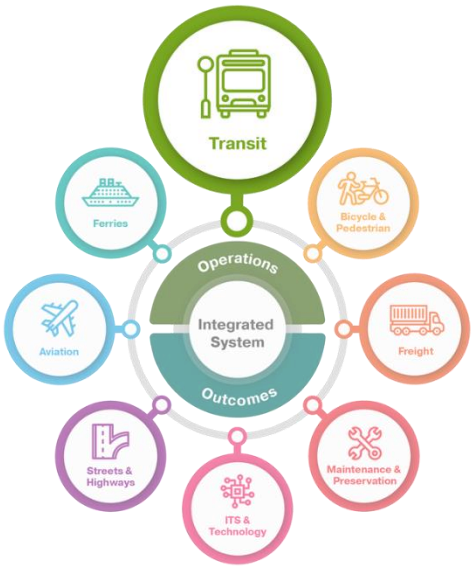
This chapter describes different parts of the system and related operations and efficiencies, including current conditions; needs, gaps and opportunities; future conditions; and what's ahead.

System Uses

Regular Transit

When people think of transit, most often they think of fixed-route rail or bus service that stops at specific stations or stops on a schedule. For the purposes of this section, these types of transit services are referred to as "regular transit."

VISION 2050 calls for providing and encouraging alternatives to driving alone and ensuring the availability of reliable and competitive transit options. With an adoption of a transit-focused Regional Growth Strategy, complete implementation of a comprehensive, integrated transit system will be critical.



Existing Conditions

The region's regular transit system is built upon the backbone of an extensive bus transit system with an expanding high-capacity transit system.

High-capacity transit in the region is provided by a variety of rail, bus rapid transit and ferry modes, including: Sound Transit's Link light rail, Tacoma Link, and Sounder commuter rail; Seattle's two streetcar lines and the historic 1962 monorail; Community Transit's Swift and King County Metro's RapidRide bus rapid transit services; and multimodal and passenger-only ferry services provided by the Washington State Ferries, Pierce County Ferries, King County Metro and Kitsap Transit (see Ferries section below). Bus rapid transit (BRT) routes in the region are distinguished from other forms of bus transit by a combination of features that include branded buses and stations, off-board fare payment, wider stop spacing than other local bus service, and other treatments such as transit signal priority and business access and transit (BAT) lanes. Collectively, high-capacity transit modes provided approximately 25% of the region's transit boardings in 2018. See Figure 4

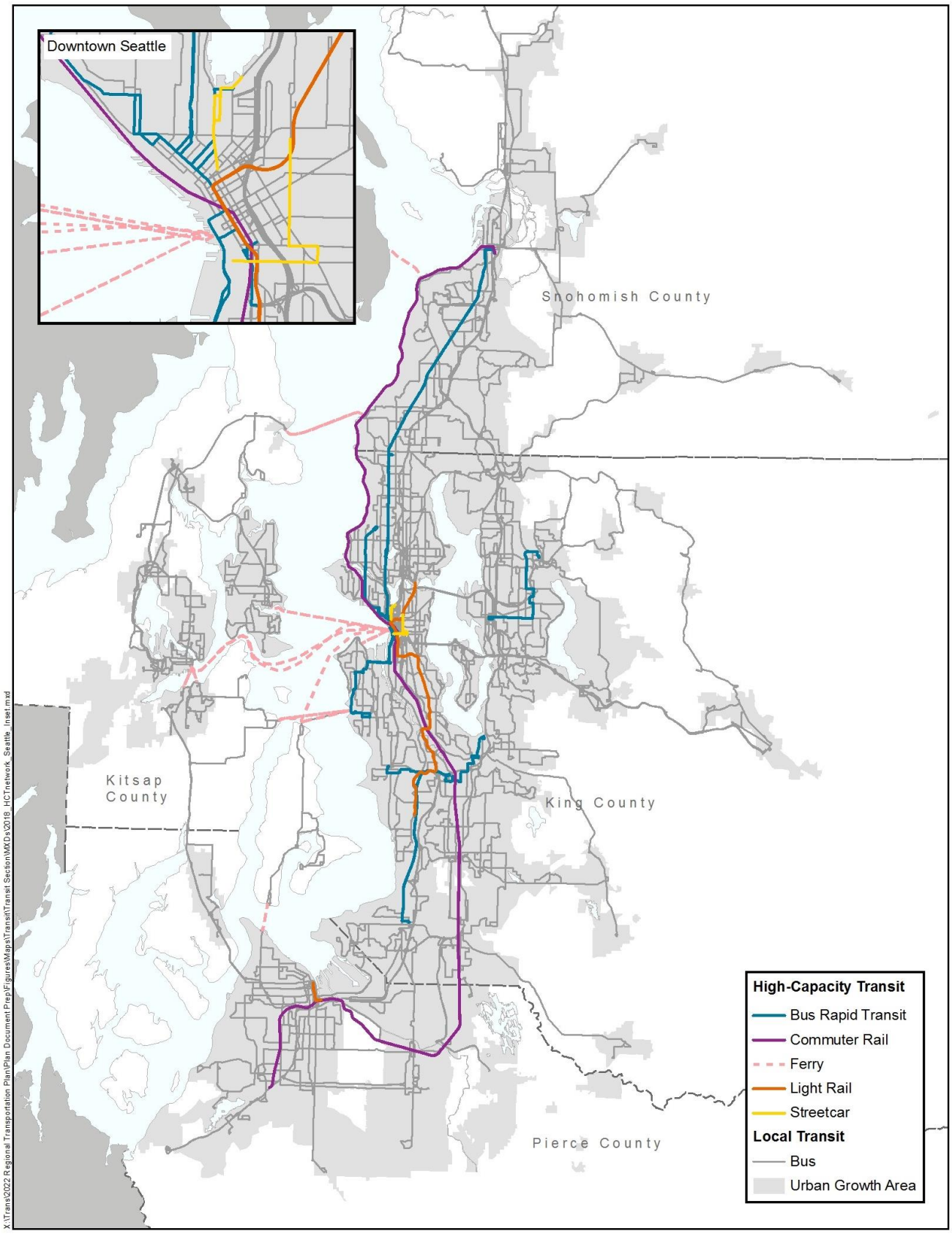
Definitions

Regular Transit: Rail or bus transit that serves regional and local mobility needs by providing service at fixed stations or stops. Regular transit consists of both high-capacity transit modes (light rail, commuter rail, streetcar, monorail, and bus rapid transit) as well as bus service connecting local communities to one another and to high-capacity transit modes.

Six transit agencies provide additional fixed-route bus service in the region. Each agency defines its own service thresholds and types. However, the system can be characterized by varying frequencies of bus service. The more urban and densely developed parts of the region include a network of frequent buses that operate throughout most of the day. Key roles of this type of bus service include supporting transit-oriented development (TOD) and connecting to high-capacity transit modes. Other parts of the region have more limited service. In addition, different forms of commuter and express buses operate over longer distances using the highway high-occupancy vehicle (HOV) lane system with some routes operating predominantly in the peak commuting periods only. Overall, these bus

services (excluding BRT) provided approximately 75% of regular transit boardings in 2018.

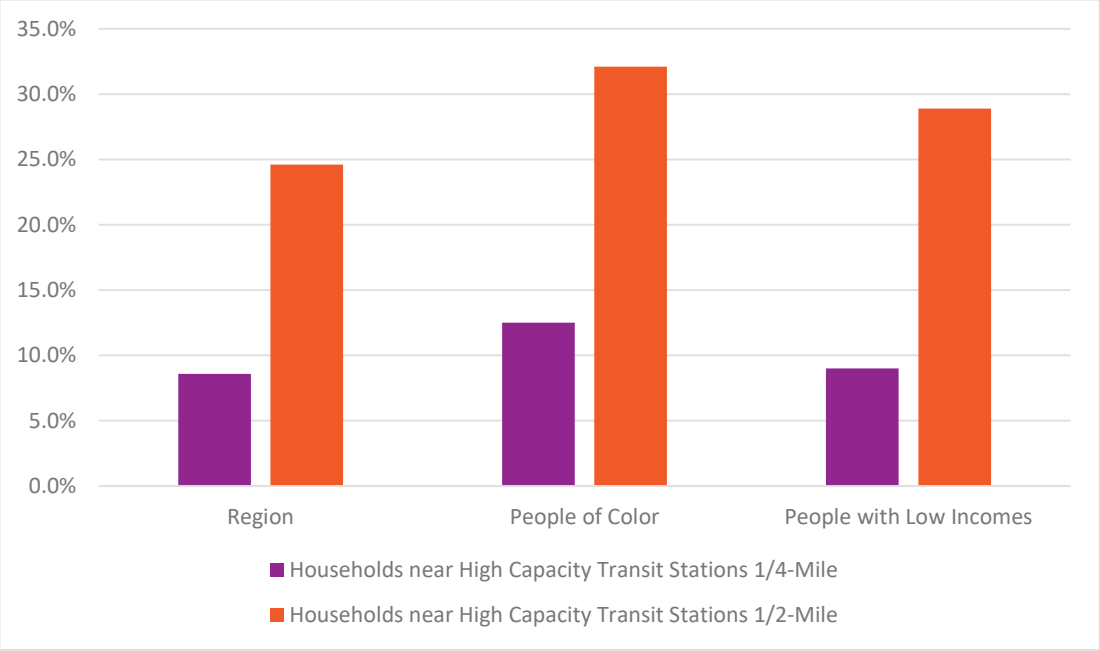
Figure 4 - 2018 High-Capacity Transit Network



More than 83% of all trips accessing transit were made by nonmotorized modes of travel (pedestrians and bicyclists) in 2018. Automobiles accounted for the remainder of access either by parking or drop-off. The central Puget Sound region has 231 park & ride lots providing 45,226 spaces for people to park to access regular transit (as well as accessing vanpools and carpools).

Figure 5 shows proximity of households to the region's growing high-capacity transit system. The figure shows that more people of color and people with low incomes are living near high-capacity transit than the region's population as a whole. This finding holds true whether considering ¼-mile or ½-mile distance from stations.

Figure 5 - Households Near High-Capacity Transit Stations (2018)



Trends and Data Collection

Transit agencies in the central Puget Sound region collectively provided over 221 million regular transit boardings in 2018. All fixed-route transit modes experienced robust growth between 2010 and 2018. Light rail boardings increased dramatically due to ongoing system expansion and additional station openings in 2016. In recent years prior to the COVID-19 pandemic, the region saw regular transit boardings increase faster than population - the largest increase among the top 50 urbanized areas across the nation.[1]

In 2018, more than 20% of all ORCA[2] boardings used a reduced fare product. The largest among these were people with low incomes, using an ORCA LIFT (5.7%) at almost 8 million boardings. This was followed by people with disabilities, youth, and older adults (aged 65+). The Coordinated Mobility

[1] PSRC: Puget Sound Trends (2019). Retrieved from: https://www.psrc.org/sites/default/files/trend-transit-growth-20190424.pdf

[2] ORCA stands for One Regional Card for All. It is a contactless smart card system for public transit system riders in the central Puget Sound region. ORCA allows for fare reductions through programs such as the Regional Reduced Fare ORCA (for older adults and people with disabilities), ORCA LIFT (for low income households), and ORCA Youth, among other fare products.

Plan provides more information on mobility and demographic trends for people who use reduced fare products; see Appendix B (Coordinated Mobility Plan).

In 2020, the COVID-19 pandemic disrupted this growth in regular transit boardings as the region responded to a stay-at-home order, rising unemployment, and a dramatic increase in telecommuting by employees who could work from home. By early April 2020, WSDOT's Transit COVID-19 Transportation System Reporting dashboard indicated that the regular transit ridership in the region was down 74% on average across transit agencies compared to the previous year.[3] Transit agencies in the region responded to this public health emergency in a variety of ways to maintain a safe operating environment with reduced demand and vehicle capacity. The pandemic dramatically highlighted that certain corridors and areas within the region had higher reliance on regular transit to meet daily needs, even with pandemic travel restrictions. By 2021, with the rollout of vaccines and partial reopening of the region, regular transit boardings showed a slow rebound, but remained at a fraction of the boardings in prior years.

The COVID-19 pandemic will continue to have near-term impacts on regular transit boardings. However, jurisdictions and transit agencies in the region are continuing to plan for growth in a way that will increase ridership and meet long-term projections of transit boardings. The continuing build out of the planned high-capacity transit network means that when people return to in-person employment, school, and other activities in greater numbers, they will have easier access to fast and reliable transit options. Since 2018, the region has seen the opening of one new BRT route (Swift Green line) and the extension of Link light rail (Line 1) from Husky Stadium to Northgate, opening three new stations in north Seattle.

Appendix A (Transportation System Inventory) provides information on the various routes and operational details for the region's public transit system.

Needs, Gaps & Opportunities

VISION 2050 calls for attracting 65% of the region's residential growth and 75% of its employment growth to regional geographies that are centered upon high-capacity transit station areas. Therefore, some of the plan's greatest needs, gaps, and opportunities are linked to the planned expansion of an integrated high-capacity transit network. Integration of this network includes providing easy connections between modes of transit and providing easy multimodal access to the public transit network, and will be critical to support the high-growth areas anticipated in the Regional Growth Strategy.

Public feedback during development of the plan indicated that among the top motivators to get people to use more regular transit are shorter trip times, easier access, and extended service. For people with special transportation needs, many of their top mobility challenges include those associated with regular transit, including lack of regular transit in locations where it is needed, long travel times, lack of service at times when it is needed, lack of accessible physical infrastructure to access regular transit,

[3] WSDOT: Transit COVID-19 Transportation System Reporting. Retrieved in October 2021 from: https://wsdot.wa.gov/about/covid-19-transportation-report/dashboard/transit/default.htm

and difficulty getting to medical appointments.

Access to Transit

As the high-capacity transit system expands, there is an opportunity to continue to improve upon the high percentages of nonmotorized access to transit that exists today. In addition, local jurisdictions and transit agencies will need to collaborate in their planning to facilitate multiple modes of transit access around future HCT station areas. This includes the following types of access:

- **Transit-Oriented Development (TOD):** VISION 2050 reinforces the importance of regular transit in the regional growth strategy. More than 65% of new housing units and 75% of new jobs are planned near transit stations. Locating most of the new growth near transit leverages the region's investment in regular transit and provides new opportunities for nonmotorized access. Ensuring that long-term affordable housing is incorporated into transit-oriented communities will help to ensure that people with low incomes, people with disabilities and others who experience mobility challenges have easy access to the high-capacity transit system.
- **Nonmotorized Transportation (pedestrian and bicycling):** Walking and bicycling are some of the most efficient, healthy, and environmentally friendly ways to access transit. PSRC's inventory of pedestrian and bicycle facilities shows that there are opportunities to fill gaps and create a connected network of facilities that will encourage walking and bicycling (See Bicycle and Pedestrian section). In developing the Regional Transportation Plan, sensitivity testing of PSRC's model was conducted including an evaluation of improved walk access time and distance around HCT stations and the corresponding impact to transit boardings. The sensitivity test was intended to represent improved access from both nonmotorized and other last-mile improvements such as community shuttles and mobility on demand options. The results of this sensitivity test showed that implementation of these types of access improvements to the transit network could yield up to an estimated 40% increase in transit boardings.
- **Automobile (both parking and drop-off):** Not everyone will be able to walk or bicycle to regular transit, particularly in less urban and in rural contexts. However, constructing parking is one of the most expensive ways to access transit on a per passenger basis. Continuing to explore and implement parking management policies and programs at existing park and rides, particularly those facilities at or near capacity, can help ensure more efficient use of parking that is already in place. Parking management can include providing incentives for carpool parking as well as disincentives to driving alone. Managing demand for park and ride spaces, including through price, can also improve customer experience by providing riders with certainty that they will find a space. This can also offer more equitable access by freeing up spaces for use outside the peak periods, and potentially through leveraging programs like ORCA LIFT for low-income riders. There are opportunities for transit agencies and local governments to work together to incorporate areas for passenger drop off (private vehicle, taxi, transportation network company, and other forms) and to provide parking in scale with the community context. Agencies can consider strategic and lower cost ways to create additional parking, including:
    - **Leased lots.** Leased parking both increases the supply of transit parking and comes in

at a much lower per-stall cost than building new permanent stalls.

- **Creative partnerships.** Leveraging existing private parking supply is a cost-effective strategy for transit agencies and local jurisdictions. Fee-based parking near high frequency transit service can add parking capacity and provide predictability to riders with guaranteed parking spaces near transit.
- **Restriping existing park and rides.** Restriping and reconfiguring the layout of parking stalls at existing park and ride lots can add significant new capacity at a relatively low cost.

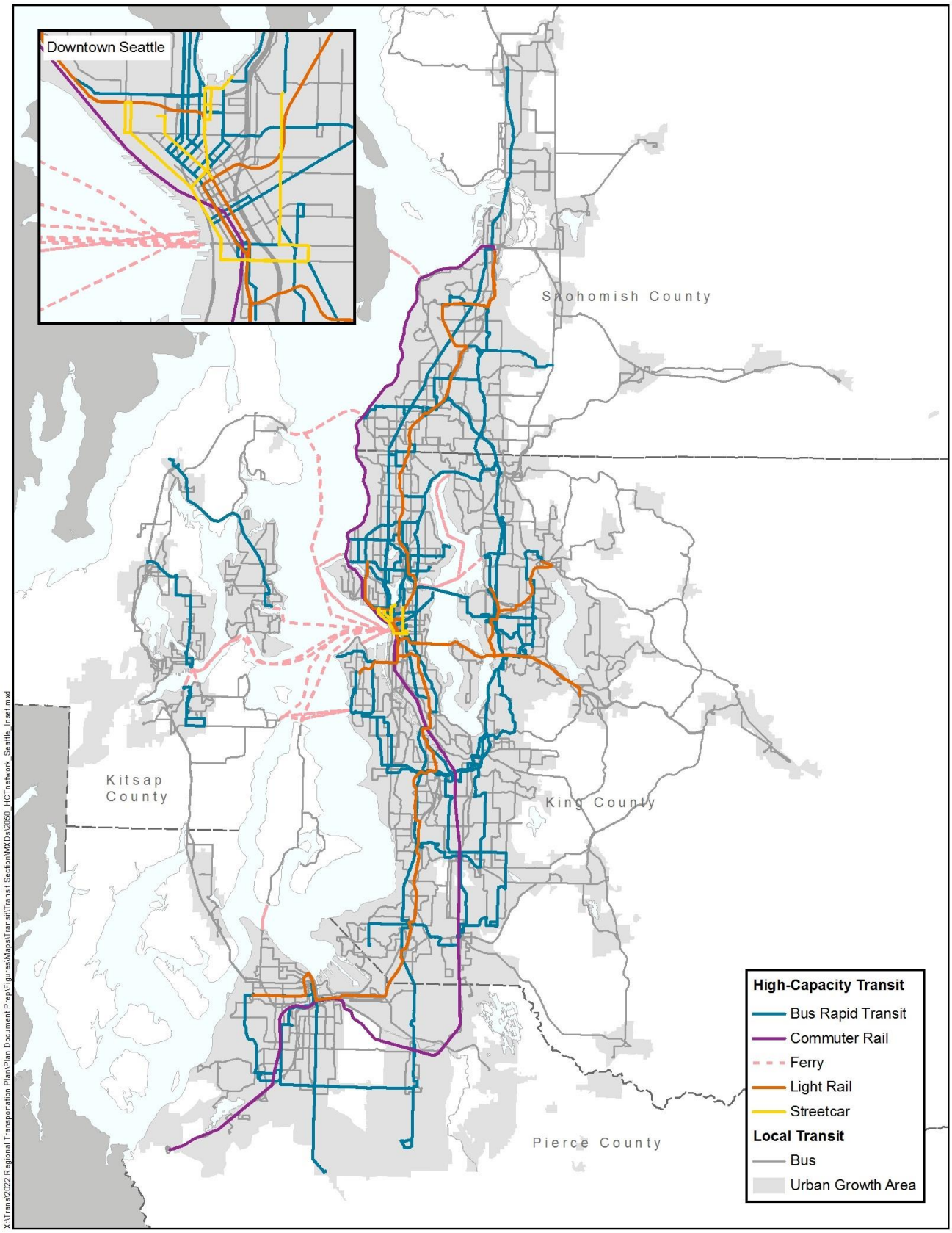
In addition, convenient connections between regular transit modes at transit stations and stops will enable people using the growing transit system to travel farther in less time than they do today. There is an opportunity for transit agencies and jurisdictions to collaborate in designing and implementing transit facilities that make connecting between modes and services easy and seamless. One example of a seamless transfer location where multiple modes of transit come together is the Tacoma Dome Station, where Sounder commuter rail, Tacoma Link, and regional and local bus service are all within a short walk of each other. In Bremerton, ferry and bus modes come together at the Bremerton Ferry terminal. These smooth intermodal connections require advanced planning that may include multiple modes, transit agencies, local jurisdictions, and others such as WSDOT, to succeed.

Future Conditions

The plan includes investments in high-capacity transit to expand the system to include 116 miles of light rail with 80+ stations in three counties, 36 bus rapid transit routes, two expanded commuter rail routes (89 miles and 15 stations), three streetcar routes, and maintaining the existing historic monorail.

This integrated high-capacity transit system will connect to local transit services and other forms of public transit noted within this section. Local bus service on weekdays will increase by approximately 26% regionwide between 2018 and 2050. This bus service will continue to provide mobility in places not served by the high-capacity transit network, as well as connecting to that network. Approximately 70% of all system improvements in the plan's financial strategy (see Appendix J, Financial Strategy) are transit investments. In addition, a significant portion of overall transit investments are for maintenance and preservation: replacing vehicles and keeping facilities in a state of good repair over the long-term. See the System Performance section for information about transit asset management and associated performance measures and targets.

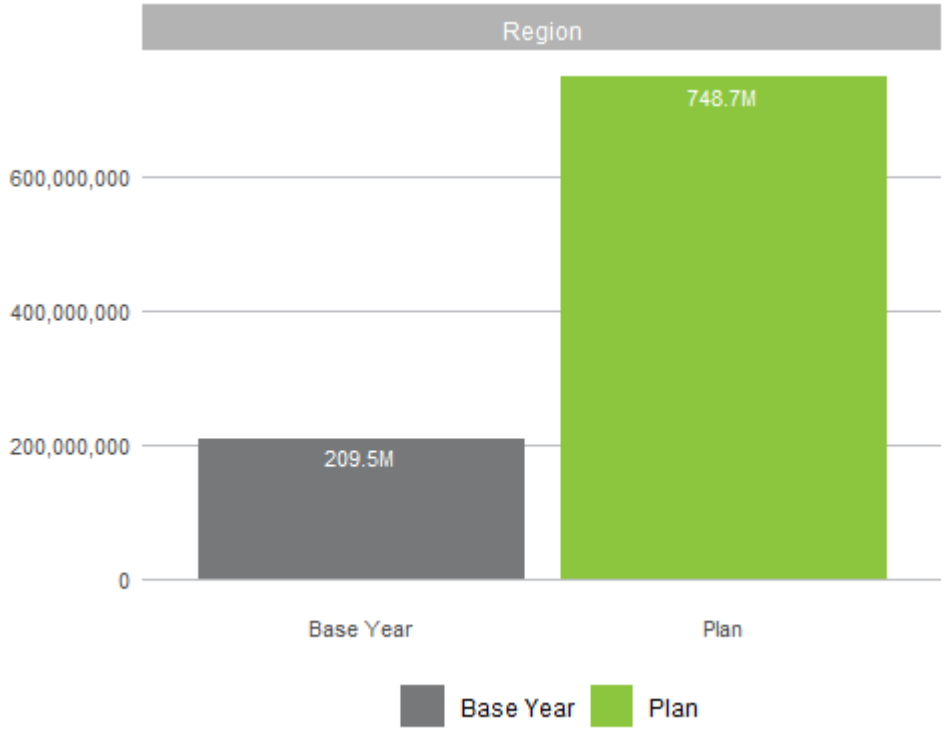
Figure 6 - 2050 High-Capacity Transit Network



Plan Outcomes

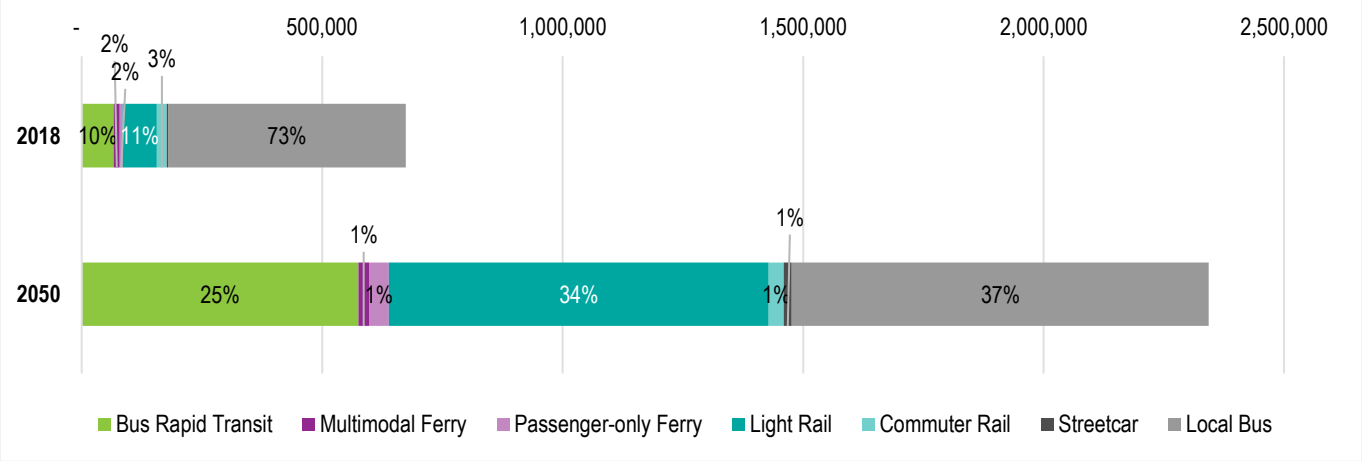
Planned investments that expand and integrate the high-capacity transit system and improve multimodal access to the public transit system result in a projected tripling of transit boardings from 2018 levels (see Figure 7).

Figure 7 - Transit Boardings Comparison 2018 to 2050



The number of regular transit boardings from high-capacity transit modes will grow from 25% in 2018 to over 62% in 2050. Light rail boardings will increase by more than tenfold over 2018 levels. BRT and streetcar modes will also experience exponential growth in boardings (BRT boardings are projected to increase eightfold and streetcar boardings are projected to increase more than sixfold). Other forms of regular transit experience smaller, but still significant, ridership growth. See Figure 8 for a comparison of transit ridership by mode between 2018 and 2050.

Figure 8 - Transit Ridership by Mode, 2018 and 2050



As the regular transit system expands and more housing is built near transit investments, by 2050 around 36% of all households will live within ¼-mile of the high-capacity transit system (up from 9% in 2018) and 59% of households will live within ½-mile of high-capacity transit in the region (up from 25% in 2018). The improved access to the HCT network is projected to be even better for people of color and for people with low incomes. By 2050, 48% of people of color will live within ¼ mile of HCT and 75% will live within ½-mile of HCT. People with low incomes will have similarly high percentages (45.5% within ¼-mile and 71% within ½-mile of HCT). Nonmotorized access to regular transit will increase from 83% in 2018 to 90% of all trips accessing transit in 2050.

By 2050, the magnitude of transfer activity across the regular transit system increases dramatically. Local bus-to-local bus transfers are larger than they are in 2018 but are no longer the largest within the system in 2050. The region's investments in an integrated high-capacity transit system that reaches all four counties means that by 2050 the largest transfer volumes will be connecting light rail to and from local bus, with the next largest transfer volumes connecting light rail to and from BRT.

What's Ahead?

As the region continues to expand its regular transit network into one that is increasingly convenient, flexible, safe, and provides mobility options throughout the day, access to transit becomes more important than ever.

Access to Transit

As described above PSRC's model sensitivity tests showed the importance of improving access to transit and its impact on transit ridership throughout the region in 2050. This makes it clear that improving access to transit is essential to achieving the VISION 2050 regional growth strategy. The region's transit agencies, local jurisdictions, and other regional and state partners should continue working together, building upon principles that facilitate easy multimodal access to transit as the transit system expands. Key highlights of the work ahead include:

- **Equity and safety:** A safe and equitable transit system is fundamental to implementing VISION 2050. Equity and safety are primary lenses through which transit access improvements should be considered. The needs of transit-dependent communities to access quality transit service should be prioritized in planning and implementation. In addition, transit access improvements should be safe and comfortable for those using the transit system, with particular focus on safety for vulnerable users and people of all ages and abilities. For more in-depth analysis, please see the Equity and Safety sections of the plan.
- **Location and context matter:** There is no "one size fits all" solution to access to transit issues. When transit agencies and other stakeholders work together to improve access to transit stations, the location of the station within the transit network should be considered as well as the local community context. A station located in a growing suburban area designated as a high-capacity transit community will have different access needs and priorities than a station located at the edge of the urban growth area. Access improvements should be customized based upon location and context.
- **Importance of land use decisions and affordable housing:** VISION 2050 calls for significant development near high-capacity transit stations. It is important that convenient, safe, and

multimodal access to transit be a primary focus in redevelopment to TOD in these key locations to maximize nonmotorized access to transit and to facilitate easy transfers. Maintaining existing and creating new affordable housing near transit stations will be key to ensuring that transit-dependent populations will have easy access to the expanding transit network.

- **Identify roles and responsibilities:** Improving access to transit is a shared responsibility that includes ongoing communication and coordination among transit agencies, local jurisdictions, and other relevant stakeholders (such as WSDOT). It is important to identify and engage with potential stakeholders early in the planning process and to outline and agree to key roles and responsibilities around planning for, funding, and implementing access to transit in a community.

Planning for transit investments to 2050

The Regional Transportation Plan, building from and implementing VISION 2050, extends beyond the planning horizon of all transit agencies within the region. The plan provides resources for transit agencies to use and provides an opportunity for them to think longer-term beyond their existing planning horizons towards the next major transit investments needed to expand the region's multimodal capacity.

Key issues to consider within this topic area include:

- **Equity:** As transit agencies and local jurisdictions begin planning beyond their current long-range planning horizons, it is important that they prioritize good quality transit service and consider the needs of transit-dependent populations as they do so. The Equity analysis shows that transit-dependent populations are predominantly low income and people of color. Transit-dependent populations need transit service connecting to jobs, childcare, health care and other vital services, including on days and at times other than the typical commute peak periods.
- **Envisioning the next high-capacity transit corridor planning:** This plan introduces the opportunity for transit agencies to look beyond their typical planning horizons. Looking ahead to the next set of high-capacity transit corridors will provide the framework for transit agencies to consider in updating their long-range plans, similar to how envisioning the light rail spine in the 1990's set the regional stage for three high-capacity transit system plans that followed. See Chapter 4 of the plan for more information on this topic.
- **Maintaining and updating transit agency long range plans:** All of the region's transit agencies have developed, and in some cases, updated long range transit plans. These plans are useful for identifying long-range planning goals, assessing transit opportunities and needs into the future, and informing shorter range implementation and funding decisions. Transit agencies should include PSRC early in their plan update processes and incorporate an assessment of how their long-range plans are consistent with and implement VISION 2050. PSRC will also continue review of transit development plans and other transit agency planning documents, as appropriate.

Specialized Transportation

People with special transportation needs are defined as those who are unable to transport themselves due to their age, income, or ability.[4] For purposes of planning, these populations include older adults, youth, people with disabilities, and people with low incomes. While regular transit services, such as bus, rail, and ferries, are the backbone of the transit system, public transportation services tailored to people with special transportation needs are called specialized transportation.

Federal and state regulations require regions like PSRC to conduct a coordinated planning process that identifies an inventory of all transportation services available to people with special transportation needs, identifies mobility challenges through outreach to those groups, and creates prioritized strategies to address those challenges. PSRC includes this planning process as part of the Regional Transportation Plan in the development of a Coordinated Mobility Plan, see Appendix B.

Existing Conditions

As of 2019, almost half of the region's population (47%) had special transportation needs, whether they were an older adult (aged 65 or older), youth (age 5-17), a person with low income (household income under 200% of the federal poverty level), or a person with disabilities (including physical and cognitive disabilities). Although not every person within these groups requires specialized transportation, these group tend to rely more heavily than others on public transit and specialized transportation to meet their daily needs. In many cases, people are in multiple categories, such as an older adult with a disability or a youth who lives in a household with low income.

While almost half of the population falls into at least one of the categories for people with special transportation needs, the largest component of that group consists of people with low incomes (20%) followed by people with disabilities (11%). The Coordinated Mobility Plan provides information about the distribution of these and other groups of people with special transportation needs within the region and identifies common mobility challenges associated with each group. In addition, the Coordinated Mobility Plan incorporates an equity lens by considering race and ethnicity of people with special transportation needs. For example, people of color are more likely to be low income or to have a disability when compared to the general population.

Trends and Data Collection

Long-range transportation planning relies on a thorough understanding of current conditions. As demonstrated in other sections of the RTP, data collection and analysis are critical to this understanding. This section addresses the data related to specialized transportation that is currently available and highlights challenges and gaps in that data.

Demographic Trends

This section includes trends relating to the various groups considered people with special transportation needs.

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[4] According to Washington state law, RCW 81.66.010, people with special transportation needs are "those people, including their attendants, who because of physical or mental disability, income status or age, are unable to transport themselves or purchase transportation."

Youth

The number of youth in the region is expected to grow by 21% between 2020 and 2050, a slower rate than the total population. Approximately 48% of youth in the region today are people of color, making it one of the most diverse age groups in the region. Youth also tend to be in households with low incomes at higher rates than the regional average.

Older Adults

Whereas youth will grow at a slower rate than the total population, older adults will grow at a faster rate (85%) between 2020 and 2050. This trend has been continuing for the last decade as the large Baby Boomer generation (born 1946-1964) ages and people tend to live longer. Older adults tend to be less diverse than the regional population as a whole. Although one in three adults aged 65 or older has a disability, 73% of the oldest cohort at 85 and older has a disability. The 85 and older cohort is projected to be the fastest growing demographic group in the region, increasing from 69,600 in 2020 to more than 275,900 by 2050. This oldest group, in particular, requires specialized transportation for mobility.

People with Disabilities

King County has the largest overall number of people with disabilities and Kitsap County has the highest percentage (14%) in the region. As described above, there is a high correlation between people with disabilities and older adults. In addition to that, people with disabilities are more likely to be in a household with low incomes than the general population. Twenty-seven percent of people with disabilities identify as people of color.

People with Low Incomes

The largest group of people with special transportation needs are people with low incomes, at 20% of the region's population in 2019. Forty-nine percent of people with low incomes are people of color. Transportation costs and availability are key concerns for people with low incomes. As housing costs in urban centers increase, many people with low incomes are moving or being displaced to areas outside of the urban core. When looking at data for the Seattle-Tacoma-Bellevue Metropolitan area, the Urban Institute found that a lack of affordable housing in transit-rich areas has caused low income people to live in areas that are far from employment/services and lack frequent transit.[5]

Other Groups

Additional groups with high correlations to people with special transportation needs include both veterans (correlated to older adults and people with disabilities) and people who have limited English proficiency (LEP) (correlated to people with low incomes, youth, and older adults). See the Coordinated Mobility Plan for more information on these groups.

Common Origins and Destinations for People with Special Transportation Needs

The coordinated planning process calls for PSRC to identify common origins and destinations for

[5] Urban Institute (October 2020). Access to Opportunity through Equitable Transportation: Lessons from Four Metropolitan Regions. Retrieved from https://www.urban.org/research/publication/access-opportunity-through-equitable-transportation

people with special transportation needs. The Coordinated Mobility Plan identifies where different groups of people with special transportation needs live within the region. Feedback from surveys to these groups shows that some of the most common destinations for people with special transportation needs are medical facilities and related healthcare destinations, grocery stores/food banks, and educational institutions. Medical/healthcare locations are important for all but are particularly common destinations for older adults and people with disabilities. Educational institutions are the most common destinations for youth.

Existing Specialized Transportation Services

People with special transportation needs rely upon all modes of public transit. Of particular importance for freedom of movement and flexibility are buses, rail, and ferries, discussed in other sections of the RTP. This section reviews the various forms of specialized transportation that are available in the region.

Most specialized transportation providers surveyed for the Coordinated Mobility Plan serve the needs of older adults, people with disabilities, and people with low incomes who either are not able to access transit or have mobility needs that cannot be met by transit.

Older adults and persons with disabilities who are very frail or have cognitive impairments require a higher level of service than can be provided by either public transit or paratransit services. Based on the latest service inventory, more than half of the specialized transportation programs in the region serve older adults or people with disabilities and most of those programs reported their service vehicles are wheelchair accessible. Table 1, below, provides a summary of specialized transportation services found in the central Puget Sound region. The Coordinated Mobility Plan includes a full inventory of existing services.

Figure 9 - Specialized Transportation Programs by Type

Transportation Service	Key Provider(s)	Eligibility
ADA Complementary Paratransit	Transit agencies	People with disabilities
Demand Response (non-ADA paratransit)	Transit and other specialized transportation agencies	People with special transportation needs (see Coordinated Mobility Plan Attachment B for more details)
Volunteer Driver Programs	Other specialized transportation agencies–non-profits or faith-based organizations	People with special transportation needs (see Coordinated Mobility Plan Attachment B for more details)
Non-Emergency Medical Transportation (NEMT)	Other specialized transportation agencies—for-profit transportation contractors	Medicaid/Medicare Advantage eligible riders
Student Transportation (School Buses)	Other specialized transportation agencies—for-profit transportation contractors	School-aged youth
Travel Training	Transit and other specialized transportation agencies	Open to the public (see Coordinated Mobility Plan Attachment B for more details)

Transportation Service	Key Provider(s)	Eligibility
Information and Referral Service	Other specialized transportation agencies—non-profits	Open to the public
Mobility Management/Coalitions	Other specialized transportation agencies—non-profits	Open to the public

Most of the programs noted in Figure 9 are specialized transportation operating programs. However, some programs are designed to educate and inform people with special transportation needs on how to use existing operating services, whether they be regular transit or specialized transportation. These include travel training, information and referral services, and mobility management/coalitions. These three categories of specialized transportation programs provide a key transportation demand management (TDM) function for people with special transportation needs. See the Transportation Demand Management section of the RTP for more on that topic.

Needs, Gaps & Opportunities

People with special transportation needs experience a multitude of mobility needs or challenges that are not experienced by the general population or are more difficult for these groups compared to the general population. Examples of these challenges include lack of transportation that they can use in their neighborhood; transportation that is not available at the time that they need it; and/or institutional barriers to using accessible transportation.

PSRC conducted outreach to people with special transportation needs through community-based organizations (CBOs) and online surveys during 2020-2021. Through this outreach targeted to people with lived experiences with mobility challenges, PSRC identified several key mobility needs that are highlighted in the Coordinated Mobility Plan and summarized below.

Shorter travel times when taking regular transit or specialized transportation

Longer travel times when taking regular transit or specialized transportation compared to other transportation options, like driving a personal vehicle, is one of the key mobility challenges. Long wait times can be due to poor on-time reliability and excessive wait time at transfer points, among other things. Also, a lack of flexibility scheduling return trips for Americans with Disabilities Act (ADA) paratransit can result in a rider waiting a long time to be picked up.

More transportation services at times when they are needed

With many transit agencies focusing service during peak hours, there is a need for more of the region's transit service to be available during non-peak hours, for example in the early morning or late evening. Also, there is less transit and ADA paratransit service available on weekends compared to weekday service. Specialized transportation services most commonly provide service on weekdays with little or no service offered in early mornings, evenings, or on weekends.

Accessible information about available services and language services

Riders with special transportation needs are often unaware of the different transportation options available to them or unsure which to use for a particular trip. Also, a lack of translated resources or in-

language assistance services can further exacerbate this challenge.

Better access to health and wellness destinations

With a growing number of people with special transportation needs, getting to health and wellness destinations is a continuing mobility challenge in the region. Many people shared that a lack of transportation, either regular transit or specialized transportation, to get to their medical appointments was a barrier to accessing healthcare. Other feedback in this area was on the difficulty of reaching urban medical facilities from rural areas. There is a particular mobility challenge identified for those who have special transportation needs and are not eligible for Medicaid non-emergency medical transportation or ADA paratransit service.

Affordable transportation for families with low incomes

Although most transit agencies in the region offer reduced fare options for people with low incomes, those reduced fares can be too expensive for families with lower incomes who may need to pay for multiple family members for multiple rides a day. This concern was raised in many outreach meetings throughout the coordinated planning process. Concerns were also expressed about the cost of medical transportation for people with low incomes.

Connected ADA-accessible infrastructure

Individuals seeking to walk, bike, or roll need an accessible and connected bicycle and pedestrian network. ADA-accessible infrastructure, such as complete sidewalks and wheelchair-accessible curb ramps, can help people getting to transit or specialized transportation services to reach their desired destinations. Filling gaps in sidewalks can mean accessing public transit options that allow more independence, such as allowing use of bus transit instead of ADA paratransit service.

Better regional coordination to meet growing mobility needs

Transportation providers and regional stakeholders expressed concerns over funding constraints to support the mobility of people with special transportation needs in the region. In addition, there are numerous mobility programs that serve specific groups for specific purposes. These programs create potential unnecessary duplication of service to areas that are expensive to serve. There is a need to improve regional cross-program collaboration and leverage existing funding among entities with dedicated transportation programs to increase availability of specialized transportation services.

Additional needs and challenges for specialized transportation

PSRC also identified the following mobility needs and challenges through outreach:

- More flexible scheduling for specialized transportation services, such as ADA paratransit and other community demand response services.
- Improved driver communication and training for people with special transportation needs.
- Simplified ADA paratransit eligibility review processes.
- Issues associated with rider comfort and safety, including perceived safety.

There are also challenges in obtaining consistent data for specialized transportation programs. Specialized transportation programs cover a wide range of types, including forms of operation (volunteer driver, demand response paratransit, deviated fixed-route, among others), and types of

mobility management (travel training, information and referral services, and mobility coalitions). Specialized transportation services are also often provided by private nonprofit organizations and human service providers with limited budgets and capacity for robust data collection and reporting.

There is a clear need to develop consistent performance measures and collection processes for specialized transportation providers.

Future Conditions

Demographic trends point to a future with a higher percentage of people with special transportation needs living in the region by 2050. The oldest adults 85 and older will be the group that grows the most and who have a very high correlation with people with disabilities. In addition, youth, people with low incomes and working-age people with disabilities will continue to have mobility challenges that must be addressed.

At the same time, as described in other sections, the central Puget Sound region will have a much more extensive high-capacity transit network that will be fed by bus, mobility on demand, and specialized transportation services to improve mobility of all people, including those who have challenges due to age, income, and ability.

What's Ahead?

Prioritized Strategies

PSRC developed and prioritized strategies to improve identified mobility needs of the people with special transportation needs. Community and regional partners provided input on prioritization of the strategies. See Appendix B - the Coordinated Mobility Plan for a full discussion of these strategies.

Measuring Impact and Next Steps

PSRC will work with stakeholders to engage on the mobility needs and strategies identified in the Coordinated Mobility Plan, and to find meaningful ways to measure performance of the programs that implement the strategies.

Mobility On Demand

Mobility on Demand (MOD) refers to the ability of individuals to find and use a variety of transportation options through public or private providers at their own convenience rather than a fixed schedule. Technology plays a key role in aggregating transportation options and providing details like availability and cost so customers can make an informed decision when planning a trip. All the shared mobility options addressed in the ITS/Technology section of the plan can also be considered MOD options: ride hailing, microtransit, micromobility, car sharing, and ride sharing. (See the ITS/Technology section for definitions and general discussion of these modes.)

MOD can be a direct provider-to-user experience, like an individual booking an Uber ride instead of driving themselves or renting an electric scooter in lieu of walking. However, public transit agencies are increasingly pursuing opportunities to leverage these new transportation options rather than compete with them. Transit agencies generally use the MOD service model to provide first- and last-mile connections to regular transit services and/or to serve geographic areas not well suited to regular transit.

Utilizing MOD for First- and Last-Mile Connections

Not all residents live close enough or are able to walk, bike, drive, or get dropped off to access transit at a stop or station. One way transit agencies in the region are addressing this access issue is through MOD projects, usually as a pilot or on a trial basis. These projects use smaller vehicles (vans or cars) to provide trips within a set geography where either the destination or origin point must be a transit stop or station (usually with high-capacity transit service like rail or BRT). Transit agencies may also encourage the use of micromobility options to access regular transit services.

Ride Hailing Partnerships and Microtransit

Many of the region's transit agencies have experimented with public-private partnerships with ride hailing or microtransit companies to improve access to transit by closing first- and last-mile gaps. Examples include King County Metro's Via to Transit and Ride Pingo to Transit programs. Via to Transit operates in four designated zones in King County: Othello, Rainier Beach/Skyway, Renton Highlands, and Tukwila. Customers use the Via app or contact the call center to book an on-demand trip. One end of the trip (origin or destination) must be a designated Via hub, which includes transit centers, light rail stations, and key community locations (e.g., select community centers, libraries, and medical facilities). Another pilot program, Ride Pingo to Transit, operates similarly but uses the Pingo app instead of Via. Ride Pingo to Transit serves the Kent Valley area, and each trip must either end or begin at Kent Station or the Kent Valley Hub to connect to bus or Sounder commuter rail services.

Former pilots include the Ride2 Pilot Program in Eastgate and West Seattle, which was a partnership between King County Metro and Chariot, a defunct microtransit service, as well as Pierce Transit's Limited Access Connections Program, a partnership with Lyft funded by the Federal Transit Administration's MOD Sandbox grant program.

Micromobility

Another emerging market under the MOD umbrella is micromobility, which refers to person-powered and individually operated modes, usually for short trips. Micromobility includes shared-use bike, e-

bike, or e-scooter rental services where rental transactions are typically completed in a smartphone app. Transit agencies have partnered with bike and scooter share services to install docked systems or deploy dockless fleets at transit centers to encourage transit riders to use these modes for first- and last-mile connections to transit.

Targeted MOD

Transit agencies also deploy MOD services to replace a low-performing bus route or provide new service in an area that has unmet demand that may not be high enough or dense enough to warrant a regular route. Common MOD solutions in this scenario are deviated-route buses or providing on-demand point-to-point service in a designated service zone using agency-owned vans or by partnering with ride hailing or microtransit companies.

Flexible- or Deviated-Route Bus

Deviated-route service is a hybrid of fixed-route and demand-response service.[6] Typically using a smaller bus or van, this service generally operates along a fixed route but can deviate within a certain proximity to pick up a rider who submits a pre-scheduled request. It may also refer to a route that consistently circulates along a busy route or corridor without scheduled timepoints that can be flagged down for pickups.

New technology has made this a more efficient mode, enabling real-time requests and making it a truly on-demand service. One local example of a deviated-route service is Kitsap Transit's BI Ride Powered by Pingo. BI Ride has operated a deviated route serving Bainbridge Island since 2014. Beginning in July 2021, customers can also use the Ride Pingo mobile app to request rides on demand instead of scheduling in advance.

Ride Hailing Partnerships and Microtransit

Transit agencies have long used vans to provide community shuttle and on-demand service as an alternative to regular transit to serve people with special transportation needs (sometimes called paratransit). As ride hailing apps grew in popularity over the last decade, transit agencies began piloting partnership programs to provide a similar on-demand experience to the general public either through public-private partnerships or agency-operated programs. These pilots are typically deployed in areas where regular transit has been eliminated due to low productivity or where there is unmet demand but not enough to warrant regular transit.

King County Metro's Community Ride is an example of the MOD application. Unlike Ride Pingo to Transit or Via to Transit, Community Ride allows on-demand trips to begin and end anywhere within the designated service area, even if it is not a transit stop, station or hub (sometimes referred to as point-to-point service). The service is being piloted in the Sammamish and Juanita areas. To access

[6] Traditional bus, rail, or ferry service that operates on a set schedule, along a fixed route alignment (including those in a shared right-of-way, like local bus), and with designated stops is considered fixed-route or "regular" transit. Alternatively, on-demand service operates dynamically based on customer demand. Routing, stops, and pick-up/drop-off times are based on requests from riders. Traditional demand-response and paratransit services require scheduling in advance, but newer technologies are allowing for true on-demand service, with customers requesting rides in real-time, as needed.

destinations outside the service areas, customers can be dropped off at one of several transit stops or park-and-rides within the service area to connect to regional transportation options.

Pierce Transit's PT Runner service builds upon lessons learned from the pilot Runner to Joint Base Lewis-McChord. The on-demand service is designed to offer a car-free transportation solution in areas with limited regular transit options. Customers can book a door-to-door trip anywhere in a designated zone on the Goin app, by phone call, or by flagging down a vehicle. Trips are provided by Pierce Transit owned-and-operated vans.

The Future of Mobility on Demand

The scale of adoption and future impacts of Mobility on Demand are still relatively uncertain. Most programs in the region have been launched on a pilot basis, and the cost effectiveness and successfulness of MOD as a longer-term public transportation service model has yet to be seen. The impacts of the pandemic on travel behavior and the high turnover of technology and microtransit companies also contribute to this uncertainty.

Customer awareness and convenience also present challenges. With various implementers and partnerships across the region, there are several apps and programs for customers to keep track of. While traditional ride hailing services may show up as a transportation option in Google Maps, along with driving, walking, biking (with personal bike or micro-mobility options), and traditional fixed-route transit, most microtransit and flexible-route services (as well as specialized transportation services) do not show up as an option. Uniform adoption of standard data feeds (like GTFS-flex) for all MOD services in the region would improve customer awareness of these services by showing them alongside other options in Google Maps and other trip planning tools.

MOD has a lot of potential to improve access to regular transit and provide point-to-point service more efficiently in areas not well suited to regular transit. More data collection and analysis at a local and regional scale of past and current programs may help focus these emerging technologies and service models where they can be most effective long-term. Further discussion of the future of MOD is included in the ITS/Technology section of the plan.

Intercity Rail & Bus

Intercity passenger rail and bus provide transportation for trips between cities in and outside of the region, with connections to key regional and local transit services. The central Puget Sound region benefits from existing intercity passenger rail and bus lines and its location along a federally designated high-speed rail corridor.

Intercity Rail

System Description

The Pacific Northwest Rail Corridor is one of 11 high-speed rail corridors designated by the Federal Railroad Administration. The corridor runs from Eugene, Oregon through the Seattle-Tacoma-Everett urbanized area up to Vancouver, British Columbia, encompassing the primary north-south passenger rail route through the state of Washington.

Since 1994, the Amtrak Cascades line has provided intercity rail service along the length of the Pacific Northwest Rail Corridor, from Vancouver, B.C. to Eugene, OR. Since 2013, the service has been managed and funded by the Washington State Department of Transportation (WSDOT) and Oregon Department of Transportation (ODOT), contracting operations and train equipment maintenance with Amtrak and primarily using tracks owned by BNSF.[7] The Amtrak Cascades line stops in Everett, Edmonds, Seattle, Tukwila, and Tacoma, with other stops outside the region. Prior to the COVID-19 pandemic, the service offered four daily roundtrips between Seattle and Portland, two daily roundtrips between Seattle and Vancouver, B.C., and two daily roundtrips between Portland and Eugene. Most stations provide connections to local public transit service and many have strong connections to local bicycle and pedestrian facilities.

The Amtrak Coast Starlight (from Los Angeles to Seattle) and Empire Builder (from Chicago to Seattle), which are both managed by Amtrak, serve the region with long-distance passenger rail service. The Empire Builder stops at Everett, Edmonds, and Seattle stations, with the line terminating in Seattle. The Amtrak Coast Starlight stops in Tacoma and Seattle, where the line terminates.

Existing Conditions

WSDOT developed a long-range plan for Amtrak Cascades service in 2006, identifying several

Definitions for Passenger Rail Systems

Long-Distance: Routes of more than 750 miles between endpoints. *Example: Amtrak Empire Builder from Chicago to Seattle*

Intercity: Routes of 750 miles or less, but not commuter rail. *Example: Amtrak Cascades from Eugene to Vancouver, B.C.*

Commuter: Serves metropolitan and suburban areas, usually having reduced fare, multiple-ride commuter tickets and morning and evening peak period operations. *Example: Sound Transit Sounder from Everett to Lakewood*

Notes: Light rail, monorail, and streetcar services do not meet the definitions above, which are from United States Code (49 USC Section 24102). More details on these modes are addressed in the regular transit section of the plan.

[7] Note: Sound Transit and Union Pacific also own track segments used by the Amtrak Cascades trains.

infrastructure and equipment improvements necessary to achieving the long-term vision of expanded service between Seattle and Portland (13 daily roundtrips, up from four). The federally funded infrastructure projects prioritized from the plan were completed in 2017 and included station upgrades, track and signal upgrades, new tracks, new locomotives, and landslide mitigation work. The state is monitoring the program outcomes of these investments based on travel time reductions, number of roundtrips between Seattle and Portland, and on-time performance in the corridor.

Ridership

In 2011, WSDOT reported the highest ridership on the Amtrak Cascades service to date with 848,000 trips.[8] Unfortunately the delivery of the rail infrastructure projects between 2011 and 2017 created short-term reliability issues during construction. Ridership decreased each of the following years, reaching 745,000 in 2015. Ridership fluctuated over the next few years, but WSDOT reported improvements in ridership, revenue, and on-time performance in 2019.

The COVID-19 pandemic had a substantial impact on Amtrak Cascades service in 2020. The closure of the Canadian border led to the suspension of service between Seattle and Vancouver, B.C., and the reduction in passenger demand due to public health recommendations resulted in WSDOT reducing the number of daily roundtrips between Seattle and Portland from four to one. Furthermore, capacity restrictions to encourage social distancing limited ticket sales to 50% of capacity on all trains for most of the year. Consequently, annual ridership in 2020 dropped to 172,000 passenger trips from the 824,000 reported in 2019.

Reliability

With the completion of projects to improve the speed and reliability of intercity rail, WSDOT set a new goal in 2018 for 88% on-time performance for the trips serving Washington cities (i.e., all trips on Amtrak Cascades except the Eugene to Portland trips), up from the previous goal of 80%. On-time performance has been recovering from a low of 47% in 2017 but continues to be a challenge. In 2020, WSDOT reported that 62% of trips were on time, up from 58% in 2019 but still well below the 88% goal. Slow order delays, freight train interference, and passenger train interference accounted for almost half of all delay on this route in 2019.[9]

Additionally, beginning in 2018, WSDOT adjusted the definition of "on time" from a train arriving at the final destination station within 10 or 15 minutes of the scheduled time (depending on route length) to arrival within 10 minutes of scheduled arrival at the endpoint station within each segment (Portland to Seattle is one segment and Seattle to Vancouver, B.C. is another).

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[8] Source (for all Amtrak Cascades ridership data in this section): Amtrak Cascades 2020 Performance Data Report. Washington State Department of Transportation. Published February 2021.

[9] As recorded in the 2019 Washington State Rail Plan, of the 24 Amtrak delay categories, these three categories accounted for 18.7%, 15.3%, and 12.9% of total delay minutes on Washington trips of Amtrak Cascades, respectively. Freight and passenger train interference refer to delay when another train is given priority (freight, commuter rail, another Amtrak train, etc.). A slow order is issued by the host railroad as a safety measure, lowering the maximum allowable operating speed on track segments, often near maintenance areas or capital projects. Operating at a reduced speed can lead to late arrival at the destination.

Safety

The Washington Utilities and Transportation Commission (UTC) is the primary state agency responsible for regulating railroad safety in Washington, including the inventory and inspection of railroad crossings and documentation of trespassing and incident data. UTC monitors all fatalities and injuries involving trains, including those occurring at private crossings or on industrial properties along railroad rights of way. At the federal level, the Federal Railroad Administration employs safety inspectors to monitor railroad compliance with federally mandated safety standards including track maintenance, inspection standards, and operating practices. The Federal Transit Administration provides federal oversight of transit safety, in coordination with the state. As the sponsor of Amtrak Cascades, WSDOT is responsible for complying with state and federal safety regulations, along with Amtrak as the operator and the track owners.

In December 2017, an Amtrak Cascades train derailed while crossing an I-5 overpass near DuPont, Washington. The derailment killed three and injured 65 other people.[10] It was the first revenue service trip on the Point Defiance Bypass from Tacoma to Nisqually Junction, which was built to reduce delays and improve travel time on the Seattle-to-Portland segment of the Amtrak Cascades route. Service was suspended on the bypass corridor after the crash, reverting to the previous route along the waterfront.

The National Transportation Safety Board (NTSB) investigation concluded in 2019 and identified several contributing factors to the derailment, including the lack of Positive Train Control (PTC) on the railroad segment (sensors had not yet been placed on the tracks). PTC is a technology designed to prevent overspeed derailments as well as train-to-train collisions, incursions into established work zone limits, and movements of trains through switches in the wrong position.[11]

To reopen the bypass, Amtrak, Sound Transit, and WSDOT worked together to address the recommendations in the NTSB investigation report as well as those identified in an independent safety study commissioned by Sound Transit, which owns the tracks. PTC has now been installed and activated on all passenger rail corridors in Washington. Following extensive training and testing of crew members for qualification on the bypass, it was reopened for revenue service in November 2021.

Future of Intercity Rail

Every five years, WSDOT prepares a single, integrated plan for both passenger and freight rail, including ridership and rail volume forecasts as well as station connectivity analysis[12] and strategies for

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[10] Source: Amtrak Passenger Train 501 Derailment, DuPont, Washington (NTSB/RAR-19/01). National Transportation Safety Board. Published May 2019.

[11] Note: The Rail Safety Improvement Act of 2008 required PTC to be fully implemented on any main lines over which intercity or commuter rail passenger transportation is regularly provided. The initial implementation deadline was December 31, 2015, but Congress allowed extensions through December 31, 2020. The FRA reports that all required route miles had PTC in operation by the 2020 deadline. Note and Text Source: USDOT Federal Railroad Administration PTC Overview. Updated September 2021.

[12] Connectivity analysis refers to an evaluation of a station area's land use context, availability of transportation services (multimodal connections), and transportation infrastructure (e.g., bicycle lanes, sidewalks, traffic lanes) to identify strengths and weaknesses of existing station access. See Appendix C of the Washington State Rail Plan 2019-2040.

addressing identified issues and needs. The 2019 Washington State Rail Plan identifies the next steps toward faster, more reliable, and more frequent intercity service.

Continued population growth in the region is expected to fuel demand for passenger rail service. Along with other transit services, Amtrak Cascades plays an important role in providing mobility options along the I-5 corridor. The State Rail Plan confirms the long-term vision for intercity passenger rail in Washington first identified in the Long-Range Plan for Amtrak Cascades in 2006, which is focused on increasing the number of trips and reducing travel times to keep intercity rail a competitive mode choice. The state's long-term vision for intercity rail by 2040 is the following: 13 daily roundtrips between Portland and Seattle (with a travel time of 2 hours, 30 minutes); 4 daily roundtrips between Vancouver, B.C. and Seattle (with a travel time of 2 hours, 37 minutes); and a total travel time from Vancouver, B.C. to Portland of 5 hours, 22 minutes.

Determining the timeline for incremental steps toward this vision is contingent on future funding availability and ridership recovery from the pandemic. Now that the Point Defiance Bypass has reopened for passenger service, it is expected that two additional roundtrips between Seattle and Portland (bringing the total to six) will be added once replacement equipment for the trainset damaged in the 2017 derailment arrives and funding for expanded service is secured by WSDOT and ODOT. WSDOT is working on a service development plan for Amtrak Cascades with an implementation strategy to achieve the long-term vision for expanded service.

Reducing delays through collaboration with the railroad owners and Amtrak is also critical to achieving the travel time goals. Additionally, WSDOT is working with U.S. Customs and Border Protection, Canada Border Services Agency, and the British Columbia Ministry of Transportation and Infrastructure to implement preclearance at the international border. Preclearance allows immigration and customs to happen at a single location prior to boarding the train, eliminating the existing customs inspection stop, which could reduce travel time between Seattle and Vancouver, B.C. by up to 10 minutes.

Ultra-High-Speed Ground Transportation

The Legislature instructed WSDOT to study the feasibility of Ultra-High-Speed Ground Transportation, which is defined as transportation capable of test speeds of up to 250 miles per hour, operating on an independent corridor separate from existing freight and passenger rail systems. WSDOT completed a feasibility study in 2017 and, in cooperation with British Columbia, Oregon, and Microsoft, completed a 2019 business case analysis. Refer to Chapter 4 of the plan for more information on the future of ultra-high-speed rail.

Intercity Bus

System Description

Intercity bus service has provided critical mobility throughout the region for several decades. Perhaps the most well-known and longest-running example is Greyhound Lines, which operates a network of

intercity bus service across North America. With terminals in Everett, Seattle, and Tacoma, routes serving the region primarily operate on the I-5 and I-90 corridors, with direct service as far as Vancouver, B.C. to the north, Spokane to the east, and Los Angeles to the south as well as connections to other destinations in the national intercity bus network.

Other private operators serving the region with intercity bus service include Northwestern Trailways, Bellair Charters & Airporter, and Cantrail Coach Lines. Spokane-based Northwestern Trailways operates intercity bus throughout Washington, including one daily roundtrip from Tacoma to Spokane via I-5 and US-2, with stops in Seattle, Everett, and Skykomish. Bellair Charters & Airporter serves Sea-Tac Airport with 16 daily trips between its Central Airporter and Western Washington Airporter routes, making several stops in the region. Cantrail Coach Lines provides three southbound and four northbound daily trips between Seattle and Vancouver, B.C. Other bus services periodically enter and leave the market, like the Greyhound-owned BoltBus, which operated in the region from 2012 to 2021.

Intercity bus also encompasses the rural intercity bus program, which is designed to connect residents in rural and small urban areas to larger urban areas and more transportation options. The FTA requires each state to spend at least 15% of funds received from the FTA Rural (Section 5311) formula grant program for rural areas to develop and support rural intercity bus transportation. WSDOT developed the Travel Washington program, which uses the federal dollars to subsidize four intercity bus routes that fill gaps in the transportation network for rural and small urban areas. WSDOT contracts with private bus companies to operate the services.

The Dungeness Line, a Travel Washington route operated by Greyhound, connects the central Puget Sound region to the Olympic Peninsula. It runs from Seattle to Port Angeles and includes stops in Edmonds and Kingston. The route provides direct connections to several other modes—Amtrak Cascades (intercity passenger rail), Amtrak Coast Starlight and Empire Builder (long-distance passenger rail), Sounder (commuter passenger rail), and Greyhound (intercity bus)—at King Street Station in Seattle and terminates at Sea-Tac Airport.

Existing Conditions

WSDOT conducted a rider survey as part of the outreach for the 2019 Travel Washington Intercity Bus Plan Update. According to the survey, across all four Travel Washington routes 86% of riders indicated they were traveling alone, potentially diverting some number of single-occupancy vehicle trips off the roadways.[13] However, 22% said they did not have a driver's license and 57% indicated they either didn't have a vehicle, their vehicle was not available, or was not in adequate condition to make the trip. Intercity bus ensures mobility for people who might not have other transportation options.

The Dungeness Line carried over 15,000 riders in 2018, outperforming projections by 2,200 riders and accounting for half of all Travel Washington bus riders that year. This is due, in part, to more population located along the Dungeness Line and the demand generated by Sea-Tac Airport. Ridership on this route is highly seasonal, with peak demand in the summer, whereas other routes are more consistent

[13] Source (for all ridership survey data in this section): 2019 Travel Washington Intercity Bus Plan Update. Washington State Department of Transportation. Published September 2021.

throughout the year.

Future of Intercity Bus

Based on a needs assessment, service data for existing routes, and public and stakeholder input, WSDOT identified 22 route expansion alternatives for the Travel Washington program. Two of these expansion alternatives provide service to/within the central Puget Sound Region: an additional Dungeness Line that deviates south through Kitsap and Pierce counties and terminates in Tacoma instead of continuing east to Seattle via Kingston, and an extended version of the existing Dungeness Line that continues west across the Olympic Peninsula, from Port Angeles to Forks (creating a Forks to Sea-Tac Airport route). Due to other needs around the state and limited funding, these expansions ranked very low in prioritization scoring and are not likely to be pursued at this time.

An on-going priority is coordinated scheduling between modes and services, especially at shared terminals like Edmonds Station and Seattle's King Street Station. The rider and stakeholder input gathered for the 2019 Intercity Bus Plan Update indicated that more could be done to improve the passenger experience of making connections from intercity bus to other services at shared terminals.

Other Local Transit Providers with Service to the Region

In addition to intercity bus lines, there are also local transit providers in smaller urban areas bordering the region that operate longer-distance or commuter routes into the central Puget Sound region. Examples include Intercity Transit, Skagit Transit, and Clallam Transit routes.

Intercity Transit in Thurston County operates a limited stop service from Olympia to the SR 512 Park-and-Ride in Lakewood, where riders can connect to Pierce Transit local bus and Sound Transit ST Express bus.

Skagit Transit operates the Skagit Snohomish Connector, an express route from Burlington to Everett via Mount Vernon. Today riders can connect to Community Transit Swift Blue Line BRT and local bus, Everett Transit local bus, and Sound Transit Sounder commuter rail at Everett Station. Island Transit in Island County also provides service connecting Whidbey Island and Camano Island with local transit in Snohomish County.

Clallam Transit in Clallam County operates a commuter bus that connects Port Angeles and Sequim with Poulsbo and the Bainbridge Island Ferry Terminal. From these stops, riders can connect to local Kitsap Transit routes or the Washington State Ferries Bainbridge-to-Seattle route. Mason Transit Authority in Mason County and Jefferson Transit in Jefferson County also provide public transit service to Kitsap County from other parts of the Olympic Peninsula.

Multimodal connections to services bordering the region enhance the function and reach of the regional transit network and provide more transportation choices for people making longer trips within the region and beyond.

Ferries

The waters of Puget Sound and its nearby lakes have provided a convenient way to transport people and connect communities since pre-European contact. By the late 1800s and early 1900s, the waters of Puget Sound were bustling with a Mosquito Fleet of privately operated ferries that transported millions of people across Puget Sound, Lake Washington, and other waterways. The marine environment is still an important transportation thoroughfare for this region.

Passenger-only and multimodal ferries are an important component of the integrated high-capacity transit network envisioned in VISION 2050.

Existing Conditions

Four agencies provide ferry service within the central Puget Sound region: King County Metro and Kitsap Transit provide passenger-only ferry service as another mode of service for their customers, while the Washington State Ferries and Pierce County Ferries provide multimodal ferry service that allows automobile access as well as pedestrian and bicycle access.

As of 2018, there were 23.4 million boardings on ferries in the region. Approximately 1.5 million of these boardings occurred on the growing passenger-only ferry services, while the rest were on state and county ferries.

Definitions

Ferries: Public transit that connects communities by marine vessel. Ferries can include passenger-only ferries that accommodate pedestrian and bicycle access or multimodal ferries that also allow automobile transportation. In Washington state law ferries are also defined as marine highways.

Washington State Ferries provides six routes that serve the region. Washington State Ferry routes within the central Puget Sound region provide the highest ridership in the state's system. Pierce County Ferries serves two rural islands in the south part of the region. King County Metro provides two routes for its Water Taxi passenger-only ferry service, and Kitsap Transit provides four passenger-only ferry routes: two local Foot Ferry services and three cross-Sound Fast Ferry services.

Trends and Data Collection

As of 2018, all ferries within the region were experiencing passenger growth. However, passenger-only ferries were experiencing the fastest growth, as Kitsap Transit rolled out its new cross-Sound Fast Ferry service. Passenger-only ferries grew 64% from 2014 to 2018 while multimodal ferries grew only 6%. Ferry service in the region tends to include seasonal variation with higher demand for passenger service in the warmer summer months compared to the winter. This is partially the effect of tourist and recreational ferry travel demand, with many ferry service providers adding additional trips to respond to that increased seasonal demand.

As with the regular transit modes described earlier, the COVID-19 pandemic has decimated ferry

ridership in the region near-term. The combination of an aging ferry fleet and lack of qualified trained staff in the workforce has created additional reliability challenges for Washington State Ferries' services. Similar to rail and bus transit, noted in other sections of the RTP, the region is anticipating ferry ridership will recover as people return to in-person work and activities. PSRC will continue working with ferry and other public transit partners to monitor recovery of ridership and potential changes to travel patterns.

Needs, Gaps & Opportunities

Washington State Ferries (WSF) completed its long-range plan update in 2019, extending its planning horizon to 2040. The WSF plan identified key needs and opportunities for the agency to address, including:

- **Stabilize its aging ferry fleet:** The WSF 2040 Long Range Plan identifies the need for 16 new ferry vessels by 2040 in order to replace aging vessels and to provide necessary relief vessels to ensure reliable ferry service. The new vessels combined with retirement of aging vessels will bring the ferry fleet from 21 vessels in 2021 to 26 vessels by 2040. Although 10 existing vessels will not have reached the end of their useful life within the timeframe of the Regional Transportation Plan, the three Jumbo Mark II vessels will be approaching the end of their useful asset life by 2050.
- **Invest in new, greener vessels through electrification:** The WSF plan identifies the need near-term to complete electric-hybrid conversions of its largest vessels and to continue reducing carbon emissions with the construction of new electric-hybrid vessels and terminal electric charging infrastructure.
- **Enhance its customer experience:** The WSF plan also calls for investing in technology that gives customers more information to support better trip planning, modernizes fare collection and provides operational efficiencies. Within this area, WSF also calls for improving accessibility and wayfinding in and around vessels and terminals to support, among other things, increased multimodal connections.

In early 2021, PSRC completed the Puget Sound Passenger-Only Ferry Study and identified potentially feasible routes within the 12 counties bordering the Puget Sound. This study described common needs and opportunities for passenger ferries that the two operators in the region (King County Metro and Kitsap Transit) have identified in the long-term planning for their systems. The Findings from the study included:

- **Importance of time-competitive travel:** Potential passenger-only ferry routes must be time competitive to be viable public transit options. Factors such as vessel speed, additional stops between destinations and the speed and reliability of land-based transportation alternatives all factor into the time competitiveness of this form of public transit.
- **Need for planning and coordination around new routes:** The study reinforced the need for early planning, collaboration, and community engagement in development of new potential passenger-only ferries. Even for theoretically time-competitive routes, specific route characteristics that include presence of confined waterways, vessel speeds, currents, wind actions, and shore-side multimodal connections are all vital considerations in creating a viable route. In addition, operation in the marine environment creates additional considerations that

are not part of standard transit planning, including consideration of Tribal treaty rights and sensitive habitat and marine mammal protection. Finally, public engagement and support for terminal location within a community is important to ensuring the success of a route.

- **Downtown Seattle terminal capacity:** The existing passenger-only ferry terminal at Pier 50 is at capacity with existing routes. The current facility limits additional trips on existing routes, and does not have capacity for new passenger-only ferry routes serving downtown Seattle. Kitsap Transit is leading a study of additional passenger-only ferry terminal capacity in this area (expected completion in late 2021).
- **Electrification:** Similar to investments in electrification identified under multimodal ferries, passenger-only ferries have an opportunity to leverage terminal electrification efforts and to use emerging technologies to provide more environmentally friendly and potentially cost-efficient travel.

Future Conditions

As the region continues to grow, there will be growing demand for travel across Puget Sound and its nearby lakes. Ferry travel as a form of public transit will continue to have a role in providing a reliable time-competitive option for travel within the region and potentially connecting outside of the region. The plan includes growth to 10 passenger-only ferry routes and investments in multimodal ferries that provides improved reliability and customer experience, including improved multimodal access to ferries.

Plan Outcomes

Plan investments expand the number of passenger-only ferry routes by three to 10 routes total, including the first two modern routes on Lake Washington. Although the number of multimodal ferry routes remain the same, multimodal ferry boardings (e.g., walk-ons and bike-ons) are projected to increase 75% by 2050, supported by investments in vessels and terminal upgrades that improve reliability and customer experience. Meanwhile, passenger-only ferry boardings will increase by more than seven times by 2050. By 2050, 65% of all ferry walk-on/bike-on ridership will occur on passenger-only ferries compared to only 30% in 2018. Ferries maintain around 3% of all public transit boardings in 2050, similar to 2018. This is largely because other high-capacity transit modes, such as light rail and BRT have a more significant growth in ridership over that timeframe.

What's Ahead?

Ferries have many of the same emergent issues as regular transit. Both access to transit and planning for transit investments to 2050 are applicable to the ferry mode of transit, with some unique aspects relevant to ferries that are highlighted below. In addition, because ferry vessels have such a long asset life and lead time for construction, planning for vessels to maintain service reliability is a particular emphasis for ferries.

Access to Ferries

The emphasis areas of access, safety and equity noted elsewhere in the plan are also applicable to the ferry mode of transit. Ferries, as part of the marine environment, do have a unique context. As described under the Needs, Gaps & Opportunities section, planning for new ferry service in terms of

new routes or additional trips will need to take into consideration the other users of the marine environment, marine mammals and ecological factors, and features such as confined waterways. Ferries, unlike land-based transit, have more limited TOD potential, given adjacency of ferry terminals to the marine environment. Providing a seamless transfer environment between modes of transit (bus, rail, etc.) at ferry terminals is important to encouraging walk-on and bike-on ferry ridership. Ferry agencies should work closely with rail and bus agencies and local jurisdictions to make this transfer as seamless to the customer as possible.

Planning for ferry investments to 2050

Similar to regular transit, extending the planning horizon year beyond existing long-range plans provides ferry operators an opportunity to imagine what new ferry investments may be appropriate to implement the regional growth strategy in VISION 2050. This could include:

- **Envisioning the next set of passenger-only ferry routes:** The Puget Sound Passenger-Only Ferry Study assessed the feasibility of several different potential routes and service types within the region and connecting the region to other parts of western Washington. See Chapter 4 for more information on this topic.
- **Maintaining and updating transit agency long range plans:** Two of the current passenger-only ferry operators are transit agencies with long range plans. Passenger-only ferries should be incorporated into these plans as a mode of public transit, and transit agencies should include PSRC early in their plan update processes and incorporate an assessment of how their long-range plans are consistent with and implement VISION 2050. PSRC will also continue review of transit development plans and other transit agency planning documents, as appropriate.
- **Washington State Ferries Long Range Plan.** WSF adopted its most recent long-range plan in 2019 with a planning horizon year of 2040. The agency's long-range vision includes near-term system stabilization, medium-term building infrastructure, and long-term responding to growth. The agency should continue plan implementation and extend its planning to 2050 as cities and counties complete their comprehensive plans to ensure that the agency continues to manage growth into the long term.

Long-range planning for vessels and terminal capacity

Ferries have a long asset life. Washington State Ferries maintains its ferry fleet vessels for 50+ years. In addition, it can be a long and complicated process to identify and construct ferry terminal improvements. Therefore, this long lead time calls for ferry agencies to take a proactive approach to planning for vessel replacement and terminal capacity. WSF's long-range plan calls for increasing its ferry fleet from the current 21 vessels to 26 vessels by 2040. In the near-term, the number of vessels and shortage of skilled mariners in the workforce are affecting system reliability.

The agency's long-range plan for vessel replacement and workforce development is intended to help the agency get ahead of these issues and provide both a reliable ferry schedule as well as to plan for system growth. A combination of vessel replacement, transportation demand management, and operational and technological efficiencies are intended to allow for ferry system growth within the constraints of newly expanded 26 vessel fleet. Terminal improvements for the agency, currently planned out to 2040, include completion of major preservation or improvement projects (including in

some cases electrification improvements) at every WSF terminal in the central Puget Sound region. For example, the Seattle Colman Dock preservation project is underway and scheduled for completion in 2023, while the Bremerton ferry terminal is scheduled to receive modifications for electric-hybrid vessel plug-in capability in the WSF medium-term planning period.

Bicycle and Pedestrian

VISION 2050 calls for promoting and improving pedestrian and bicycle transportation[14] networks to support an accessible and sustainable regional transportation system. These planning efforts focus on providing safe, connected routes for walking and bicycling, and improving access to transit and neighborhood destinations to enhance communities and encourage physical activity. VISION 2050 includes a goal for 65% of the region's population growth and 75% of the region's employment growth to be located within walking distance of high-capacity transit by 2050. Comprehensive bicycle and pedestrian infrastructure will be critical to achieve this goal.

The Regional Transportation Plan recognizes active transportation, such as walking or cycling, as an essential element of the region's transportation system. The region's existing sidewalks, bicycle facilities and trails provide vital connections to transit and other local and regional destinations. However, there are substantial gaps in the facility network, leaving people unable to walk and bicycle to their destinations in some areas, particularly in less urban areas. "Last Mile" bicycle and pedestrian connections from transit routes and stations to neighborhoods, local commercial areas, schools, and other important destinations are critical to make transit a viable option for people. Potential users are less likely to see walking and biking as viable transportation options if facilities are disconnected or appear to be unsafe. Concerns about the safety of facilities are not unfounded; pedestrian serious injuries and fatalities increased considerably over the past decade in the central Puget Sound region.

Through the implementation of the plan, the region can advance many of the VISION 2050 policies for ensuring equitable access to a safe and well-connected active transportation network as the region grows.

Existing Conditions

To help support efforts to improve walking and biking travel, PSRC has sought to better understand the current state of active transportation in the region. This section describes work the agency has undertaken to collect data on existing conditions, as well as key findings from the information gathered.

Regional Travel Patterns

Walking and biking make up a relatively small but essential portion of trips in the region. In 2018, residents made an estimated 1.8 million daily walking trips and150,000 bicycle trips, representing 14% of all trips taken in the region. Generally, walking makes up a larger share of trips than biking as

[14] For purposes of this section, "pedestrian and bicycle transportation" encompasses travel by walking, cycling, mobility device (wheelchair or power scooter), and small personal devices, such as foot scooters. This includes both traditional and electric assist devices.

not all people in the region are cyclists, but everyone will at some point be a pedestrian.

Most trips using active transportation are short compared to trips using other modes. In 2018 the average person in the region walked or biked about 11 minutes for transportation purposes each day, with an average trip length of 0.8 miles. Around 80% of all walking trips were less than one mile, while almost all were less than three miles. For biking, about 60% all of all trips were three miles or less. See the System Performance section for more information.

Active transportation varies widely by geographic location, with people in urban areas more likely to walk or bike than people living in rural areas. Within PSRC's designated Regional Growth Centers, over 40% of daily trips are by walking and 3% are by bicycle, which is a far higher share than the region as a whole. For example, in downtown Seattle more than 60% of daily trips are by walking, and in Seattle's University District almost 7% of trips are by bicycle. Other notable examples of centers with high shares of active transportation trips include Bellevue, Bremerton, downtown Tacoma, and Everett, where between 40% and 50% of trips are active transportation.

In addition to location, walking and biking trends vary by demographic characteristics. Generally, households with people of color and with low incomes have fewer vehicles than the average household in the region. Accordingly, areas with high concentrations of people of color and people with low incomes have more walking and biking trips than other areas. While in 2018 the regional average for walking and biking was 11 minutes per day, residents in areas with high concentrations of low-income populations (above 50% threshold) walked or biked around 14 minutes a day and residents in areas with high concentrations of people of color (above 50% threshold) walked or biked 12 minutes per day. See the Appendix F (Regional Equity Analysis) for more information.

Pedestrian and Bicycle Facility Connections

To learn more about current active transportation travel and infrastructure, PSRC has been working to build consistent regional inventories of sidewalks and bicycle facilities on arterials, and shared use paths in separate rights-of way. In 2019 and 2020, PSRC conducted a survey of every jurisdiction in the region to gather information on bicycle and pedestrian facility data and travel counts. The facility data collected provides comprehensive information on bicycle and sidewalk facilities on arterials and shared use paths in the region, including the existence, completeness, and type of facility. This inventory helps to provide baseline data for informing regional and local planning and to identify needs and gaps in the network. See Appendix A (Transportation System Inventory) for more information.

The data collected gives information on facility coverage for the almost 3,000 miles of arterials in the region. At the regional level, a little over half of arterials have some presence of sidewalks and about 40% have complete sidewalk coverage, meaning facilities on both sides of the street. At the regional level, 37% of arterials have some presence of bicycle facilities, while 25% have complete coverage. By county, King County has the highest degree of arterial facility coverage for both pedestrian and bicycle facilities, followed by Snohomish, Pierce, and Kitsap counties.

Bicycle facilities were further categorized by type. Overall, paved and striped shoulders are the most common bicycle facility type, representing almost half of facilities in the inventory. The next most common facility types are striped bicycle lanes, marked shared lanes (or "sharrows") and adjacent shared use paths. Though a growing presence, protected and buffered bicycle lanes still only make up 3% of bicycle facilities in the region. Of those, about a third are located in Regional Growth Centers.

Arterials within urban areas are far more likely to have sidewalks than those outside of the urban growth area (UGA). About 75% of arterials in the UGA have some sidewalks, compared to only 5% of arterials outside the UGA. Bicycle facilities are somewhat more common outside of the UGA, at 40% of arterials in the UGA compared to 60% outside of it. For bicycle facilities, the most common types in the UGA are striped bicycle lanes, paved and striped shoulders and marked shared lanes, while outside of the UGA the large majority (about 95%) are paved and striped shoulders.

Similarly, designated Regional Growth Centers (RGCs) have more nonmotorized facility coverage than the region as a whole. Altogether, almost all of arterials (about 95%) in RGCs have some sidewalk coverage and about a third have some bicycle facility coverage. Arterial sidewalk coverage in RGCs ranges from 70% to 100% in RGCs like Kent and Federal Way. There is significant variation in the degree of arterial bicycle coverage when looking at centers individually. About a third of RGCs have less than 10% coverage for bicycle facilities on arterials, while centers like University Place and Canyon Park in Bothell have almost full coverage.

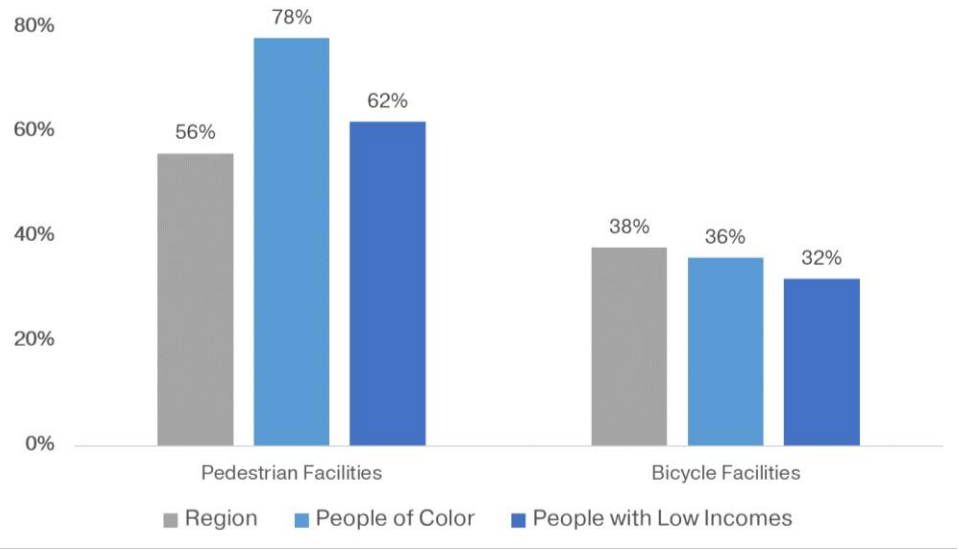
In addition to arterial facilities, PSRC identified 417 miles of shared use paths on separate rights of way in the region. For the inventory, this included only shared use paths that both met basic design criteria and connected regional destinations, like RGCs and high-capacity transit stations. Regional shared use paths are well represented in both urban and rural areas, with 70% located within the UGA and about a third outside of it. By county, the largest share is located within King County, followed by Snohomish, Pierce, and Kitsap.

Connectivity Near Residences

For facility coverage near where people live, the majority of people in the region have at least some sidewalk and bicycle facility coverage in their neighborhoods. About 85% of people have sidewalk coverage on a quarter of arterials near their home, while about 65% have coverage on half of the facilities near their home. For bicycle facilities, at the regional level over half of households have striped bicycle lanes within one mile of their home, while about 15% live within a mile of protected bicycle lanes or adjacent shared use paths.

In addition to looking at general network access, PSRC reviewed the bicycle and pedestrian facility inventory to better understand the availability of facilities for historically marginalized and underserved communities. As shown in Figure 10, tracts with high proportions of people of color have significantly higher sidewalk coverage on arterials compared to the region as a whole, while bicycle coverage is fairly similar. Similarly, arterials in tracts with higher concentrations of people with low incomes have somewhat higher sidewalk coverage and similar bicycle coverage compared to the overall region.

Figure 10 - Nonmotorized Facility Coverage on Arterials, by Census Tracts



The likely reason that these areas have more complete sidewalk coverage than other areas is because they are located in more urban areas of the region, where pedestrian facility coverage is generally higher. It is also important to note that this inventory does not include data for facilities on local roads or data on the quality of facilities available in these areas.

Connectivity in Transit Station Areas

As the region builds out its high-capacity (HCT) transit network to 2050, it will be important to ensure sufficient access for people walking and biking. As noted earlier, convenient, safe bicycle and pedestrian connections are critical for transit to be a viable choice for many users, a core VISION 2050 goal. The large majority of trips to access transit services are by walking or biking. As of 2018, about 85% of riders walked to access transit services and 1.4% went by bicycle. To learn more about nonmotorized access to transit, PSRC looked at bicycle and pedestrian facility coverage on arterials within a half mile of high-capacity transit and a quarter mile of non-HCT transit stations. These distances were chosen because they are the distance users are generally willing to walk to access each type of transit service.

As shown in Figure 11, most HCT and non-HCT station areas already have fairly extensive sidewalk coverage. However, a significantly smaller percentage of station areas feature widespread bicycle facility coverage, as can be seen in Figure 12. Almost all (99%) HCT stations have some (at least 25% of arterials) sidewalk coverage, but only a third have full coverage. For non-HCT stations, about 80% have some arterial sidewalk coverage while about half have full coverage. About half of HCT and non-HCT transit stations have some (at least 25%) bicycle facility coverage on arterials. However, only 0.2% of HCT station areas and 13% of non-HCT station areas have full coverage.

Figure 11 - Pedestrian Facility Coverage on Arterials Near Transit Stations

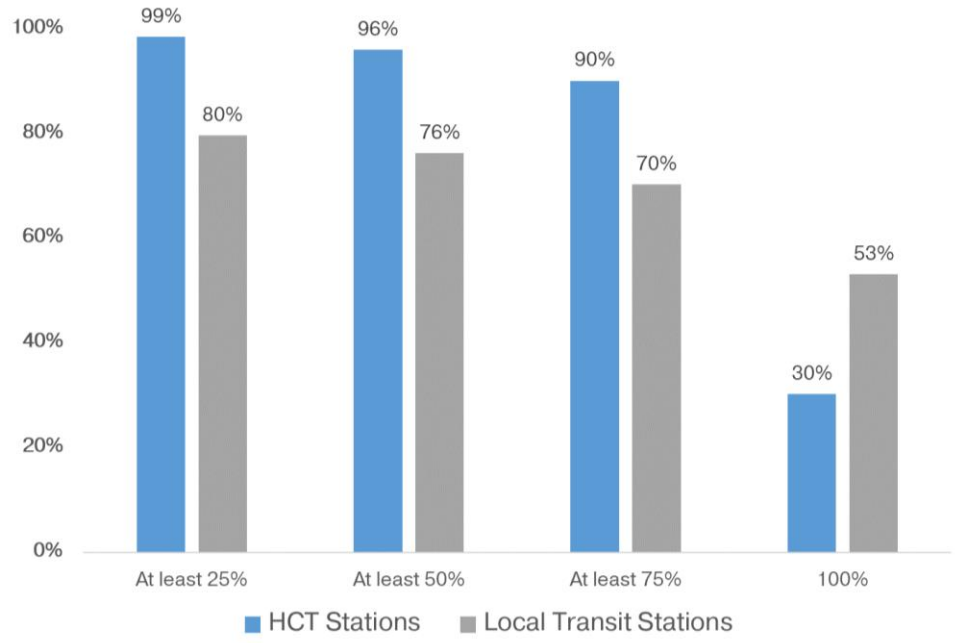
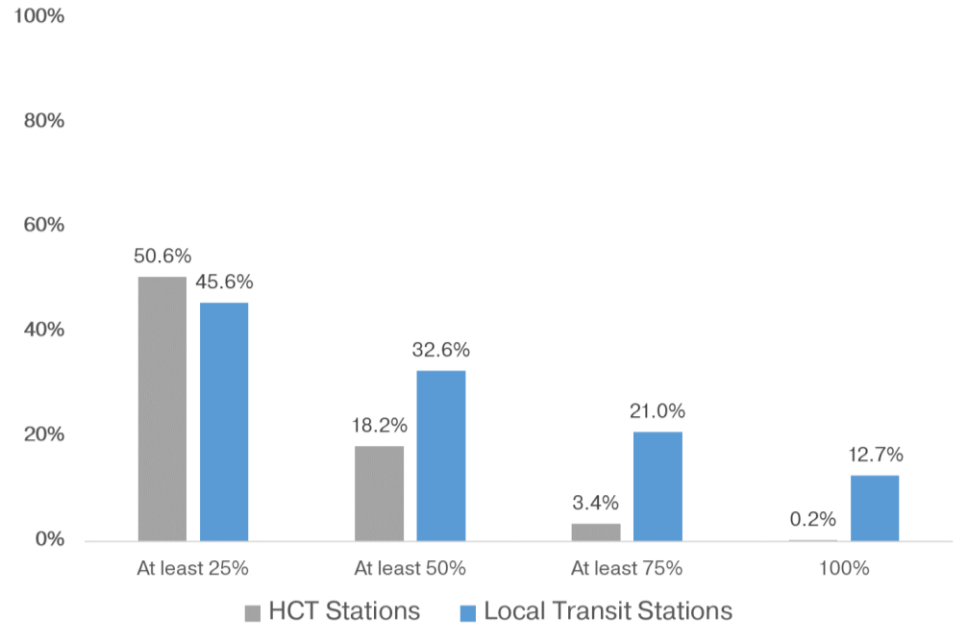


Figure 12 - Bicycle Facility Coverage on Arterials Near Transit Stations



Another way of looking at transit access is examining how many residents live within walking or biking distance to transit stations. At the regional level, in 2018 about a quarter of residents lived within a half mile of high-capacity transit. This percentage is forecast to increase significantly to almost 60% of people in the region living near high-capacity transit by 2050.

Bicycle and Pedestrian Safety

In recent years pedestrian and bicyclist injuries and fatalities have increased significantly in the central Puget Sound region, particularly for pedestrians. Between 2010 and 2019, pedestrian serious injuries

and fatalities increased by 27%, while bicyclist serious injuries and fatalities increased by 1.5%. During the same period, serious injuries and fatalities for motorists decreased by 3.6%. For context, population grew almost 14% between 2010 and 2019, and the number of people who walked or biked to work grew by 34%.

Travel in intersections was the factor most often associated with serious injuries and fatalities, which could point to conflicts between different modes during crossings and turnings. Looking at trends for this time period shows that there was an almost 90% increase in the number of serious injuries and fatalities associated with distracted users, which includes both drivers and active transportation users. An adopted multicounty planning policy (MPP T-4) commits the region to improve the safety of the transportation system and, in the long term, achieve the state's goal of zero deaths and serious injuries by the year 2030. More information on safety trends, ~~and~~ activities, and work to develop a regional safety plan may be found in Chapter 2.

Needs and Opportunities

PSRC has been working with its stakeholders to determine how the region can ensure connected and safe options for accessing destinations by walking and biking. This section looks at needs and opportunities for improving active transportation conditions as the region grows, including some highlights of work local jurisdictions are already accomplishing in their areas.

Some recent examples of local projects for improving nonmotorized gaps in transit station areas include:

- The City of Tacoma Links to Opportunity Project was initiated in 2016 to engage the community in designing streetscape improvements along Sound Transit's Hilltop Tacoma Link Extension route. Based on community feedback, the city is currently making pedestrian improvements in the station area and planning to add a bicycle boulevard and a festival street.
- The City of Lynnwood has been working with Sound Transit on nonmotorized improvements at the future Lynnwood City Center Station, including a pedestrian promenade and plaza, and improved shared use path connections to the station area and Interurban Trail.

What Have We Heard?

In 2021, PSRC staff engaged in a number of outreach activities to learn about the needs and priorities of the public for the regional transportation system, including through a regional survey. From this survey, Kitsap County respondents gave low quality ratings for sidewalk infrastructure and lighting near where they live, while bicycle lane infrastructure rated low across the region. In addition to the survey, PSRC conducted meetings and focus groups with people with special transportation needs. Participants particularly noted that a lack of suitable physical infrastructure, such as curb ramps, makes it difficult for them to access the services they need. See the Specialized Transportation section for more information.

PSRC has also been increasing its understanding of the various approaches jurisdictions in the region use to improve their active transportation infrastructure. Currently, about half of jurisdictions in the region have adopted specific "Complete Streets" regulations. Although not every jurisdiction has adopted a Complete Streets code, many have adopted similar policies and regulations that do not

explicitly use that terminology. On the planning side, every jurisdiction in the region includes policies and plans for improving active transportation infrastructure in their municipal and county comprehensive plans. About a quarter of jurisdictions also have separate stand-alone active transportation plans for improving their networks.

Transit Access Opportunities

Transit agencies in the region have been working to ensure seamless access to transit for pedestrians and bicyclists through improvements to facilities at transit stations and stops. Examples of ongoing and recently completed projects include:

- Pierce Transit appointed a Mobility Coordinator to create an inventory of access surrounding the most common places traveled to by bus. The project measured barriers to access near those places, such as hills, uneven terrain, and lack of curb ramps or sidewalks.
- In 2019, Sound Transit approved $40 million in funding for local jurisdiction implementation of transit access projects in its station areas. Additionally, the agency has been working on an implementation plan to improve passenger access to Sound Transit's existing and future stations and facilities.
- Washington State Ferries is constructing active transportation facilities for people walking and biking to access its Seattle Multimodal Terminal at Colman Dock, including an Elevated Pedestrian Connector, Marion Street Pedestrian Bridge and new pedestrian promenade on Alaskan Way, as well as a new dedicated entrance and covered holding area for people biking.

In addition to providing sidewalks, bicycle facilities and shared use paths near stations, transit agencies have been working to ensure that active transportation users can safely stow their equipment at stations and on vehicles. As an example, Kitsap Transit recently renovated its Bicycle Barn at the Bainbridge Island Ferry Terminal at Winslow with security and accessibility improvements, as well as dedicated spaces for electric bicycles.

Access and Safety Opportunities

Potential users may be discouraged from using active transportation by the perception that facilities are unsafe. They also may also simply lack information about how to access walking and biking routes. Cities and towns in the Puget Sound region have a number of programs to encourage more walking and biking through education, outreach and wayfinding.

Transit Demand Management (TDM) programs use education, incentives and other strategies to encourage travel by transit, carpooling and walking and biking. As an example, the City of Bellevue administers its SchoolPool program in partnership with King County Metro. Through this program, the city encourages families to explore active transportation for school trips, which could help alleviate congestion at drop-off and pick-up times. During the 2018-2019 schoolyear, the program helped families avoid almost 100,000 single-occupancy vehicle trips to and from school. See the TDM section for more information.

Wayfinding strategies include providing signage, maps and group walks to help users orient themselves and find routes to their destinations. As an example, the City of Seattle has been working with King County Metro, Sound Transit, and others on its Seamless Seattle Pedestrian Wayfinding program. This program will directly support walking and transit user experiences by providing

consistent, map-based wayfinding information for users to be able to easily orient themselves and find key destinations close to transit stops.

To improve safety for active transportation, many jurisdictions in the region use local crash data to analyze risk factors at key locations and plan safety improvement projects and programs. Some strategies for improving nonmotorized safety include creating safer pedestrian and bicycle pathways and employing road design techniques, such as street calming measures in residential areas. On the educational side, jurisdictions work to inform both drivers and active transportation users about road safety through campaigns and other events. Jurisdictions may also deploy targeted enforcement efforts to deter unsafe user behavior. See Chapter 2 for more information.

Future Conditions

Planned Investments to 2050

The Regional Transportation Plan calls for investment in well-connected bicycle and pedestrian networks that provide access to transit. Looking out to 2050, the plan includes a number of nonmotorized projects that will help realize these objectives.[15] Planned investments include 30 projects for new regional trails or extensions to current routes. These projects will help increase shared use path circulation and close some of the current gaps in the trail network. A few highlights include extensions to the Sound to Olympics Trail, East Lake Sammamish Trail, Green River Trail and Pipeline Trail.

Beyond trail projects, the majority of roadway and transit projects in the plan also include components for improving bicycle and pedestrian facility connectivity, safety and access to transit. Examples include improved sidewalks and bicycle lanes near Community Transit's Swift Bus Rapid Transit routes and a new trail connecting the Tacoma Dome Station to the entrance of Mt. Rainier.

In addition to the trail projects captured in the Regional Capacity list, jurisdictions are planning many smaller scale projects for improving bicycle and pedestrian infrastructure in local areas, such as Regional Growth Centers and high-capacity transit station areas. Beyond these investments in expanded infrastructure, cities and counties will continue to maintain and preserve the current nonmotorized network, and encourage more active transportation through education, outreach and safety programs.

Active Transportation in 2050

PSRC's forecasts show that with the transit-focused regional growth strategy and the planned investments in the transportation system, the average person is forecast to walk or bike 21% more in 2050 than in 2018. The share of trips by walking and biking is expected to grow from 14% of all trips in 2018 to 20% by 2050, and the average time spent walking or biking for transportation purposes is

[15] The RTP Regional Capacity Project list includes only planned projects that meet the regional thresholds. For stand-alone bicycle and pedestrian projects, only projects over $20 million on separated pathways on dedicated rights of way are included on the list. All other stand-alone bicycle and pedestrian projects are considered programmatic so are not required to be on the list. More information is available here: https://www.psrc.org/sites/default/files/rtp-201806regionalcapacityprojectlistthresholds.pdf

forecast to increase from 11 minutes per day to 14 minutes. With the expanding high-capacity transit system almost 60% of households will live within a half mile of HCT transit service, meaning a larger proportion of households will be able to walk or bicycle to transit in the future.

What's Ahead?

PSRC works with its member agencies and the Bicycle and Pedestrian Advisory Committee to support local coordination of planning for active transportation in the region. These groups include representatives from cities, counties, transit agencies and other entities responsible for planning and implementing nonmotorized projects and programs. On a regular basis, the agency has been working with these groups and other local stakeholders to review walking and biking data, discuss current and emerging issues, and look at performance monitoring of regional outcomes.

The following key themes have emerged for improving active transportation as the region grows, including:

- **Improve network connectivity, particularly for accessibility to the transit system.** Expanding and improving facilities in areas with disconnected networks will enhance multimodal system continuity and encourage more active transportation and transit usage. This will be critical to help meet VISION 2050's goals for safe, convenient pedestrian access to transit. Local jurisdictions should prioritize filling network gaps and expanding nonmotorized coverage when planning transportation projects, particularly in transit station areas.
- **Include equity in the evaluation of needs.** To ensure equitable access to nonmotorized facilities, local jurisdictions should assess the needs of historically disadvantaged populations when planning active transportation projects and programs.
- **Emphasize safety improvements for bicyclists and pedestrians.** To help the region reach its safety goals, local jurisdictions should place an emphasis on pedestrian and bicyclist safety as part of their transportation projects and programs.
- **Continue to refine active transportation performance metrics.** Tracking and refining current metrics for walking and biking will help the region meets its long-range goals for improving accessibility, safety and public health.

Streets and Highways

Streets and highways throughout the region provide the foundation of the multimodal transportation system. Street rights-of-way may include vehicle lanes, transit lanes, bicycle lanes, sidewalks or shoulders, and/or planted strips that provide buffers between vehicular and non-vehicular traffic. Buses, streetcars, freight trucks, automobiles, bicycles, pedestrians, and sometimes light rail all travel via the street network, sometimes in space dedicated to their specific travel mode and sometimes mixed in shared space.

VISION 2050 calls for a multimodal transportation system that supports the regional growth strategy, with strategic expansion of capacity and increased efficiency of the system to move goods, services and people.

Population and jobs are expected to increase 41% and 48% respectively by 2050. This will increase demand for all transportation modes that use the street and highway network, requiring measures to improve the efficiency and capacity for safely moving people and goods. Land use and transportation policies established in VISION 2050, as well as strategies to improve pedestrian, bicycle, transit, automobile, and freight travel modes described in this Regional Transportation Plan, all factor together to impact the operating and safety conditions on the street and highway system. Other elements of the plan also affect these operations. Transportation Demand Management (TDM) strategies seek to encourage travel by transit, carpooling, walking, biking, and telecommuting, and discourage drive-alone travel, allowing the street and highway system to be used more efficiently. Intelligent Transportation Systems (ITS) measures use technology to enhance safety and utilize existing street capacity more efficiently. See the TDM and Technology sections for more information.

Right-of-Way

Public land reserved for transportation uses including vehicle lanes, bicycle lanes, sidewalks, trails, rail, parking, and buffers between modes, as well as utility and stormwater management uses.

Existing Conditions

The region's street and highway system consists of:

- Highways generally carry the highest volumes of vehicular traffic, including trucks, buses, and automobiles. Freeways and expressways are high-speed with controlled access, and do not generally accommodate pedestrian or bicycle travel. Other state highways (state routes) function more as arterials and serve vehicular and nonmotorized travel, as well as providing access to adjacent properties.
- Arterials and Collectors are high-volume streets that serve a higher mobility function as well as provide some access to properties. Of these, Principal Arterials have the highest traffic volumes and lowest access function. Minor Arterials have lower volumes than Principal Arterials

but higher than Collectors, which provide connections between arterials and the local street system. Arterials and collectors serve all modes of transportation. Because they carry higher vehicle volumes, design standards for these types of roadways may seek to separate pedestrians and bicyclists from vehicular traffic to the extent that right-of-way width allows.

- **Local Streets** primarily provide access to residential and commercial properties. They are lower-speed, lower-volume roads that typically serve automobile, bicycle, and pedestrian travel, as well as vehicle parking and door-to-door freight deliveries.

Streets and highways in rural areas have operational and design characteristics unique to their urban counterparts. For example, while arterials in the urban area serve major activity centers and connect residential areas to employment centers, arterials in the rural area often serve longer through trips and are spaced more infrequently, providing fewer direct connections. See the Appendix A (Transportation System Inventory) for a more complete inventory of the region's streets and highways.

State System

The Washington State Department of Transportation (WSDOT) leads the planning, operation, maintenance, and improvement of all Interstate and U.S. highways (I-5, I-90, I-405, and US -2 in the central Puget Sound region) as well as segments of state routes that serve as access-controlled freeways. WSDOT is also responsible for some highways that function as arterials, as well as freeway ramp intersections, but typically works closely with the local jurisdictions where they are located for their planning, operation, maintenance, and improvement. Projects on these facilities may be led by either WSDOT or the local jurisdiction.

Overview of WSDOT's Managed Lanes System

The state's Managed Lanes System is one approach WSDOT uses to operate its highway facilities efficiently. The system includes High Occupancy Vehicle (HOV) lanes, Express Toll Lanes, and High Occupancy Toll (HOT) lanes that are designed to maximize the movement of people and encourage commuters to use transit or travel together to save time and reduce traffic volumes and congestion.

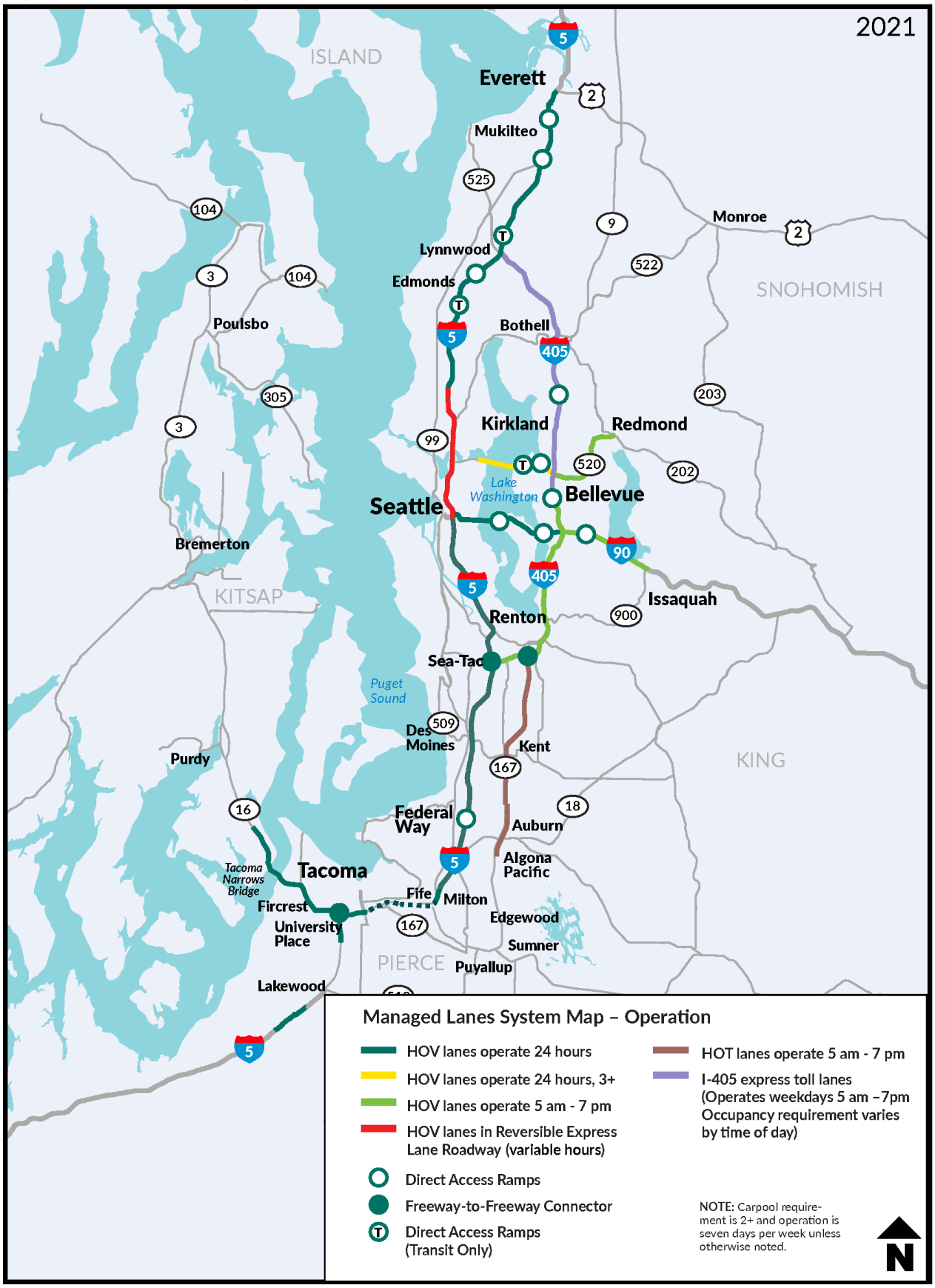
Types of Managed Lanes

High Occupancy Vehicle (HOV) lanes - Also known as carpool or diamond lanes, are special-use highway lanes reserved for carpools, vanpools, buses, and motorcycles.

Express Toll Lanes and High Occupancy Toll (HOT) Lanes - a form of HOV lane that can also be used by non-HOV drivers who choose to pay a toll. Drivers who do not qualify as a carpool have the choice to pay a toll for a faster trip when they need it.

As illustrated in Figure 13 below, a number of managed lane facilities already operate on the system today. WSDOT is continually looking into ways to maximize efficiency to help keep people moving and has projects currently under construction as well as those planned for the future.

Figure 13 - Current Managed Lanes System Map



Significant progress is being made towards completing the HOV facilities in Pierce County. In 2007, WSDOT opened its first HOV lanes on State Route 16, and in 2010, WSDOT opened the first I-5 HOV lanes in Pierce County. The HOV facilities from the Piece/King County line to South 38th Street in Tacoma will be complete in 2022. Work also continues to build the HOV lanes from Thorne Lane in Lakewood south to Mounts Road in DuPont. When these HOV facilities are complete, the section from South 38th Street to Thorne Lane remains the final gap needed to implement continuous HOV lanes on I-5 through Pierce County. While not yet funded, this section remains a priority for WSDOT.

Local System

All other arterials, collectors, and local streets are planned, operated, maintained, and improved by the city or county in which they are located. For streets that include transit facilities such as bus stops and rail stations, streetcar, or light rail, the local jurisdiction coordinates closely with the transit agency that provides the service.

Existing characteristics of highways, principals arterials, and minor arterials are presented in the Transportation System Visualization Tool for the Regional Transportation Plan, including the presence of bicycle and pedestrian facilities, location and control type of traffic signals, condition of bridges, and peak hour congestion levels.

The following are key operating characteristics of the existing street and highway system:[16]

- Residents of the central Puget Sound region drive an average of 17 miles per day. However, vehicle miles traveled varies greatly between people who live inside or outside Regional Growth Centers. People who live within a Regional Growth Center drive an average of 7.1 miles per day, while people living outside drive an average of 17.6 miles per day.
- Traffic congestion is highest during the morning and evening commute periods. In 2018, about 21% of the region's roadways typically experienced heavy to severe congestion (meaning average speed was less than half of the posted speed limit) during the peak hour. About 15% of additional roadways experienced moderate congestion (meaning average speed was about half to 70% of the posted speed limit) during the peak commute hours. Overall, this reflects just over one-third of the regional roadway system that experiences some level of peak hour congestion.
- In 2018, the average household in the region experienced a total of 62 hours of travel delay due to traffic congestion. Households of lower income tend to drive less with an average total delay of 40 hours per year. Households with people of color experienced congestion at a slightly lower level than the regional average, with an average total delay of 60 hours per year.

The greatest need on the regional roadway system is ongoing maintenance and preservation, which is critical to keeping highways and streets in a safe and usable condition and making the most efficient use of transportation investments to date. In addition, there are notable gaps in facility connections, such as those between SR 167 and SR 509 and the Ports of Tacoma and Seattle which are being addressed through WSDOT's Puget Sound Gateway Program. There are also needs that require more

[16] Key operating characteristics obtained from PSRC's 2018 travel demand forecasting model.

focused improvements to address access issues or bottlenecks, which can include improvements to make existing capacity more efficient (e.g. measures to encourage increased vehicle occupancies and/or technology solutions) or targeted access or capacity improvements at locations where congestion is most severe. These are discussed in more detail in the following section.

System Investments

The plan includes both larger scale investments that modify the overall capacity of the system as well as smaller scale, programmatic investments that maintain or improve the system.

Over 75% of the projects on the financially constrained Regional Capacity Projects list that represent investments on streets and highways are providing multimodal improvements. Examples of these improvements include roadway re-channelization that also provides bicycle lanes, enhanced sidewalks and transit stops; or the addition of a high-occupancy-vehicle (HOV) lane that accommodates carpools and buses. Many multimodal projects include roadway capacity improvements to relieve traffic congestion, but also provide new or enhanced facilities to improve travel for people walking, biking, or using transit.

The plan also includes projects that improve overall roadway operations without significantly increasing the capacity of general-purpose vehicle lanes. Examples include ITS improvements (discussed in detail in the Technology section), or reconfigurations to address bottlenecks at interchange ramps or along arterial roadways.

From those projects in the plan that do add general purpose capacity to the streets and highway network, only 5% in additional lane miles is being added to the total system by 2050. An analysis of the projects adding general purpose capacity finds that 94% are on or connecting to facility segments with heavy or severe congestion, and 66% are within or connected to areas of future growth. The majority (78%) of projects adding general purpose capacity to the system are less than two miles in length. Projects between two and five miles in length are approximately 17% of the total, and there are only six projects (less than 5%) over five miles in length. These projects are the larger scale key highway investment projects that have been underway for many years – the Puget Sound Gateway Program, SR 18 and improvements to I-5 near Joint Base Lewis McChord.

The Regional Transportation Plan contains a variety of investments – to preserve and maintain the transportation system, improve the system's efficiency, and expand the system with strategic capacity. These investments incorporate various modes of travel on a wide range of facilities, from local roads to major interstates. Most of these investments are considered "programmatic" in nature and are not called out as individual investments. These programmatic investments include, among other things, preservation, maintenance and operations, and capacity investments on local roadways.

Projects that seek to modify capacity on the regional system are required to be explicitly identified on the Regional Capacity Projects List and are subject to additional review and approval by PSRC's Boards. Specific thresholds are identified to determine if an investment is considered a Regional Capacity Project.

The plan also includes projects on streets and highways that extend the HOV system and add Business Access Transit (BAT) lanes. Several of these projects on interstates and major highways transition current, or add new, HOV lanes to function as express toll lanes in the future (see above). This is

consistent with the plan's financial strategy assumptions for additional express toll lanes in the future, to both raise revenue and manage travel demand. One key example is the expansion of the I-405 express toll lane system.

The plan also includes significant investments in streets and highways that are not identified on the Regional Capacity Projects list. These investments include improvements at a more local scale for all travel modes and are considered programmatic in the plan's financial strategy. Examples include bicycle and sidewalk infrastructure, local roadway improvements, and all aspects of maintenance and preservation. While not expressed in detail in the RTP, more details are contained within the transportation elements of city and county comprehensive plans and other local planning documents.

A total of 56% of the investments in the RTP is dedicated to maintenance, preservation and operations. Specific to the streets and highways network, roadway facilities, sidewalks, and bridges in poor condition degrade mobility and safety for users as well as the overall reliability of the transportation system. The plan's financial strategy recognizes the role of adequate maintenance and preservation in accommodating expected future travel demand and identifies full funding for this critical element. See Chapter 3 and Appendix J (Financial Strategy) for more information.

Future Conditions

While population and jobs are expected to increase 41% and 48% respectively by 2050, the number of congested roadways is projected to grow by only 4% (from about 21% to 25%).

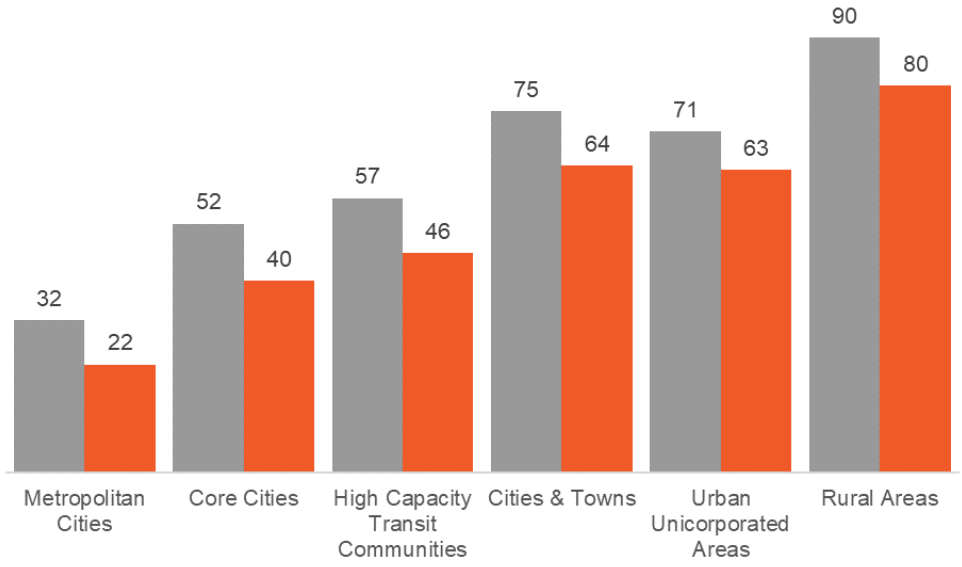
The average distance driven by residents of the region is expected to decrease from 17 to under 14 miles per day. Inside Regional Growth Centers the average distance is expected to decrease from 7.1 to 5.5 miles; outside Regional Growth Centers it is expected to decrease from an average of 17.6 to 15.1 miles per day.

As shown on Figure 14, by the year 2050, average annual delay per household is projected to decrease from 62 to 53 hours, a 15% decrease. Households of lower income and households of people of color are projected to experience a similar decrease, and experience traffic delay at levels lower than the regional average. This is due to a combination of land use strategies to increase densities in designated centers, multimodal investments that will increase shares of high-occupancy vehicles such as buses, which will allow available highway and street capacity to be used more efficiently, and focused capacity improvements to relieve traffic bottlenecks.

Figure 14 - Change in Vehicle Delay Per Household

Figure 15 illustrates the daily miles driven per household across various regional geographies. While households in each geography will travel less in 2050 as compared to the base year, rural residents drive more than other residents across the region. This reflects both the different needs and different system outcomes by the various regional geographies, and different mobility choices and travel patterns of residents across the region. Additional information about the effects of VISION 2050 policies and future transportation investments on the multimodal transportation system is provided in Appendix H (System Performance).

Figure 15 - Daily Miles Driven per Household, by Regional Geography



What's Ahead?

Streets and highways provide the foundation of the region's transportation system, and multimodal improvements planned at the state and local levels have either direct or indirect benefits to users of all modes that use the system. Forecast future characteristics of highways, principal arterials, and minor arterials are presented in the Transportation System Visualization Tool, which is a resource available to jurisdictions to support ongoing local transportation planning and the identification of future needs.

- Through development of their comprehensive plans, counties and cities will support implementation of the projects in this plan, as well as identify additional local improvement projects needed to support the transportation system.
- Completion of long-term key state investments should be prioritized, and commitment made to implementation of the HOV and express toll lane system.
- PSRC will continue to engage with member jurisdictions and other stakeholders on the needs of the system and provide continued data collection and monitoring. In addition, PSRC regularly participates with WSDOT in the development of state plans and programs.

Ballard-Interbay Regional Transportation System Report (BIRT)

The Ballard-Interbay Regional Transportation System (BIRT) study was commissioned by the 2019 Washington State Legislature and completed by the Seattle Department of Transportation (SDOT) in 2020. The BIRT report examines Ballard-Interbay as an entire transportation and economic ecosystem and includes an analysis of options for replacing the Ballard and Magnolia Bridges in Seattle, as well as recommendations for tactical transportation investments that can be made to the larger Ballard-Interbay area to improve mobility for people and freight.

The report lays the foundation for identifying funding opportunities in partnership with the Washington State Legislature to keep this area of Seattle connected to neighborhoods, employers, commercial centers, and the broader region. As its findings result in specific, more detailed transportation projects they should be incorporated into the Regional Transportation Plan.

Freight

VISION 2050 calls for a safe, efficient and reliable transportation system for the movement of people, goods and services.

Freight transportation refers to the movement of goods from one location to another. Freight is a vital function of the region's multimodal transportation system, supporting day-to-day livelihood and providing a lynchpin to the region's economic health. All individuals and businesses in the central Puget Sound region depend on the timely delivery of goods for access to daily essentials. Almost every product used by every person is brought to consumers via the freight system, which provides for a seamless connection between people and goods.

Freight movement is everywhere. Recognizable freight features include cargo ships and planes, trucks, and trains. However, the essential role of freight in everyone's daily lives may be less visible or understood. Our morning coffee, the clothes we wear, the food we eat, the supplies we use at work, the merchandise that we order online, the materials that build our homes and businesses—all of these are brought to us through the freight system.

The region's freight transportation system is an integral part of supply chains and consists of an interconnected multimodal network of highways and streets, railways, deep water ports and marine facilities, airports, and oil and gas pipelines. The Washington State Department of Transportation's (WSDOT's) Freight System Plan[17] categorizes the freight system in the state into three integral components:

- **Global Gateways** that provide freight access to international markets, via marine ports, airports, railways, and highways.
- **Made in Washington**, which are goods manufactured or produced in Washington, delivered within and beyond our borders via marine ports, airports, railways, and highways.
- **Delivering Goods to You**, referring to local freight delivery for business and residents, primarily by truck via the highway and street system.

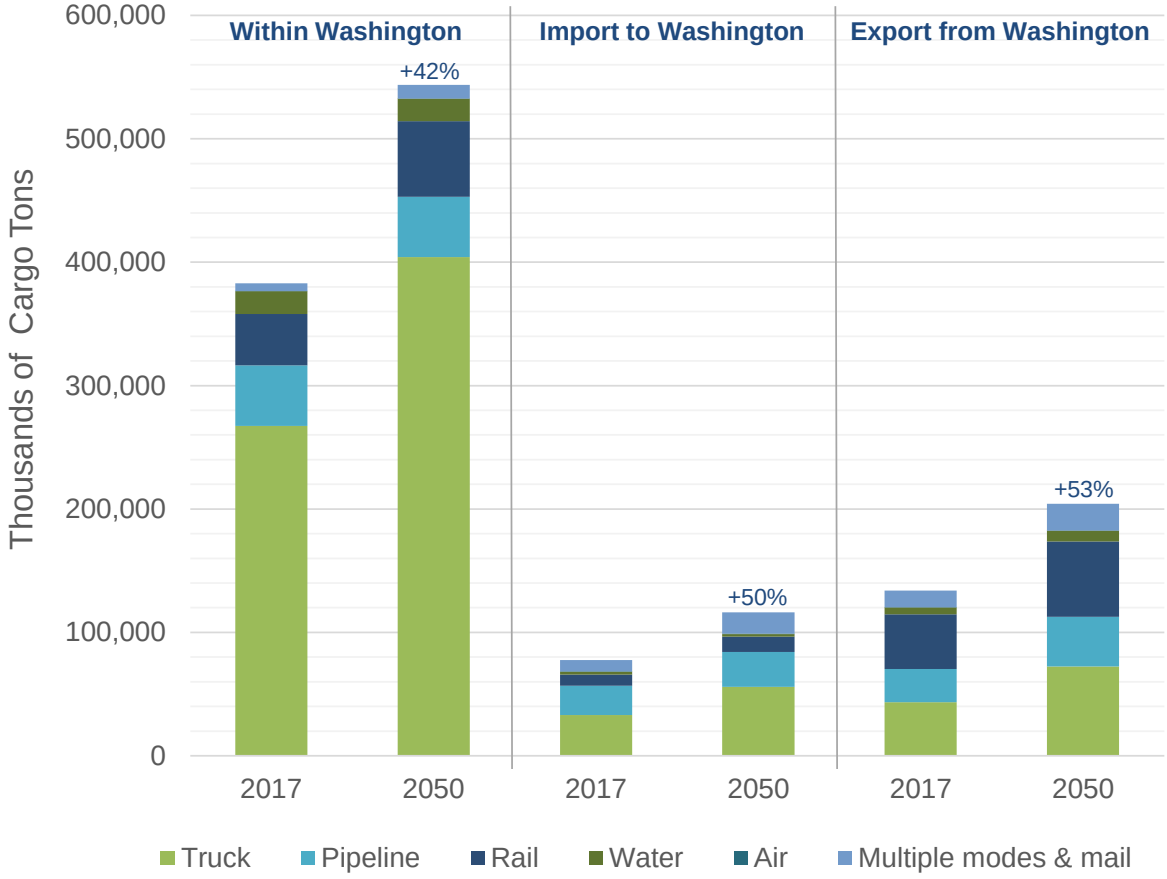
Each of these components differ in terms of economic impacts, geographic impacts, direct and indirect jobs created, and influences on various supporting industries. They also vary in the policies, design standards, and investment priorities needed to sustain them.

Figure 16 shows the tonnage of freight imported, exported, and transported within Washington State in 2017, as well as the forecast tonnage for 2050. The figure shows that close to 600 million tons moved in, out, and throughout Washington in 2017. The largest percentage of freight is moved by truck, but substantial portions are also carried by rail, water, pipelines, and air. By 2050, freight

[17] WSDOT, 2017, Washington State Freight System Plan.

transported within Washington is forecast to increase by more than 40%, and imports and exports by more than 50%. As the largest population and employment center in the state, as well as home to the ports, railroads and highways that serve as major gateways, a substantial portion of current and future cargo tonnage moves into, out of, and within the central Puget Sound region.

Figure 16 - Forecast Freight Growth, 2017 to 2050



In addition to encompassing all modes of transportation, the freight system relies on supporting infrastructure such as intermodal terminals, warehouses, and processing facilities to move goods from one location to another. Goods that arrive through major gateways are transported to warehouses and distribution centers for processing and routing to final destinations, either within or outside of the region. Similarly, goods that are produced within the region are transported to destinations outside the region. There are 10 designated Manufacturing/Industrial Centers (MICs) in the region, which are areas with intensive, concentrated manufacturing and industrial land uses and employment.

Existing Conditions

PSRC worked in coordination with its Freight Advisory Committee to develop an inventory of freight assets describing the significant system components related to goods movement to, from and within the region. Additional data related to truck traffic travel and distribution patterns within the region were also obtained. The major elements of the Regional Freight Inventory are presented in the Transportation System Visualization Tool. More detailed descriptions of the freight system elements are provided in Appendix A (Transportation System Inventory).

The freight assets inventory was developed to provide a better understanding of this system and the associated assets in terms of their unique characteristics and interdependencies. In addition, the inventory shows the connections between the freight system and the broader community and emphasizes the critical role freight and goods movement plays in supporting the region's economy and maintaining overall quality of life.

Major freight corridors in the central Puget Sound region consist primarily of railroads, waterways, and T-1/T-2 highways and streets that carry the highest volumes of freight. They serve industrial land uses including MICs and warehouse-intensive areas, and connect industry to the regional, statewide, national, and international freight network. Major freight corridors also include intermodal connections, which provide seamless transfer of freight between container ships, rail, and trucks.

While these corridors are critical to freight movement within and beyond the region, they also need to be integrated with other modes. Commuter and recreational routes may intersect with freight routes, requiring design and operational elements to ensure that people are able to travel safely while goods are efficiently and reliably transported.

Freight and Goods Transportation System

WSDOT maintains a statewide Freight and Goods Transportation System (FGTS) which classifies the state's freight corridors by modes based on annual freight tonnage moved through truck, rail, and waterway freight corridors. The FGTS designations and associated freight volumes are described in more detail in Appendix A (Transportation System Inventory). WSDOT classifies all highways, county roads, and city streets by reported annual gross truck tonnage, ranging from T-1, with the highest tonnage, to T-5 with the least tonnage.

The following section provides brief highlights of the existing freight system. More details are provided in Appendix A (Transportation System Inventory).

Ports and Waterways

Deepwater ports and airports provide the major gateways for freight delivery within the region. They are a critical component of the global supply chain, serving as the point of entry for goods coming into the region and the point of exit for distribution of agricultural and manufactured goods produced in the region. Adequate port capacity and state of good repair of the infrastructure serving the ports are essential to support the role of our region in regional, statewide, national, and international supply chains.

- The Ports of Seattle and Tacoma (Northwest Seaport Alliance) together rank among the top 10 busiest ports in the US and the fourth largest container gateway in North America. In 2019, ships utilizing these ports carried $74.9 billion worth of international trade.[18]
- The Port of Everett specializes in high-value, over-dimensional cargo such as airplane and aerospace parts and ranks as the fifth largest port on the west coast in terms of value of goods exported.

Waterways provide connection between the ports and other industrial facilities. Puget Sound and the Duwamish Waterway are both part of the State Strategic Freight Network.

Railways

BNSF Railway and Union Pacific operate most of the railways in the region, with Tacoma Rail operating one mainline in the Port of Tacoma/Tacoma Tidelands area. The mainlines owned by these operators have been designated by the State of Washington as Rail Freight Economic Corridors,[19] handling products such as grains, lumber, and auto parts. BNSF and Union Pacific railways directly serve the region's ports with intermodal facilities that provide critical connections between cargo ships and truck and rail networks.

An important multimodal consideration for rail freight transport is the presence of at-grade rail crossings of roadways. Trains crossing at these locations intersect with vehicles, people walking, and people biking. Roadway-rail grade crossings are intersections involving very different modes of transportation, with different sizes, weights, and speeds. In addition, these intersections are multi-jurisdictional, involving both highway and railroad authorities responsible for different aspects of design and maintenance. The Washington State Joint Transportation Commission and Freight Mobility Strategic Investment Board (FMSIB) completed an intensive review of road-rail conflicts in 2017 and 2018, establishing a corridor-based process for addressing the impacts on a statewide level; FMSIB maintains a prioritized list of improvement locations to guide funding as it becomes available.[20]

Major private railway operators have established programs to promote rail safety. For example UP CARES – Crossing Accident Reduction Education and Safety – is a program that works to reduce train accidents through education and partnership with law enforcement. BNSF works to improve safety through investment in technology, infrastructure and equipment; training; and safety programs among other activities.

The locations of intermodal facilities and at-grade crossings with their priority improvement ranking are provided in the Transportation System Visualization Tool.

[18] Northwest Seaport Alliance, Partnerships Drive Performance, 2019 Annual Report.

[19] WSDOT, 2017.

[20] Freight Mobility Strategic Investment Board (FMSIB), Study of Road-Rail Conflicts, Phase 2 – Development of Project Priorities, August 2018.

Trucks

Trucks are a critical component of the freight transportation system, and they share the highway and street system with all other modes, including people walking and biking, transit, and automobiles. It is vital that the planning and operation of roadways accommodate freight transport and delivery in conjunction with the safe and efficient movement of people. However, different types of roadways serve different functions in freight transportation, and each has unique needs and considerations. The roadway system serves two critical tiers of freight movement within the region.

Truck Classifications

Medium Duty Trucks for the purposes of PSRC's modeling are those trucks that are single unit vehicles between 16,000 to 52,000 pounds gross vehicle weight. Examples include garbage trucks and multi-stop deliveries.

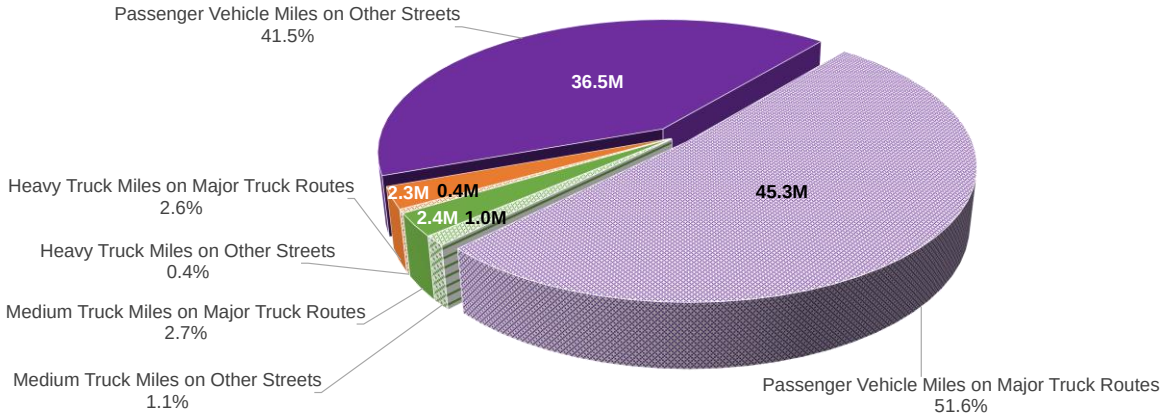
Heavy Duty Trucks are generally double or triple unit trucks over 52,000 pounds gross vehicle weight. These trucks are primarily used for long-haul freight deliveries and heavy-duty transport.

- Truck Freight Economic Corridors are state-designated transportation corridors of great economic importance within an integrated freight system that carries high freight tonnages. These consist of roadways with T-1 or T-2 designation, meaning they carry at least 4 million tons of freight per year, and first-mile/last-mile connector routes that connect freight-intensive land uses to these high-volume freight routes. These are considered major truck routes within and beyond the central Puget Sound region as they carry a high volume of heavy trucks.
- Beyond the major truck routes, the rest of the street network serves the commercial and residential door-to-door delivery component of freight movement. Deliveries to residences and many businesses are generally made in small to medium sized trucks, so freight design considerations are different for these streets than the major freight corridors that must accommodate high volumes of large, heavy trucks.

Figure 17 shows the average total daily miles traveled by trucks within the region; truck travel comprises about 7% of the daily miles traveled by all vehicles. Of this, about 3% reflects heavy truck transport and 4% reflects medium trucks. Overall, the data indicate that greater than 75% of truck travel within the region occurs on major truck routes; less than one-quarter occurs on local streets and is predominantly comprised of medium trucks.

Travel data indicate trucks make a substantial portion of their trips during off-peak periods of the day—in-between the morning peak period and evening peak period when commute-related traffic is heaviest. Roadway congestion is a major impediment to reliable freight delivery, so freight providers make most efficient use of the roadway system and increase reliability by traveling more during less-congested times of day. However, truck travel does also occur during the periods of peak congestion, particularly in the morning. In 2018 the average heavy truck driver in the region spent 56 hours in congestion annually, and the average medium truck driver spent 21 hours in congestion. See Appendix A (Transportation System Inventory).

Figure 17 - Daily Truck Versus Other Miles Traveled in the Central Puget Sound Region[21]



Heavy truck travel is most concentrated in the MICs and other industrial areas of the region. For example:

- Analysis of heavy truck movements indicates that over one-third of heavy truck trips in the region's industrial lands occur in the Kent Valley, corresponding to the high concentration of manufacturing and warehousing in that area.
- Concentration of truck traffic in the North Bend area reflects its role as a gateway to the region. Heavy trucks entering the region concentrate in this area to time their travel on the more congested urban roadways or to meet a specified arrival time at their destination; heavy trucks exiting the region stop to refuel and prepare for the next stage of their cross-state or cross-country trip.

These examples illustrate a regional issue related to freight movement—along with the local and regional economic benefits that come with freight come the operational and maintenance impacts of heavy truck traffic that are primarily addressed by the local jurisdictions in which truck-heavy land uses are located. Partnerships are critical to help address localized impacts of heavy truck traffic in these areas.

Maintenance and preservation of major truck roadways is also essential to efficient freight movement, as degraded streets can increase travel delay and reduce the reliability of freight delivery, and heavy truck travel can increase the rate at which streets in poor condition further degrade. See the Maintenance & Preservation section for further discussion.

Truck Parking

While heavy truck transport is a critical element of freight movement within and beyond the region, the need for truck parking space has become increasingly strained. Issues related to truck parking include:

- **Driver and Community Health and Safety** – All drivers require access to facilities that provide adequate opportunities for nourishment, rest, and hygiene. In addition to the need to meet

[21] Source: PSRC Baseline (2018) Travel Demand Model; daily miles are presented in millions (M).

these basic human needs, when drivers cannot take adequate breaks they may be forced to park in undesignated and unsafe areas (e.g., roadway shoulders and vacant lots), potentially exposing them to personal harm, property damage, or cargo theft. With a lack of adequate truck parking in designated areas, some drivers may park in available space they find on neighborhood streets that do not have amenities to support them. This can also result in safety hazards due to trucks occupying right of way and blocking the line of sight of other motorists.

- **Roadway Congestion** – If drivers are forced to circulate in a search for parking, this increases vehicle miles traveled on the roadway system, with associated impacts on roadway congestion and air quality, and additional operating costs to the drivers.

Even within the issue of truck parking there are different contexts that warrant different types of solutions. Short-haul truckers who live in the region need space to regularly park their trucks when off duty. Long-haul truckers need places to rest and refuel, and potentially also to wait to time arrivals at their destinations.

Truck parking issues are receiving statewide and national attention. The Washington State Legislature commissioned a truck parking action plan that includes recommendations for immediate next steps in the near-term, and lasting change in the availability of truck parking for short-haul and long-distance commercial vehicle drivers. The action plan is evaluating the magnitude of impacts and the regulatory measures and investments needed to address them. The action plan is currently under development, with completion planned for January 2022. If the action plan is completed prior to finalization of this Regional Transportation Plan, discussion of its findings and recommendations will be incorporated.

Future Conditions

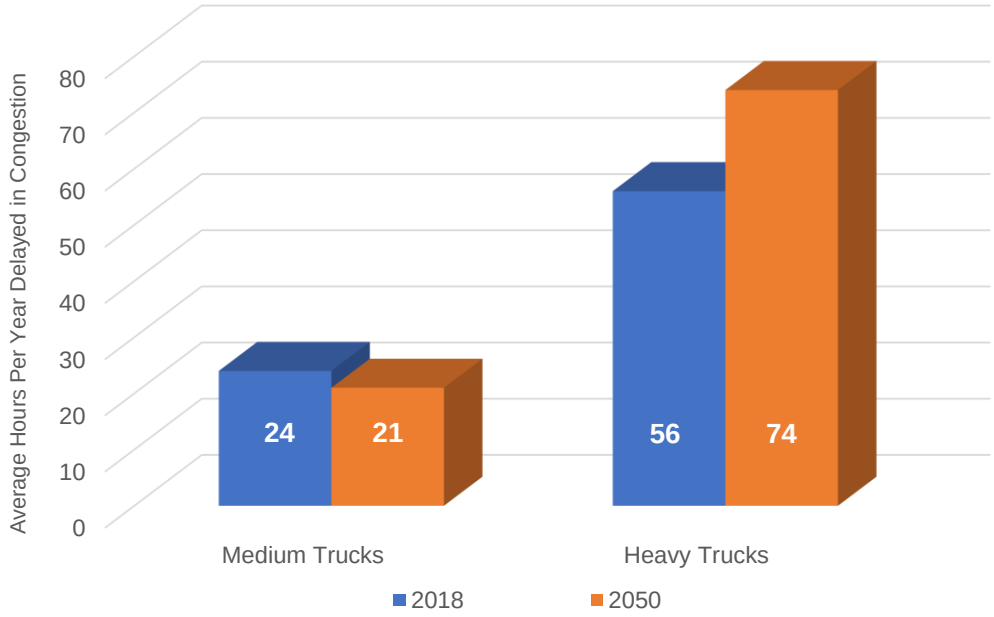
Future Freight Conditions

With projected population and employment growth through 2050, cargo transported by trucks and other modes is projected to increase by more than 40%. By 2050, the number of truck miles traveled per day is forecast to increase by 27%.

There are a variety of projects in this Plan that will provide benefits to the overall freight system, either directly or indirectly. While freight transport and deliveries will continue to rely on the roadway system, projects and strategies that shift more travelers to high occupancy vehicles and non-vehicular modes are beneficial to freight because they allow roadway capacity to be more used more efficiently by users such as cargo trucks. Of Regional Capacity projects 44% are providing improvements to T-1/T-2 truck routes.

Figure 18 shows that for heavy trucks, the time an average driver spends delayed by congestion is forecast to increase by more than 30% by 2050. For drivers of medium trucks, however, the amount of delay is projected to decrease by about 13%. This reflects the effect of investments in the plan and land use patterns adopted in VISION 2050 that will both improve the freight network itself and reduce the number and shorten the length of some types of passenger vehicle trips. Although delay is expected to increase for heavy trucks that predominantly travel on highways and major arterials, the investments in the plan combined with long-range land use strategies are still beneficial to freight because they will allow roadway congestion to increase at a much lower rate than the rate of population and employment over the same timeline.

Figure 18 - Average Traffic Delay per Truck Driver in 2018 and 2050



Freight Considerations for Future Planning

The investments in the plan include many elements that will be beneficial to regional freight transport and deliveries. Implementation of these projects, as well as additional planning and projects implemented to address freight issues, happen at the local level. The following are important freight-related considerations local jurisdictions should include in their future planning efforts.

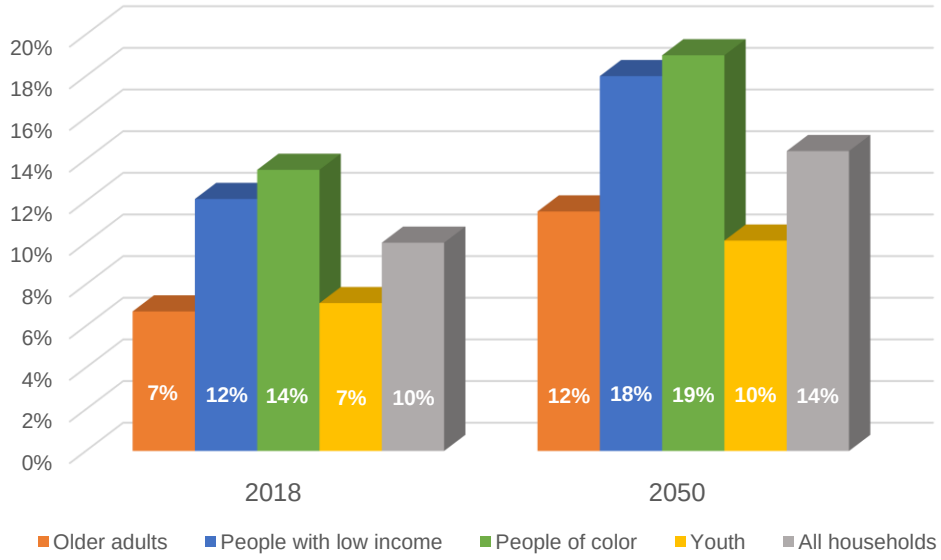
- Growth in the number of people living and working in the region, combined with growth in freight transport needed to support them, will increase the potential conflicts between the different modes that carry people and goods. There are distinct safety and mobility considerations with respect to heavy trucks and trains that intersect with pedestrians, bicyclists, and passenger vehicles, depending on the facility type and location, that need to be explicitly addressed when planning for future transportation conditions.
- There are maintenance and preservation considerations unique to major freight corridors that will be exacerbated by growth in heavy truck traffic. Increased heavy truck traffic needed to support future population and industry growth will increase the strain on pavement and bridges. Degraded highways and arterials increase travel delay and reduce the reliability of freight delivery, and heavy truck travel can increase the rate at which streets in poor condition further degrade. Additionally, major freight corridors have high overlap with the Strategic Highway Network and serve as major thoroughfares for moving people. Properly maintaining these facilities is critical for many reasons including the need to accommodate freight transport.
- Increases in heavy trucks needed to accommodate growth in projected long-haul and short-haul freight deliveries will worsen truck parking shortages and issues unless measures are implemented to address this problem.

- Increases in small to medium trucks making door-to-door deliveries, due to growth in population and employment as well as continuing growth in e-commerce, will put increasing strain on the space available to accommodate deliveries.
- While the benefits of freight are regional, both economically and in enabling our daily lives, the impacts of freight transport—particularly by heavy trucks—are borne in great part by the jurisdictions where MICs and other industrial areas are located. Partnerships are important so that the burden of addressing freight traffic issues is more equally shared by all who benefit from reliable freight movement in the region. Growth in freight demand and its related traffic will intensify the needs of local jurisdictions with industrial-heavy land uses that experience the largest volumes of heavy truck traffic and their associated impacts.

Equity Considerations of Freight

Figure 19 shows the percentage of households within the region located within 500 feet of a major roadway facilities that also serve as T-1/T-2 truck routes, including households with groups who have historically faced disadvantages and underinvestment. As shown, the percentage of low-income households and households of people of color located within 500 feet of a major truck route is higher than the regional average; the percentages of households with older adults and youth are lower. These trends are projected to increase by 2050, with higher percentages of all groups located within 500 feet of major truck routes. In part, this reflects the typical patterns of higher density housing that is more clustered near major arterials which may also serve as truck routes. Minimizing the air quality and noise impacts of traffic congestion on affected communities, as well as the safety impacts of trucks mixed with other modes of transportation, is an important planning consideration for these facilities and should be prioritized for communities that are disproportionately impacted. Decarbonization efforts are also being focused on trucks and other freight infrastructure, which has the potential to significantly reduce emissions. See the Climate and Environment section for more information.

Figure 19 - Households Located within 500 feet of Major Trucking Routes[22]



What's Ahead?

Most of the planning and projects identified to address freight issues and to maintain or improve its efficiency occur at the local and state level, including implementation of the investments in the RTP. The following considerations are recommended to guide jurisdictions in freight planning in their long-range transportation planning efforts.

- Freight is an integral part of the region's multimodal transportation system and accommodating freight traffic should be explicitly addressed in transportation planning and programming. However, context matters, and potential strategies and projects to address freight issues are different depending on the setting.
- Freight considerations could be included specifically in roadway design and pavement standards of local jurisdictions. For arterials and highways that are part of major freight routes, this could include heavy haul pavement standards as well as cross section standards to accommodate large trucks.
- Local street systems need to accommodate commercial and residential deliveries, in addition to accommodating people traveling by walking, biking or by vehicle. This can include curb space management policies that determine how street space outside of the vehicle travel lanes should be allocated between its potential uses—loading, parking, nonmotorized travel, stormwater management, and/or landscaping and buffers. Measures could also include building codes that require on-site loading for new commercial and residential development, and innovations such as provision of common delivery lockers to reduce truck dwell times and avoid multiple attempted deliveries. The University of Washington Urban Freight Lab has conducted, and is continuing to conduct, extensive research on this topic, and serves as a resource for jurisdictions seeking options to accommodate deliveries more effectively.

[22] Source: PSRC, 2021

- Local jurisdictions should actively engage with the efforts being led by the State of Washington on truck parking issues. Although this work is ongoing, potential solutions include technology that shows truck drivers where available parking spaces are in real time and measures to expand available truck parking. The State's truck parking action plan, scheduled for completion in 2022, is planned to include measures such as regulatory frameworks, government-sponsored incentive programs, and/or direct government action.
- It is important to note that in development of local comprehensive plans, some measures and strategies needed to address freight issues involve land use policy and local development regulations, not just transportation policy. For example, building requirements, loading requirements, and frontage improvement requirements that could help address delivery issues are often specified in zoning and building codes. Coordination between land use and transportation elements of local plans will foster more effective solutions to freight issues.
- Planning for freight traffic may also require reducing conflicts between trucks, trains, and other transportation modes. This could be accomplished through lane configuration or facilities that physically separate trucks from other modes and vulnerable travelers such as pedestrians and bicycles where space allows, or technology solutions such as signalization that provide separate protected phases for each mode to safely cross or enter areas with potential for conflicts.
- PSRC will continue to lead and participate in forums that foster regional cooperation on freight, including facilitating groups such as the PSRC Freight Advisory Committee, and actively participating in State-led activities such as freight planning and truck parking forums. These forums provide opportunity to form partnerships to address and prioritize regional freight issues, share best practices and examples of solutions to freight problems within varying contexts, and leverage resources to address regional freight priorities.
- PSRC will work with member agencies to compile best practices for design, management, and operation of freight transportation, and serve as a clearinghouse to help partner agencies share this information.

Aviation

VISION 2050 recognizes the critical role that aviation plays for people and businesses in the growing central Puget Sound region, as well as its impacts to communities and the environment. The region is currently home to 29 airports of varied sizes and functions. See Figure 20. Continued, coordinated planning is essential for ensuring that the regional airport system can support existing and future demand. Aviation planning and implementation falls under the authority of the Federal Aviation Administration and is the responsibility of airport operators. PSRC recognizes the interrelationship between aviation and the broader region and within the role of the Metropolitan Planning Organization addresses these cross-cutting issues in the Regional Transportation Plan, including access issues and impacts to the broader transportation system and local communities.

Existing Conditions

There are 27 public-use airports and two military-operated airports within the central Puget Sound region. The region is also home to multiple Boeing facilities as well as suppliers and related aerospace companies. Most of the aviation activity in the central Puget Sound region is concentrated in King and Snohomish counties. An in-depth Regional Aviation Baseline Study analyzing the region's aviation system and needs was published in 2021.

The Federal Aviation Administration works closely with state aviation agencies and local planning organizations to identify public-use airports that are important for inclusion in the National Plan of Integrated Airport Systems (NPIAS). NPIAS is an inventory of existing and proposed airports that are significant to national air transportation in the U.S. and are eligible to receive certain types of federal grant funding. Twelve of the region's airports are part of the NPIAS system.

Commercial Aviation

Within the region, there are three primary commercial service airports:

- **Seattle-Tacoma International Airport (Sea-Tac)**, in King County, connects the central Puget Sound region to the world by serving approximately 50 million passengers annually. With an area of 2,500 acres—much smaller than other U.S. airports with similar annual passenger numbers—it is severely constrained by urban development and existing topography. Sea-Tac is one of the region's leading economic engines, with an economic impact of $22.5 billion in 2017. From airport workers who live in neighboring communities to cherry farmers in central Washington, and from shops in tourist destinations like Pike Place Market to corporate giants like Microsoft and Boeing, Sea-Tac touches nearly every aspect of the economy in the central Puget Sound region.

- **Paine Field International Airport** is a unique airport located in Snohomish County, with both significant manufacturing activity and limited commercial service. The airport is currently authorized for up to 24 daily flights and is home to over 650 aircraft, including small, single-engine recreational aircraft, corporate jets, vintage Warbirds, and Boeing Dreamliners. Located about 30 miles north of downtown Seattle, the airport has become a major tourist destination with the opening of the Future of Flight Aviation Center & Boeing Tour, the Flying Heritage & Combat Armor Museum, and the Historic Flight Foundation. Paine Field has an estimated economic impact of $20 billion annually.
- **King County International Airport (Boeing Field)** is one of the nation's busiest primary non-hub airports, averaging 200,000 takeoffs and landings each year. The airport serves small commercial passenger airlines, cargo carriers, private aircraft owners, helicopters, corporate jets, military and other aircraft. It is also home to Boeing Company final production aircraft services and flight testing operations as well as The Museum of Flight. This airport is severely land constrained with ongoing urban encroachment. Due to its strategic location just four miles south of downtown Seattle and close to other business centers, it is frequently used by celebrities, dignitaries, and sports teams, and supports $3.5 billion in local business.

Aviation Definitions

Commercial Aviation: Scheduled passenger service

Air Cargo: Freight and mail carried in the lower hold of passenger aircraft and on dedicated freighters

General Aviation: Business, flight instruction, medical, emergency, law enforcement, recreation, and tourism

Airport Classifications

Airports are grouped by federal law into two major categories: primary and nonprimary. Primary airports are defined by the FAA as public airports that receive scheduled air carrier service with 10,000 or more passengers per year. Primary airports are further grouped into four hub categories: large hub, medium hub, small hub, and non-hub.

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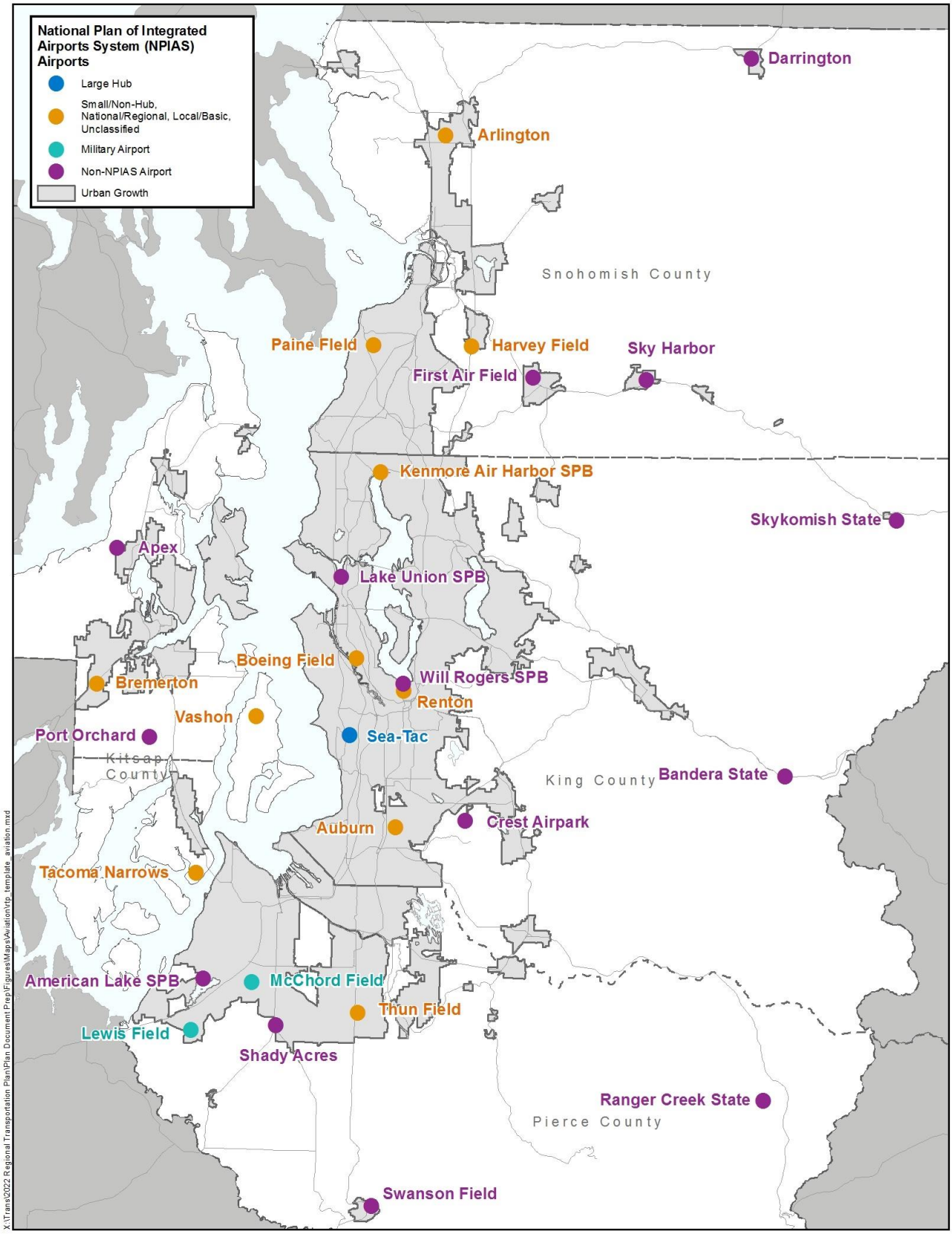
Figure 20 - National Plan of Integrated Airports System (NPIAS) Airports



General Aviation

General aviation airports in the central Puget Sound region serve different sectors of the aviation community based on the location and local demand. The unique geographic terrain of the region presents unique opportunities for recreational flight and tourism. In addition, there are aviation needs for business, flight instruction, medical, emergency management, law enforcement, local transportation (air ferry), and search/rescue operations. Depending on the user, a wide variety of airports distributed throughout the region meet the needs of General Aviation users.

Air Cargo

Air cargo services enable global marketing and transportation of goods and services, especially for time-sensitive products and trade with distant markets. Economic growth, international trade, and air transport are inextricably linked. Specifically, air cargo service provides fast and reliable delivery of high-value products especially relevant to central Puget Sound region industries, such as the pharmaceutical, technology, aircraft assembly, and aerospace equipment sectors. The air cargo system supports the express carrier industry, which provides guaranteed, rapid, and door-to-door delivery services, and increasingly offers logistics support for other companies. Air cargo also facilitates the development of e-commerce, enabling companies to transport online shopping orders quickly and reliably between regions and countries and allowing products to be stored in large warehouses, which reduces retail and distribution costs.

Air cargo in the central Puget Sound region is generated primarily by activity at Sea-Tac and King County International Airport (Boeing Field), which, combined, account for over 85% of the total Washington state market. Sea-Tac handles two-thirds of the cargo tonnage and has the greatest variety of cargo offerings in the central Puget Sound with a mix of domestic and international belly cargo, domestic and international freighter cargo, as well as express cargo generated by carriers such as FedEx, DHL, and Amazon Air. More information about transportation infrastructure supporting freight and goods movement can be found in the Freight section of this document.

COVID-19

In March 2020, COVID-19 struck the United States and severely affected air travel worldwide. However, by fall 2021, U.S. airline executives saw concrete signs of a domestic leisure travel recovery as a slowing pandemic and more widespread vaccinations drove holiday season bookings. According to Transportation Security Administration data, more than 2.3 million Americans flew for the 2021 Thanksgiving holiday, setting a pandemic record that is close to 2019 numbers. Airports and airlines estimate a recovery to 2019 levels by 2023 to 2024.

Future Conditions

While all three parts of the aviation system must work together, each is affected by unique trends and has a unique demand forecast for the future.

Commercial Aviation

Based on current capacity at Sea-Tac Airport, increased capacity planned through Sea-Tac's Sustainable Airport Master Plan, and current capacity at Paine Field, the region will be able to accommodate approximately 28,600,000 enplanements by 2027 (enplanements are a measure of

aviation activity; one enplanement is one passenger boarding a plane), up from approximately 24,000,000 enplanements in 2018[23].

The regional projected demand for passenger enplanements is 55,600,000 by 2050—nearly double 2018 demand. Based on the forecasted demand, there will be a gap of 27,000,000 unmet enplanements each year by 2050. When planning to accommodate this demand, many factors affecting both existing and potential new capacity need to be considered, including access to individual airports. As population and jobs continue to grow in the region, roads will become more crowded, increasing drive times from outlying areas to existing passenger aviation facilities, with increased parts of the region facing well over an hour drive to access Sea-Tac International Airport. As Sound Transit continues to expand the Link light rail system, this and other multimodal solutions may help increase access to the region's airports. Airspace throughout the central Puget Sound region will become increasingly crowded, with Sea-Tac in particular facing constraints due to the orientation and spacing of its runways, although new FAA navigation systems will help make better use of air space.

General Aviation

There will be adequate runway capacity within the region's system of 24 General Aviation airports to accommodate demand through 2050. Potential constraints to the system include a decrease in numbers of private pilots and aircraft maintenance technicians, limited resources for upgrading deteriorating runways, and insufficient hangar space.

Air Cargo

Air cargo growth is driven by globalization and e-commerce as well as strong state exports. Air cargo is tied to commercial flights because a lot of air cargo travels in the bellies of passenger flights, but capacity constraints both at airports and off-site facilities can be limiting factors. As documented in the Regional Aviation Baseline Study, demand for air cargo is expected to more than double by 2050, growing from 539,600 metric tons in 2017 to 1,319,300 tons in 2050. Air cargo demand is often seasonal, so air cargo handling capacity can be significantly stressed during harvest time for high value crops like cherries and or peak shipping periods like the winter holiday season, but facilities may be sufficient or even underutilized during other times of the year. Limiting factors for both Sea-Tac and King County International Airports are insufficient warehousing and landside access facilities. Based on current plans, the region will fall short of on-airport warehouse space for air cargo by 2027. There are opportunities to redesign existing on-airport facilities, develop new off-airport facilities, use Grant County Moses Lake International Airport as a cargo reliever during the harvest time for high value crops like cherries, and shift some traffic to Spokane International Airport to create additional capacity in the central Puget Sound region.

What's Ahead?

In 2019, the Washington State Legislature created the Commercial Aviation Coordinating Commission (CACC) which has been tasked with identifying and recommending a single preferred location for a new commercial service airport by February 15, 2023. In addition to recommending a new primary

[23] Regional Aviation Baseline Study (PSRC 2021) https://www.psrc.org/aviation-baseline-study

commercial aviation facility, the Commission will recommend additional ways to accommodate capacity needs at other facilities. It is important to note that the CACC's recommendations will be advisory only. After review by the Washington State Legislature, it will be necessary to conduct detailed financial and environmental analyses, and funding sources and airport governance will need to be identified to implement the recommendations. More information about this ongoing effort may be found on the Washington State Department of Transportation's website.

As described earlier, in 2021 PSRC completed a Regional Aviation Baseline Study that provides a clear picture of the different roles and purposes of aviation activity at each of the region's airports, describes how these activities interact, and identifies future needs in the central Puget Sound region to set the stage for future planning. This study provides a common baseline for policymakers about the region's aviation needs and options to consider for meeting those needs in the future. This study is the first phase of potentially more focused studies on specific areas of emphasis. PSRC released study findings to the public throughout the project, and directly shared with people who expressed interest through community engagement opportunities as well as with PSRC members and state and local elected officials. The study has also been provided to the CACC to support the development of their recommendations.

As illustrated in mapping contained in the Central Puget Sound Demographic Profile, communities in close proximity to the region's busiest airports – in particular Sea-Tac, Boeing Field, and Paine Field – have higher percentages of people of color and lower incomes, and community concerns include soil contamination from aircraft fuels and chemicals, and noise and air pollution There are ongoing efforts related to aviation and the environment in both the public and private sectors. The Puget Sound Regional Emissions Analysis Project, led by King County and in partnership with seven regional partner agencies including PSRC, is a comprehensive update of the region's greenhouse gas emissions inventory. The project, anticipated to be complete in late 2022, will provide a robust evaluation of all emission sources including aviation, as well as researching pathways to achieve equitable emission reductions.

A number of organizations and researchers are studying aviation issues in the region, and findings from their studies may help inform next steps to avoid or mitigate any harmful impacts of aviation. These include:

- **Mobile Observations of Ultrafine Particulates Study**, University of Washington
- **Aviation Economic Impact Study**, Washington State Department of Transportation
- **Aviation Biofuels Infrastructure Feasibility Study**, Port of Seattle
- **Washington State Air Cargo Movement Study**, Washington State Legislature
- **Ultra-High-Speed Ground Transportation Study**, Washington State Department of Transportation

Aviation technology continues to advance, with lower carbon fuels and electrification of aircraft offering the potential for reduction or elimination of carbon and other emissions. New and improved aircraft will likely also be significantly quieter, reducing noise impacts to the region and in particular to communities in close proximity to airports or under flight paths. The WSDOT Aviation Division conducted an Electric Aircraft Feasibility Study in 2020 and is continuing the work of the Electric Aircraft Working Group directed by the Legislature in 2018, including coordination with airports and

national partners. The Port of Seattle has developed and implemented a number of initiatives to address noise, air emissions, and other community impacts, including community grant programs and setting a timetable and goals for transitioning to sustainable aviation fuels. Another example of innovation in reducing emissions is Alaska Airlines' efforts on efficiency improvements to aircraft and navigation systems which reduce overall fuel use.

Continued coordinated planning is needed to ensure the regional airport system can accommodate growth in aviation, and regional goals related to the environment and maintaining a sustainable, multimodal transportation system continue to be met. Planning for the future airport system is guided by the following regional policies:

- The region should maximize aviation capacity within the existing regional airport system before constructing new airports.
- The State of Washington will play a lead role in addressing aviation capacity needs and place a priority on funding and planning the state's air transportation system. This work is being led by the Commercial Aviation Coordinating Commission.
- When additional capacity is forecast to be needed, and no feasible airport capacity is available within the region, the state will take the lead role in addressing capacity needs, including by funding a site selection study for the placement of new airport(s) if no sponsor is available.

VISION 2050 established the following policy to address the development of new commercial aviation capacity:

- Promote coordinated planning and effective management to optimize the region's aviation system in a manner that minimizes health, air quality, and noise impacts to communities, including historically marginalized communities. Consider demand management alternatives as future growth needs are analyzed, recognizing capacity constraints at existing facilities and the time and resources necessary to build new ones. Support the ongoing process of development of a new commercial aviation facility in Washington State.

PSRC will continue to work closely with the state, airport operators, its members, and the region's communities as new capacity is developed to safely and equitably accommodate aviation demand.

Operations and Efficiencies

Transportation Demand Management

Transportation Demand Management (TDM) refers to a coordinated set of programs to help people use the transportation system more efficiently through education, incentives, products (like subsidized transit fare cards), and programs that make it easier and more convenient to use non-drive alone modes such as transit, carpool, vanpool, walking, biking, and teleworking. These programs are typically implemented by cities, counties, transit agencies, transportation management associations (TMAs), non-profits, or other entities.

Many of the TDM programs in the central Puget Sound region were established after the state passed a Commute Trip Reduction (CTR) Law in 1991. The aim of the law is to address traffic congestion, air pollution, and fuel consumption by reducing trips during peak commute periods. The law's approach is to target worksites with 100 or more full-time employees who commute during peak hours in the most populous counties in the state, which include King, Kitsap, Pierce, and Snohomish counties (referred to as CTR-affected worksites). Jurisdictions in these counties that have large-employer worksites adopt goals and monitor CTR program outcomes.

Existing Conditions

Data Analysis and Challenges

Long-range transportation planning relies on a thorough understanding of current conditions. As demonstrated in other sections of the RTP, data collection and analysis are critical to this understanding. This section addresses the data related to TDM that is currently available and highlights challenges and gaps in that data.

TDM-Specific Data

Program Surveys

State law requires CTR-affected worksites to periodically measure employee commute behavior. To assist in compliance with this requirement, the Washington State Department of Transportation (WSDOT) provides a survey instrument, a process for analyzing the data, and technical assistance. Most CTR programs use the WSDOT survey instrument and conduct a survey at least every other year. Jurisdictions collect the data from the CTR-affected worksites within their boundaries and report that data to WSDOT. This data is used to report on progress toward reducing drive-alone trips and vehicle miles traveled.

The response rate varies from worksite to worksite and year to year. WSDOT offers recommended response rate and sampling policies, but not all worksites are able to achieve the minimum response rate. The survey asks about work schedule, commute distance, and commute mode. Responses are

aggregated by worksite, so changes to an individual's travel behavior over time are not trackable.

Several TDM programs that are voluntary and not tied to CTR have reported using their own survey tools to evaluate program effectiveness, but there is no consistent standard among these surveys. Data collected by transit agencies from ORCA card taps and statewide vanpooling data have also been used by TDM programs to measure changing travel behaviors.

Regional Program Inventory

PSRC developed and distributed a questionnaire to inventory all TDM programs in the region in 2019-2020, including those that are not considered "CTR-affected" and may not be included in WSDOT surveying. The inventory yielded data on 106 TDM programs in the region, 60 of which are not CTR-affected.

Since many TDM programs rely on funding that may not be guaranteed every year, some programs are short-term, and others only operate when funding is available. To capture this, data was collected for local programs operating any time between 2015 and 2020. The survey asked about geographic coverage of a program, trip purpose, employer size (if employer-based), TDM strategies, modes promoted by the program, and target audiences. All four counties in the region are affected by the CTR law, so all jurisdictions in the region have some type of CTR program. Some cities also have other TDM programming such as that offered by a TMA or non-profit.

Challenges to Data Collection

Performance measures or other strategies for evaluating outcomes are a standard tool for determining if a public program is achieving its goals, operating as intended, and delivering outcomes efficiently. Such measures are often factored into funding decision-making processes and can be a powerful tool to support a program. More data is needed to evaluate the effectiveness and efficiency of TDM programs across the region and of individual strategies implemented by TDM programs.

It can be difficult to directly correlate behavior changes with TDM programming. If an employer sees more employees commuting to work on transit, this may be indicative that the TDM program is effective but could also be a result of a transit service change or new route/line opening that improves the convenience of transit. Alternatively, based on location or workforce characteristics, CTR-affected worksites may be more likely to have employees commuting via transit, vanpooling, or other non-drive-alone modes regardless of whether they have a program. Several factors impact a person's mode choice, and it is difficult to determine a TDM program's role in shaping that decision.

Data privacy is extremely important but also creates some challenges in monitoring and evaluating TDM. For example, the WSDOT survey instrument for CTR programs does not ask about an employee's race, ethnicity or income, and most employers do not make this information public. Without this information, it is difficult to evaluate the equity of TDM programs and who is participating in programs or receiving these benefits.

Key Findings and Current Issues in TDM

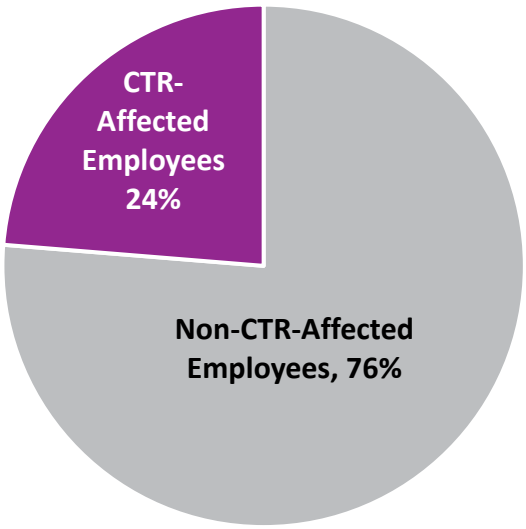
While there is room for more robust data specific to TDM programs in the central Puget Sound region, the existing data provides important context and indicates broad trends.

Most TDM Programs Are CTR or Commute-Focused

Of the 106 programs that provided data in the regional TDM program inventory, 46 were CTR programs and 60 were non-CTR programs. More than half of all programs in the inventory (58%) listed work trips as their primary focus, while 26% indicated they addressed all trips. The other 16% of programs were focused on school trips. None of the programs selected "non-work trips" (such as recreation, personal errands, or any other trip that isn't to/from school or work) as the program focus.

The approach of the CTR law to identify large employers with many employees commuting during peak hours was a good first step in using demand management to tackle congestion and its impacts. Data collected by WSDOT in the 2017/2018 CTR survey cycle indicate that there were nearly 83,000 worksites in the central Puget Sound region at that time (a single company may have several worksites/locations). Of these worksites, only 600 are "CTR-affected," meaning they have over 100 full-time employees commuting during peak hours (starting work between 6 a.m. and 9 a.m.) and have chosen to implement a CTR program. Though they constitute a small share of total worksites, these 600 sites account for over 500,000 employees, which represents about a quarter of all employees in the region. See Figure 21.

Figure 21 - CTR-Affected Employees in the Region, 2017/2018



However, this still leaves three quarters of commuters out of the equation. More data analysis is needed to evaluate and identify any trends of which industries or types of jobs are more likely to have CTR programs. Shift-based jobs may be less likely to have a CTR program, given they are less likely to have the bulk of their workforce commuting during peak morning hours and may have more part-time workers. Shift work is common in the healthcare, transportation, law enforcement, and service industries.

Furthermore, according to PSRC's combined 2017/2019 Regional Household Travel Survey data, only about 24% of all trips made in the central Puget Sound region are commute trips. Expanding the reach of these programs to address work trips at non-affected worksites and even non-work trips could extend the impact of TDM in the region and the state.

Employees Offered Transit Subsidies Are More Likely to Use Transit

According to the 2017/2019 Regional Household Travel Survey data, about 42% of workers in the region said they were offered a transit subsidy by their employer, while 51% said they were not offered a subsidy and 7% were unsure. The transit mode share among workers who were offered a transit subsidy was 18%, compared to 5% among those who were not offered a subsidy and 8% among those who were unsure. Employees who were offered a transit subsidy were more likely to use transit than those who were not.

Education and Marketing are the Most-Utilized TDM Strategies

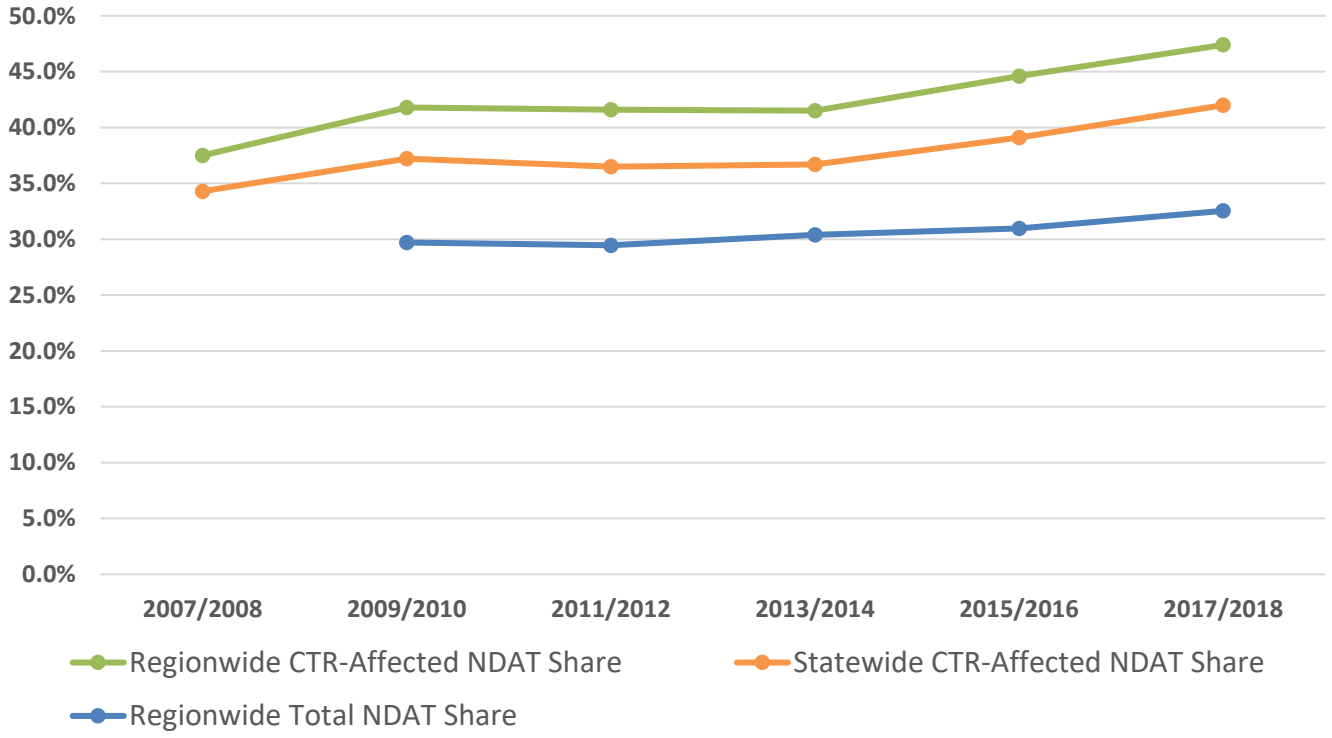
The regional program inventory asked implementers which TDM strategies they utilized in their

programs. Respondents could select all that applied among the following choices: education, marketing, consultation, regulatory, incentives, trip planning, gamification[24], financial support, rewards, and other. Ninety-two percent selected education as one of the strategies they used and 82% selected marketing. Fifty-two percent of respondents indicated they used incentives, 42% financial support, and 39% rewards. Anecdotally, implementers have indicated there often is not enough funding available to subsidize non-drive-alone trips or provide financial support. Education and marketing are lower-cost strategies.

Non-Drive-Alone Trip Rate is Higher at CTR Worksites

According to the 2017/2018 CTR survey data collected by WSDOT, just over 47% of commute trips at CTR-affected worksites[25] in the region were non-drive-alone trips (i.e., modes other than single occupancy vehicles). Across all worksites in the region, about 32% of commute trips were non-drive-alone trips. Collectively, CTR-affected worksites with programs in the region have a higher non-drive-alone trip rate than the region as a whole (all worksites). See Figure 22.

Figure 22 - Regionwide and Statewide Share of Work-related Non-drive-alone Trips (NDAT)



[24] Gamification refers to the application of game-design elements, like challenges, rewards, and incentives in non-game contexts, like TDM, to increase participation and engagement. An example would be a campaign asking employees to use trip diaries for a month and the person with the fewest drive-alone miles at the end of the month receives a reward.

[25] This number only reflects employers who are considered CTR-affected and provided survey data to WSDOT.

What's Ahead?

The Future of TDM

Population and job growth continue to add demand to the regional and statewide transportation network. TDM supports the VISION 2050 transit-focused growth strategy that mitigates congestion by encouraging alternatives to drive-alone trips. TDM efforts can help shift personal mode choice to vanpools, transit, biking, and even eliminating a physical commute through telework. Telework constituted a very small mode share in recent years with varying support from employers until the COVID-19 pandemic prompted a widescale test of telework feasibility. While the mode share of teleworking in the long term is still yet to be determined, the pandemic has undoubtedly changed perceptions and opinions on telework and made it a more viable TDM strategy for many employers.

The following are key issues and steps for moving forward:

Improving TDM Integration in Planning

- Washington State Growth Management Act (GMA) provisions call for the integration of transportation, including demand management, in the comprehensive plans that jurisdictions update periodically.[26] State law also includes requirements for the CTR plans adopted by counties, cities, and towns. CTR plans must be consistent with and may be incorporated in related state or regional transportation plans and local comprehensive plans.[27]
- While CTR programming and TDM strategies are often mentioned in local comprehensive plans, there is not always extensive coordination between cities and all TDM programs (especially those that are not affiliated with CTR) during the planning process. Comprehensive plans and affiliated local ordinances affect the success of TDM and CTR programs. For example, parking minimums, resilience and/or emission reduction goals, ordinances related to CTR enforcement, and many other policies can serve to prioritize TDM in local planning, while their absence can undermine TDM effectiveness.
- TDM should be considered and addressed at the planning, programming, and implementation stages of regional and local comprehensive plans.
- There are many jurisdictions in the region where the local comprehensive planning process and the CTR planning process are already well-integrated, but this is not consistently the case. The goal is for improved coordination of TDM programs with transportation and comprehensive plans as well as implementing programs and regulations. Additional guidance to local planning staff and TDM program implementers could improve this coordination.

Measuring Program Effectiveness and Efficiency

- As outlined in the Existing Conditions section, given a lack of data it is difficult to track the impacts of TDM programs in the region. Specifically, there is not a consistent data collection

[26] RCW 36.70A.070 Section 6(a(vi)) and 6(b) address the transportation element of the comprehensive plan. Demand-management strategies are among the listed requirements.

[27] RCW 70A.15.4020

strategy across CTR and other TDM programs and there is no parallel data on worksites without CTR programs to compare to those with programs.

- PSRC should coordinate with TDM implementers in the region to identify opportunities to collect data and evaluate the effectiveness and efficiency of TDM programs and share evaluation strategies.
- Demonstrating that TDM strategies effectively accomplish program goals (including reducing drive-alone trips) is a critical first step ahead of any efforts to increase funding of TDM or to expand the CTR Law. Defining program goals, identifying the best TDM strategies to support those goals, and measuring how effectively the strategies achieved the goals are all areas where information sharing among implementers and use of a shared vocabulary may improve outcomes. Furthermore, measures related to program efficiency (relating outcomes to resource inputs) are important in expanding a program with many implementers already competing for limited resources. Continued coordination between WSDOT, PSRC, and implementers in the region is needed to advance this effort.

Evaluating and Addressing Equity in TDM

- A common concern with many of the region's TDM programs stemming from the CTR law is that affected CTR worksites that choose to comply tend to be white-collar, office jobs. The result of this may be that the programs benefit only a segment of the population that is more likely to earn higher incomes and may have less of a need for employer benefits like transit subsidies than those with lower incomes.
- Programs do not consistently collect or share demographic data to determine the equity of TDM program availability or outcomes. Thus, it is unclear if TDM program benefits are equitably provided across regional populations, specifically people of color and low-income populations. Furthermore, there is no complete list of every CTR and TDM program in the region to guarantee statistically valid analysis, even if this data was available.
- TDM implementers should evaluate the equitable distribution and benefits of TDM programs and, if there are deficiencies, identify opportunities to improve equity.
- PSRC will continue collaborating with state agencies, employers, and local implementers to integrate equity considerations into TDM efforts, including strategies to collect data and evaluate TDM programs.

Modernizing the CTR Law

- The transportation landscape has changed significantly since the passage of the Commute Trip Reduction Law in 1991 and the subsequent Commute Trip Reduction Efficiency Act in 2006. Teleworking is a more viable alternative to physical commuting and there is increasing travel demand outside of peak hours. Currently the CTR law affects only a small portion of all employers in the region and is focused on employees traveling during peak hours only.
- The goals and priorities of the CTR law should be evaluated in coordination with the 2021-2022 CTR Program Update initiative at WSDOT, including an exploration of expanding its scope.
- Specific considerations include expanding focus from large employers during peak hours to include more employers (those that are not currently CTR-affected), commutes outside of

peak hours, and non-commute trips. Expansions to the CTR law scope or implementation may require increased resources for the program.

Technology

Intelligent Transportation Systems (ITS) are technologies that help the transportation system operate more efficiently and effectively. By doing so, they have the potential to improve mobility, increase safety, and reduce emissions. ITS benefits are multimodal and apply to personal vehicles, transit, freight, as well as pedestrians and bicyclists.

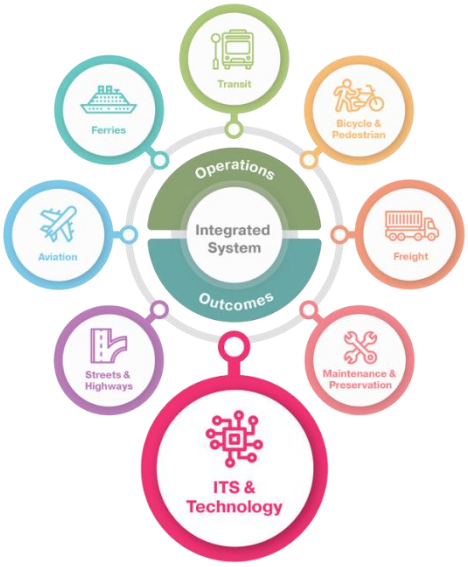


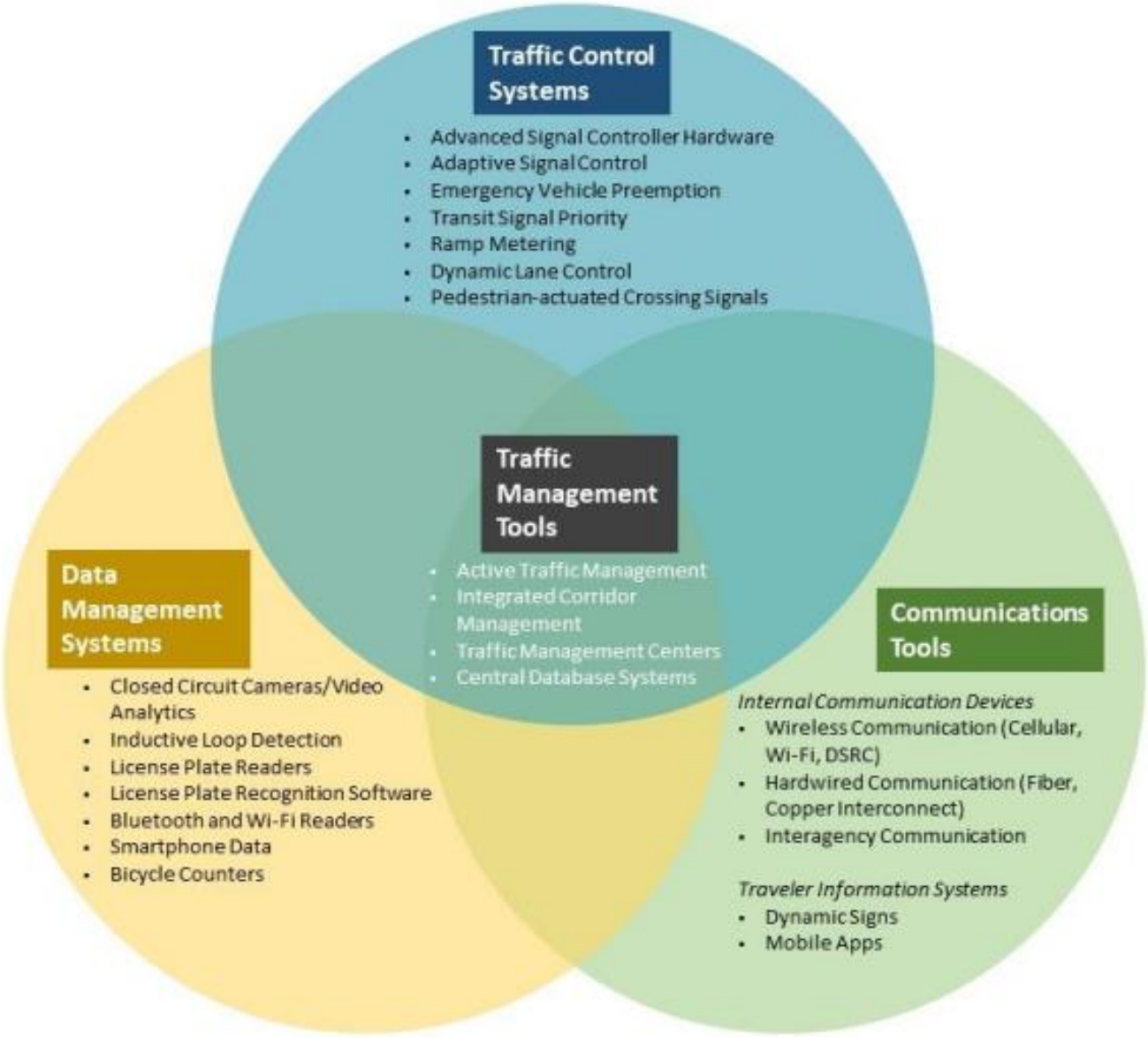
Figure 23 provides examples of the different types of ITS assets that are being used across the region, which generally fit into four categories:

- **Traffic Control Systems** are hardware or devices that interface directly with travelers to improve traffic flow and minimize barriers to mobility across modes.
- **Communication Tools** include *traveler information tools* used to inform travelers about travel times, conditions and schedules and *internal communication tools* used to relay information between devices and operators.
- **Data Management Systems** are tools used to collect multimodal traveler data and systems used to collect tolls and other revenues.
- **Traffic Management Tools** are operating systems that use different elements from the categories above to monitor traffic, identify issues, and manage the transportation system in a coordinated manner.

In addition to these more established ITS technologies, there are other newer and still emerging technologies that have the potential to affect the transportation system in ways that are not yet totally clear. **Shared mobility** is broadly defined as transportation resources– such as cars, scooters, and bicycles - that are shared among users and provide short-term, on-demand access to transportation services. While these services have seen significant growth over the past decade, they still account for only a small portion of overall travel in the region. The extent that these services will continue to grow (particularly in the aftermath of the COVID-19 pandemic) and the effects they will have on the broader transportation system remain uncertain.

Autonomous (i.e., "self-driving") vehicle technology has seen major advancements in recent years but is still in the relatively early stages of development, and the timeline for and impacts of its widespread deployment on the roadways is unclear. The same is true for **connected vehicle technology**, which allows vehicles to communicate directly with other vehicles and traffic infrastructure.

Figure 23 - ITS Deployed in the Central Puget Sound Region by Category



Existing Conditions

Signal/ITS Inventory

PSRC staff worked with member agencies to collect data for a regional traffic signal/ITS inventory to help support and inform regional and local ITS planning. Appendix A (Transportation System Inventory) and PSRC's Transportation System Visualization Tool provide the locations of various ITS assets, with the aim of helping jurisdictions identify where needs and investment opportunities may exist. ITS can be used to move all modes more efficiently and safely, from freight to transit to private vehicles to bicyclists and pedestrians. ITS and operational investments are critical for an effective transportation network that benefits all users of the system. There are thousands of intersections throughout the PSRC region, most of which require some level of traffic control to ensure safety and proper traffic flow. At some intersections, basic elements such as static signage and marked crosswalks may be sufficient to manage the level of activity. In others, signals and other ITS tools may

be more appropriate. For example, there are nearly 700 intersections in the region where National Highway System[28] (NHS) roadways intersect; these are likely to have concentrated levels of activity across all modes, and thus likely to require more sophisticated traffic control. This is reflected by the over 90% of such intersections that are signalized. See Figure 24.

It is important to note that not every intersection necessarily benefits from traffic signals or other ITS investments. Jurisdictions must take various contextual factors into account when deciding what type of traffic control to deploy at an intersection, including traffic volumes, nonmotorized activity, the presence of transit and/or freight, and crash history (among other factors).

ITS Assets

The ITS inventory captures data about an array of ITS tools that benefit users of the region's transportation system.

Signal coordination, when two or more signals along a corridor have synchronized timing cycles, minimizes the number of times motorists, transit vehicles, and bicyclists must stop when traveling along a corridor. It is most effective along higher-volume roadways where signals are within ~3/4 of a mile of each other.[29] In the central Puget Sound region, approximately 70% of the 2,600 signals along the NHS are coordinated.

Signal coordination both reduces travel time and improves safety by increasing the efficiency of traffic flow. Coordinated signals along intersection-dense corridors improve safety for all modes by reducing the amount of time spent lingering at busy intersections. Jurisdictions have the flexibility to change coordinated signal timing based on their policy goals. For example, the City of Bremerton is enacting safety improvements for pedestrians along two major corridors by updating their coordinated timing cycles to provide pedestrians with more clearance time to cross the roadway.

Adaptive signal control (ASC) is technology that continually adjusts signal timing on the fly based on existing traffic conditions along a corridor. It provides quicker, more reliable travel times and enhances transit operations by meeting travel demand in real-time. It also improves safety and prevents traffic incidents by quickly adapting to unforeseen events or conditions. Like signal coordination, ASC can be programmed based on policy goals to best accommodate the needs of all modes that traverse the corridor. In the central Puget Sound region, approximately 9% of signals along the NHS have ASC, although with several projects planned or under construction that number will likely increase soon.

Transit Signal Priority (TSP) reduces delay for transit riders by modifying signal timing as transit vehicles approach an intersection. It decreases transit travel time and improves a transit route's reliability and efficiency. This technology is most effective along congested corridors where transit routes are frequently delayed, such as SR 99 in Snohomish County or Pacific Avenue in Tacoma. In the central Puget Sound region, approximately 12% of signals along the NHS have TSP.

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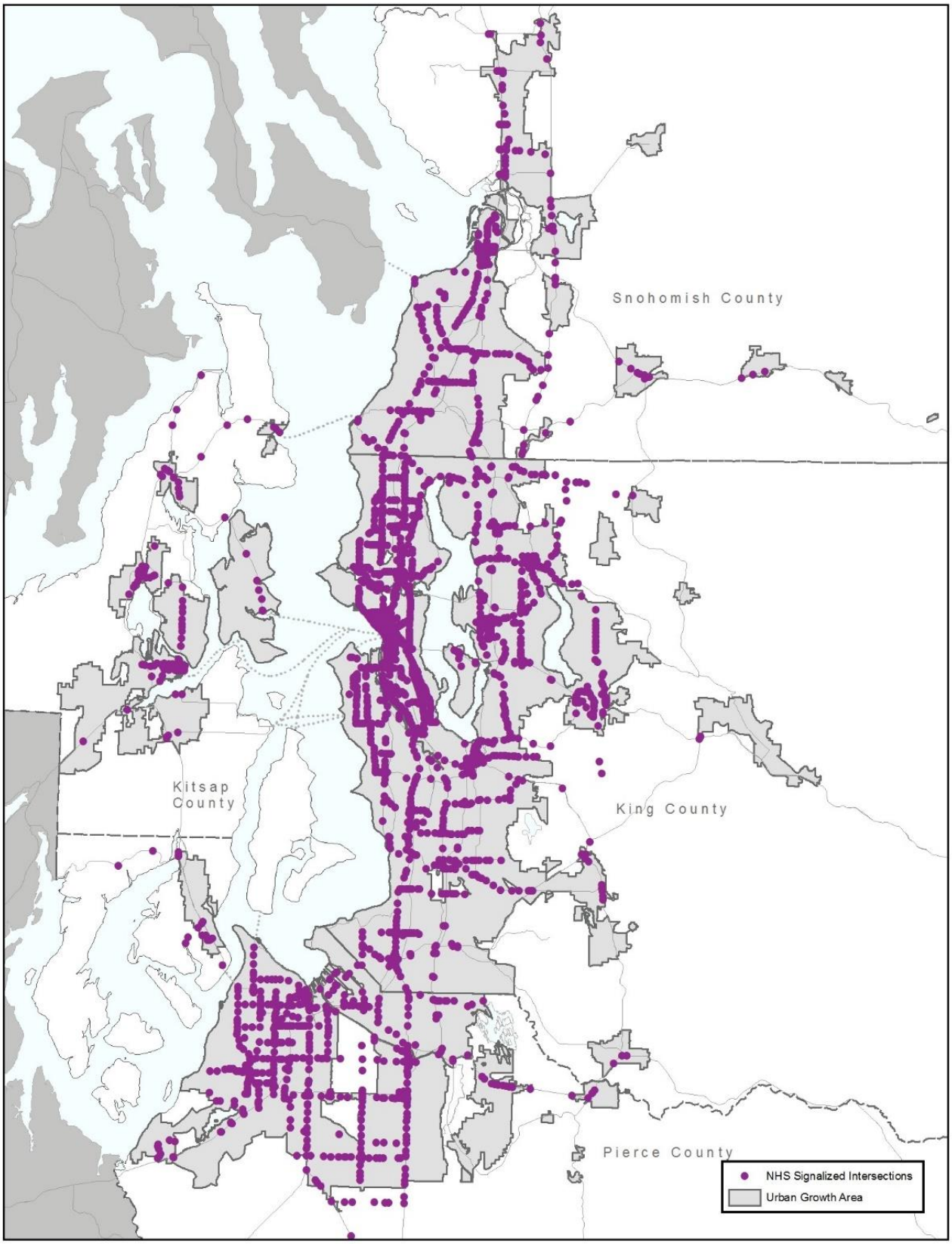
[28] The National Highway System is a federally defined network of high-volume roadways that serve major population centers, intermodal transportation facilities, and other major travel destinations.

[29] FHWA, 2017: https://ops.fhwa.dot.gov/publications/fhwahop08024/chapter6.htm

Figure 24 - NHS Signalized Intersections



Accessible Pedestrian Signals (APS) use tones and vibrating push buttons to make it easier and safer for pedestrians with a visual impairment to cross roadways and travel through an area. In the central Puget Sound region, approximately 32% of signals along the NHS meet APS standards.[30] Overall, nearly 100% of signals along the NHS in the region have at least some type of pedestrian signal.

In addition, although quantitative information was not collected for these assets, there are several other ITS tools being deployed in the region that improve safety for pedestrians and bicyclists. Examples include: Rectangular Rapid Flashing Beacons (RRFBs), which provide a high-visibility strobe-like warning to drivers when pedestrians and bicyclists use a crosswalk; mid-block crosswalks to aid pedestrians and bicyclists across high-speed roadways; and "head start" signal timing which gives pedestrians and bicyclists a few seconds head start to enter crosswalks before cars and trucks. There are jurisdictions across the region investing in these types of pedestrian- and bicyclist-oriented ITS features to improve safety for nonmotorized users of the system, including Edmonds, Everett, Poulsbo, Federal Way, Tacoma, Sumner, and many others.

One area where there are significant gaps is before-and-after performance data that could be used to quantify the benefits of ITS investments. It has been established over decades of deployment that ITS projects have the potential to provide mobility, safety, and environmental benefits. However, continued tracking and validation of these types of performance measurements often does not occur due to cost, lack of other resources, or the inherent difficulty in quantifying certain benefits. While there are increasingly more opportunities to obtain performance data and a growing number of jurisdictions that are attempting to do so, there are still a relative lack of measures being deployed in the region.

Data as a Service platforms are becoming increasingly more useful for transportation planners and project implementers. The need for agencies to collect their own data has lessened over time due to these and other new data sources, and many agencies can purchase data on an "as needed" basis. Leveraging new and better-integrated data sources will help to operate and manage the region's transportation system more cost-effectively.

[30] APS data is not available for approximately 250 signals

*For full results of the ITS Inventory please see Appendix A (Transportation System Inventory).

Newer and Emerging Technologies

Shared Mobility

An array of shared mobility services have been present in the region for nearly a decade, including car sharing, ride hailing, micromobility and others (see sidebar for definitions). Pre-COVID-19 these services were growing at a fairly steady rate and expanding to more jurisdictions across the region. With the emergence of the pandemic it is less clear what future trends will be for shared mobility usage, particularly for services such as ridehailing and ridesharing that require simultaneous sharing in close quarters with other people (as opposed to micromobility or carsharing, which do not).[31]

In general, it is not yet clear what share of the transportation market shared mobility will capture. While use and recognition of shared mobility will likely continue to grow, the share within the region and nationally remains low compared to other modes of travel. This makes it difficult to predict future shared-mobility related changes and impacts to the system.

However, various benefits and challenges have emerged based on the current usage of shared mobility. One of the most immediately recognizable benefits of these services is that they help meet the demand for more convenient and flexible transportation options. In addition, they have the potential to provide easier access to travel for special needs populations such as persons with disabilities, seniors, or youth who are unable to drive. There are also opportunities for shared mobility providers to partner with the public sector to increase access to employment and educational opportunities for disadvantaged communities. An example of this in the region was Pierce Transit's Mobility on Demand pilot program, where they partnered with Lyft to provide key transportation connections to populations outside of the Pierce Transit service area.[32]

Types of Shared Mobility Services

Car Sharing: A shared-use car rental service that allows users to rent vehicles by the hour and, in some cases, return the car to any available parking spot (e.g., Car2Go)

Ridehailing: A service that allows the legal usage of personal vehicles to operate as the functional equivalent of taxicabs. Ridehailing relies largely on mobile phone and GPS technology (e.g., Uber, Lyft).

Micromobility: Short distance shared-use transportation provided by lightweight (usually single-person) vehicles such as bicycles scooters.

Micro-Transit: A privately or publicly operated transit system that has greater operational flexibility than public transit and relies heavily on mobile phone technology (e.g., Chariot, Via).

Ridesharing: Refers to organized carpool services facilitated by transit agencies, carpooling apps that match drivers with riders on daily commutes (e.g., Scoop), and on-demand carpool options (e.g., UberPool).

In terms of challenges, managing and developing a regulatory framework for this dynamic industry has proven to be a significant task for local governments. Challenges have included contested curb

[31] https://tnmt.com/newsletter-snippets/covid-19-and-the-impact-on-shared-mobility/

[32] https://www.transit.dot.gov/sites/fta.dot.gov/files/2020-11/FTA0178-Research-Report-Summary.pdf

space/parking, conflicts with positioning of bikes and scooters on sidewalks and other areas, employment and minimum-wage standards for drivers, and difficulties associated with obtaining and tracking data. For providers, the volatile and rapidly changing nature of the industry has led to a steady influx of new permitting requirements and unstable operating expenses. Establishing an economically sustainable business model that can keep up with new technological developments while navigating an uncertain regulatory framework has proven to be difficult. These challenges have led to significant turnover among providers and raise questions about the overall viability of the industry.

Finally, there are issues related to how these services will hinder or help to meet policy goals such as vehicle miles traveled (VMT) reduction, increased transit use, and more concentrated growth in regional centers, and it is not yet clear what impact growth in shared mobility services will have. While some jurisdictions in the region have developed plans aimed at aligning shared mobility with broader policy goals, decision makers across the region will need to continue to monitor how the industry evolves and develop strategies that seek to maximize benefits and minimize disruptions.

Connected and Autonomous Vehicles

The expectations and timelines for connected/autonomous vehicles (i.e. "CAV" or "AV") hitting roadways in significant numbers have tempered in recent years. Vehicles with partial automation, such as automatic lane and parking assistance, are seeing wider adoption in vehicles at higher price ranges. Fully autonomous vehicles are being deployed in pilot programs and geographically limited implementations that allow for more controlled and predictable environments but are likely far from seeing widespread utilization.

At this early stage, benefits and challenges associated with widespread CAV adoption are still difficult to assess. For example, potential benefits of CAV technology have been stated to include a significant decrease in the number of crashes and a reduction in roadway fatalities and serious injuries.[33] At the same time, such safety benefits are not guaranteed, and new safety risks may be introduced by CAV technology. Defective hardware or software has the potential to cause accidents that would be less likely to occur under human control, and new cybersecurity risks could result in serious collisions if vehicles are hacked.[34]

Currently, the regulatory framework surrounding safety conflicts between autonomous vehicles and other road users has been at the forefront of related state and federal government agendas. The Washington State Autonomous Vehicle Work Group was developed by the Washington State Transportation Commission (WSTC) per direction from the state Legislature in 2018 and is comprised of stakeholders representing both the public and private sectors. The purpose of this group is to assess potential impacts that autonomous and connected vehicles may have on Washington state and identify policy, regulatory and public education needs to prepare for the operation of these vehicles on the region's roadways in the future. The 2021 annual report of the Work Group highlighted that four AV industry companies are currently self-certified with the Washington Department of Licensing to test

[33] https://www.theatlantic.com/technology/archive/2015/09/self-driving-cars-could-save-300000-lives-per-decade-in-america/407956/

[34] Zmud, J., Goodin, G., Moran, M., Kalra, N., Thorn, E. (2017) Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies. Retrieved from: http://nap.edu/24872.

AVs on Washington's public roadways, (BMW of North America, LLC, NVIDIA Corporation, Waymo LLC, and Zoox, Inc.), and the AV industry is continuing to evolve as it works to meet safety, mobility, environmental, and transportation needs.

One recommendation developed by the group in 2021 is to advance a state AV pilot program, directing the WSTC and the AV Work Group to establish a scope and implementation plan, reporting back to the Legislature by the 2023 session with results and recommendations to explore.

PSRC will continue to monitor and report progress on this ongoing work.

Future Conditions

The Regional Transportation Plan includes investments that maintain existing ITS and traffic operations infrastructure, as well as a broad array of new state and local projects and programs. This includes projects such as managed lanes (including express toll lanes) on the interstates, hard shoulder running operations, and other innovative methods of managing travel flow. While the plan does not include a line-item list of ITS projects, the financial strategy does assume a certain level of ITS investment based on local comprehensive plans and prior expenditures. In addition, many of the projects that are line-itemed in the plan through the Regional Capacity Project List include ITS-based elements. The plan supports investing in ITS because they are cost-effective tools for maximizing the operational efficiency of the transportation infrastructure and system.

These established ITS technologies and operational assets are expected to become increasingly more intertwined with newer and emerging technologies as the plan progresses. In addition to the advancement of shared mobility services and CAV technology, the region will also see a potentially rapid increase in the adoption of electric vehicle technology for passenger, transit, and freight vehicles; greater use of real-time traveler information systems to reduce idling and improve the efficiency of freight vehicles; and the continued growth of the electric bicycle market, among other developments. See the Climate and Environment section for more information.

Within the current landscape, the bulk of investment in the research and development of emerging technologies is occurring in the private sector, while the public sector is primarily focused on establishing a regulatory framework, designing infrastructure, and developing plans and policies that seek to maximize benefits and minimize disruptions brought about by the technologies.[35] [36] The plan assumes the continuation of these trends, although there is clearly significant uncertainty regarding what exactly that will look like, the types of impacts and disruptions that will be felt, and the timeline for their deployment and integration into the broader transportation system.

What's Ahead?

Recommended actions related to ITS and emerging technologies were developed based on input received from stakeholders from across the region, and policy board discussions. These include:

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[35] https://www.cbinsights.com/research/autonomous-driverless-vehicles-corporations-list/

[36] https://www.itf-oecd.org/sites/default/files/docs/overview-shared-mobility-growth-trends-indicators.pdf

- PSRC should work with and support member jurisdictions in monitoring emerging ITS activities, highlighting best practices, sharing technical assistance, and providing information on ITS assets and benefits.
- Agencies across the region vary in terms of how much they have invested in ITS assets. This can be due to different needs and opportunities, as well as different levels of awareness and resources.
- In coordination with PSRC staff committees and member agencies, PSRC should consider developing a guidance document for these jurisdictions that includes examples of best practices and highlights the benefits of various ITS deployments. In addition, PSRC should continue to provide opportunities for jurisdictions to come together and share technical assistance, highlight best practices, and discuss emerging ITS activities and issues on an ongoing basis.
- Jurisdictions should consider a multi-pronged approach to better highlight the benefits of ITS, including exploring more cost-effective options for retrieving data (e.g., downloading from controllers), developing and building more performance measures into ITS projects, and educating different groups on the benefits of ITS.

Safety

Safety was one of the key policy focus areas identified by PSRC's Transportation Policy Board early in the development of the RTP and is a cross-cutting issue addressed throughout all relevant sections of the plan. VISION 2050 set a goal for the region to have a "sustainable, equitable, affordable, safe, and efficient multimodal transportation system, with specific emphasis on an integrated regional transit network that supports the Regional Growth Strategy and promotes vitality of the economy, environment, and health." In addition, VISION 2050 ~~includes~~ adopted the following policy related to safety:

> MPP T-4: Improve the safety of the transportation system and, in the long term, achieve the state's goal of zero deaths and serious injuries.

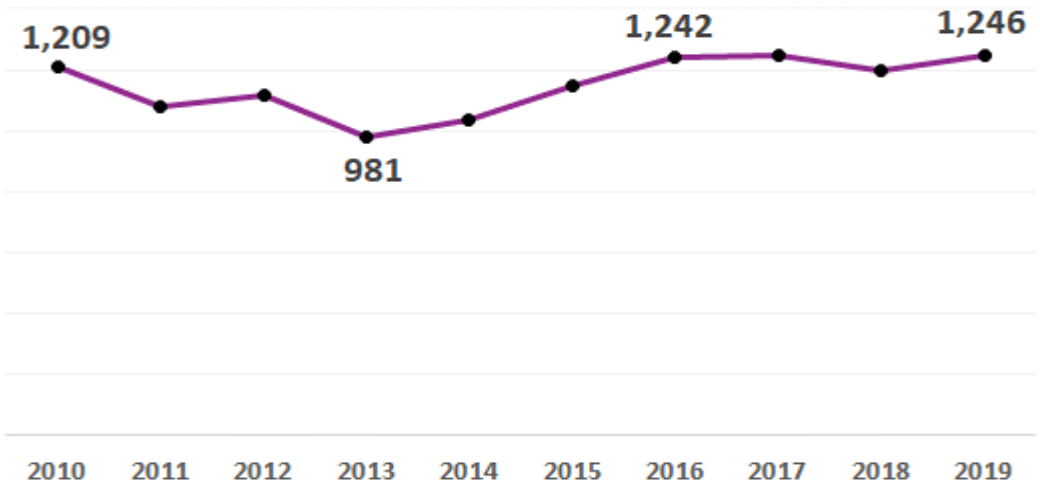
In 2019, the State of Washington adopted the Target Zero plan with the goal to reduce the number of traffic deaths and serious injuries on Washington's roadways to zero by the year 2030. The RTP will implement the region's safety goals through a Safe Systems Approach, discussed in more detail below. ~~Safety was one of the key policy focus areas identified by PSRC's Transportation Policy Board early in the development of the RTP and is a cross-cutting issue addressed throughout all relevant sections of the plan.~~

This section provides information on recent data trends related to safety, as well as programs and activities throughout the region, the state and at the national level. In addition, ongoing and future work is identified to continue to make progress towards achieving state and regional safety goals.

Safety Data Trends

Figure 25 shows the total number of crashes that resulted in fatalities and/or serious injuries in the Puget Sound region between 2010 and 2019. After a decrease in the early part of the decade, there was a significant increase between 2013 and 2016, followed by a leveling-out through 2019.

Figure 25 - Number of Fatal/Serious Injury Crashes in the Puget Sound Region, 2010 – 2019



It is notable that when looking over a longer period, significant progress on safety has been made in the region. In 2002, the total number of fatal and serious injury crashes was over 1,550, substantially higher than at any point over the last decade. However, there is clearly still a lot of work to be done for

the region to reach the goal of zero. Recent trends show significant differences across modes, with pedestrian fatalities increasing at a much faster rate than other modes. Figure 26 below shows the breakdown of fatalities and serious injuries by mode from 2010 – 2019, while Figure 27 highlights the percent change by mode during that same period.

Figure 26 - Fatalities/Serious Injuries by Mode in the Puget Sound Region, 2010 – 2019

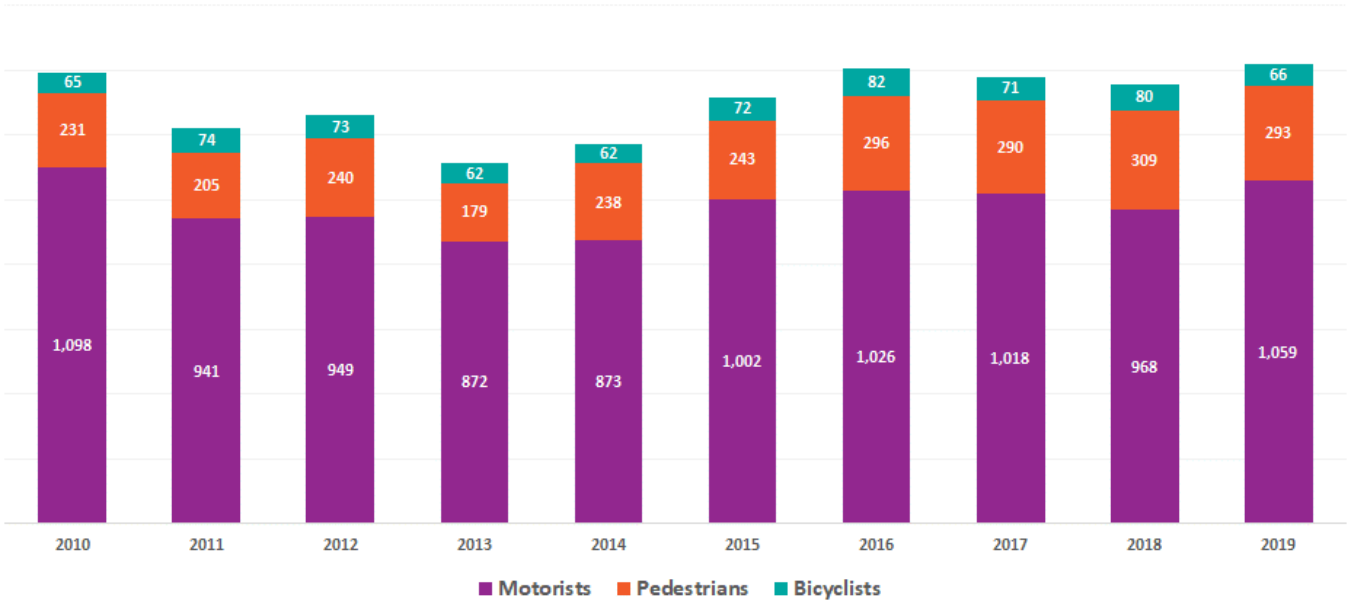
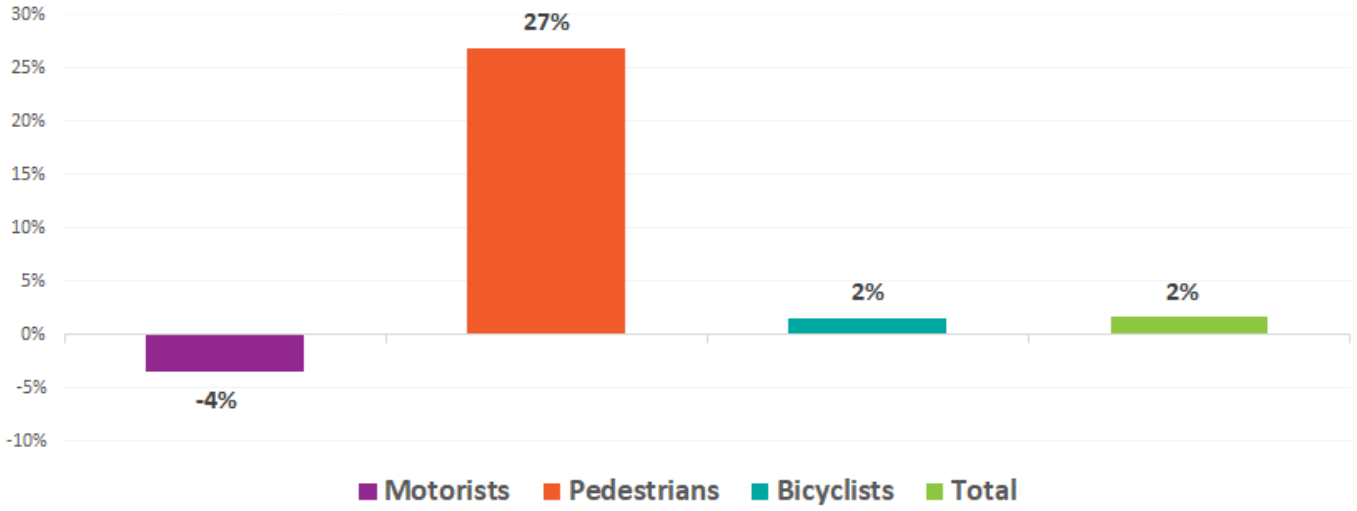


Figure 27 - Percent Change in Fatalities/Serious Injuries by Mode in the Puget Sound Region, 2010 – 2019



As highlighted in Figure 27, for motorists and bicyclists the total number of fatalities and serious injuries remained relatively stable between 2010 and 2019; however, for pedestrians there was a 27% increase during that same period.

Elements of Safety

Safety impacts every aspect of the transportation system, covering all modes and encompassing a variety of attributes from facility design to security to personal behavior. The Federal Highway

Administration (FHWA) refers to the Four E's of safety: engineering, enforcement, education and emergency medical services.

Many organizations and jurisdictions have implemented programs and projects aimed at improving safety and reducing deaths and serious injuries. All seek to achieve the long-term goal of zero fatalities and serious injuries.

National

PSRC hosted a TOOLBOX peer networking session in 2020 on transportation safety and invited the National Safety Council (NSC) to discuss their work and overall trends. The NSC developed a Road to Zero Coalition, which focuses on implementing proven, evidence-based strategies and advancing life-saving technologies to reduce fatalities and serious injuries. The coalition describes three interrelated approaches[37]:

- Engagement and partnership to support policies and identify and share resources for research, roadway and vehicle engineering and design, enforcement, education and trauma care.
- Technology promises strong advances in safety, including in-vehicle technology and connective systems. Partnerships, education and incentives can assist in the prioritization of these applications, for research and evaluation, and to increase adoption.
- Prioritizing a Safe System approach can establish an overall safety culture through an increase in awareness, education and reinforcement.

The Federal Highway Administration further elaborates on the Safe System approach which acknowledges that people are fallible and make mistakes, and addresses system design and operations on anticipating these mistakes and lessening their impact.[38] There are six key principles included in the Safe System approach:

- **Death and serious injuries are unacceptable** – modify how users, vehicles, infrastructure and emergency response operate to both reduce the likelihood of crashes and to reduce their severity when they do occur
- **People make mistakes** – to the extent possible, design and operate the system to anticipate these mistakes and avoid death and serious injury
- **People are vulnerable** – understanding and managing the system to within survivable limits when crashes occur
- **Responsibility is shared** – this includes those who design and manage the system, vehicle manufacturers, emergency responders and law enforcement, and all users of the system
- **Safety is proactive** – use tools and data trends to identify patterns and risk and apply effective countermeasures at a system level
- **Redundancy is critical** – strengthen all parts of the system

[37] https://www.nsc.org/getmedia/485b0d61-e657-44e7-84f2-1a4206a7ea33/rtz-report.pdf.aspx

[38] https://safety.fhwa.dot.gov/zerodeaths/zero_deaths_vision.cfm

There are five elements that work together in a holistic approach:

- **Safe road users** – all users of the system are equal, and all share responsibility to operate safely, with support from education and enforcement. For example, safe walking means crossing the street during the "walk" phase at a signalized intersection; safe biking means riding in the direction of traffic; safe driving means following signs and speed limits and being aware of other users. This element also addresses users not being distracted or impaired, following rules and behaving within the limits of the infrastructure design, and education and enforcement tools that can help.
- **Safe vehicles** – as noted earlier, vehicles are continuing to incorporate technology that makes them safer for people both inside and outside the vehicle if crashes occur, and also to assist drivers in being more aware of their surroundings.
- **Safe speeds** – there is a clear link between speeds and the ability to survive a crash. According to the USDOT, a pedestrian struck by a vehicle traveling at 20 miles per hour (mph) has a 90% chance of survival; at 42 mph that is reduced to 50%, and at 58 mph the chance of survival is reduced to 10%.[39] Roundabouts at intersections are an example of an effective treatment to reduce speeds and the potential impact of a crash. According to FHWA, context-sensitive speed limits can also be effective (e.g., reducing speeds in urban areas with a higher level of pedestrian traffic).
- **Safe roads** – the design of roads can also result in lowering both the incidence and severity of crashes. For example, separating users of the system both physically (such as sidewalks, dedicated turn lanes, etc.) and through timed transfers (e.g., providing pedestrians dedicated signal time while traffic is stopped), as well as increasing awareness of other users and hazards (e.g., rumble strips and street lighting) can help to make roads safer for all users. The concept of safe roads extends through all aspects of the system, from design and construction of the facility through to maintenance and operation.
- **Post-crash care** – this element relies on the quick and efficient response when a crash occurs, including emergency responders, crash investigators, incident clearing, and follow-up actions. Data collection and documentation can help shed light on causal factors for future mitigation.

State

Washington state has adopted "Target Zero" as the required Strategic Highway Safety Plan under FHWA's Highway Safety Improvement Program. Target Zero sets a goal of zero deaths and serious injuries on roadways by 2030. The plan identifies key actions under three categories – High Risk Behavior, Crash Type and Road Users – that the state or local jurisdictions can take to improve traffic safety. The plan also addresses system and technological approaches and identifies best practices in policies, regulations, equity and partnerships.

The Washington Traffic Safety Commission provides information on state safety trends and their grant programs that address impaired driving, motorcycle safety, communications, community traffic safety and local law enforcement support, youth programs, and others. In 2021 the Commission launched a

[39] https://highways.dot.gov/sites/fhwa.dot.gov/files/2020-11/FHWA_PedSafety_ActionPlan_Nov2020.pdf

new "Together We Get There" campaign to develop awareness and foster an overall traffic safety culture.

Local

Local jurisdictions are addressing safety through various types of projects and programs. Over 20 cities and towns across the region have developed Local Road Safety Plans, which prioritize projects based on analysis of WSDOT crash data to identify risk factors and key locations. Many other jurisdictions in the region incorporate safety initiatives as part of other planning and implementation efforts.

Some examples of local safety projects and initiatives happening across the region include:

- Proactively educating users of the transportation system through collaboration with local advocacy groups, safety campaigns, and other events
- Creating safer pedestrian and bicycle pathways, including safe routes to school
- Employing road design techniques that improve safety
- Deploying street calming measures in residential areas
- Upgrading railroad crossings
- Targeted enforcement efforts (e.g., Target Zero Patrols, DUI Patrols)

Examples of Local Safety Plans and Initiatives

The City of Bellevue adopted a VISION Zero Strategic Plan and the City Council passed a resolution in 2020 approving a Safe Systems approach. The City also produced a story map that includes a dynamic data dashboard.

The City of Pouslbo's Street and Pedestrian Safety Plan focuses on identifying high-risk locations for nonmotorized users and developing potential strategies and counter-measures to make them safer.

What's Ahead?

As described throughout this section, many efforts are underway to address safety and make progress towards the goal of zero fatalities and serious injuries on the region's transportation system.

PSRC will continue to emphasize safety throughout all aspects of the planning process, from the overall system goal as identified in VISION 2050, to the long-range planning and investments identified in the Regional Transportation Plan, and through the more detailed project evaluation criteria that is used to award PSRC's federal transportation dollars to specific near-term transportation investments.

Project Selection

PSRC conducts a project selection process every two years to award Federal Highway and Federal Transit Administration funds to priority projects.[40] The evaluation criteria are grounded in the policies and direction from VISION 2050, and the work to prepare for the 2022 project selection process identified key improvements to how safety will be addressed and evaluated. In addition, PSRC is called

[40] https://www.psrc.org/our-work/funding

on to develop guidance and to work with partners to identify best practices and effective solutions.

Future Work

Some key next steps on safety will include the following:

- Data collection and monitoring of state and regional safety trends, considering contextual layers such as population and employment growth, travel mode changes, and equity. Report to the board annually.
- Continued prioritization of safe infrastructure and separation of vulnerable modes in project development.
- An evaluation of the safety revisions included in PSRC's project selection process for determination of any further changes needed in subsequent funding competitions.
- PSRC will work with partners to develop guidance and compile best practices on effective safety measures and programs.
- PSRC will convene regional partners and stakeholders to discuss the challenges and solutions in meeting safety goals. This will include addressing the full spectrum of safety elements and a Safe Systems Approach.
- Develop a regional safety plan, including actions, targets and performance indicators. Seek resources for regional and local planning and projects.

Maintenance and Preservation

Maintaining and preserving the region's transportation assets in a safe and usable condition is critical to keeping people and goods moving throughout the region. These under-the-radar investments, which range from re-paving projects to the replacement of transit vehicles to seismic retrofits, make the transportation network function in a safe and usable manner.

While the two are often discussed together, maintenance and preservation are somewhat distinct. *Maintenance* refers to more routine preventative activities that maintain or improve the functional condition of an asset (e.g., "chip seal" – the application of a protective surface to an existing pavement), while *preservation* refers to costlier activities intended to more significantly extend an asset's useful life (e.g., structural reinforcement of an existing bridge or reconstruction of a roadway). *Operations* are noncapital costs associated with operating all facets of the transportation system (e.g., transit operations, active traffic management, or traffic signal retiming).

Federal transportation policies have increasingly prioritized the maintenance, preservation, and optimization of existing transportation infrastructure and services. Federal law and regulations emphasize maintaining and preserving existing transportation infrastructure and services through the deployment of performance-based planning measures. The purpose of this approach is to increase accountability and transparency at the local level, improve decision making through better information, and ultimately provide the most efficient investment of federal transportation funds towards maintenance and preservation of transportation infrastructure. In addition to this federal direction, the Policy Framework for PSRC's Federal Funds sets aside a portion of both FHWA and FTA funds for maintenance and preservation investments.

Years of deferred maintenance in the central Puget Sound region have resulted in a significant backlog of maintenance and preservation investment projects, and many agencies are experiencing shortfalls in revenues to address needs. Responding to these fiscal realities, cities, counties, the Washington State Department of Transportation (WSDOT), and transit agencies are stretching dollars further through innovative cost saving measures in maintenance and preservation project design, phasing, and timing. For example, cities are using more expensive concrete when paving highly used transit lanes whereas remaining lanes are treated with asphalt or other less expensive materials. On highways, WSDOT has implemented new approaches to extending the life of pavements through practices such as dowel-bar retrofitting (a method of reinforcing cracks in highway pavement by inserting steel dowel bars in slots cut across the cracks). Additionally, key safety investments such as seismic retrofits are being prioritized.

Despite these measures, existing resources are currently not sufficient to make critical maintenance and preservation investments to keep people and goods moving, which can have significant consequences to the system and the economy. For these reasons, the region commits as a top priority to maintain, preserve, and operate the existing transportation system in a safe and usable state. Maintenance, preservation, and operations programs represent approximately 56% percent of

the plan's total costs, and preservation and maintenance needs on all facilities are included as part of the plan's financial strategy.

Current State of Maintenance and Preservation in the Region

To identify and better understand the key maintenance, preservation, and asset management issues facing agencies across the region, PSRC staff has:

- Conducted interviews with a sample of 15 local jurisdictions to better understand the spectrum of local asset management practices. See more detail on the interview findings in Appendix C (Maintenance and Preservation).
- Reached out to several peer Metropolitan Planning Organizations to learn about other regions' approaches to data coordination.
- Conducted a comprehensive review of existing condition data on state, transit agency, and city and county-owned assets across various asset categories (e.g., pavement, bridges, sidewalks, ITS, etc.), including identifying where gaps exist and which issues are hindering data collection and integration.

The findings from these interviews, discussions and research are discussed below.

Estimating Regional and Local Need is a Challenge

A main area of focus has been identifying issues and challenges associated with collecting and integrating transportation asset condition data. Discussions with stakeholders highlight that the current disparate and inconsistent local approaches to data collection and management across the region limits PSRC's ability to integrate data, and to understand and communicate transportation asset conditions at the regional scale. This lack of comprehensive, consistent and integrated regional data for a number of transportation asset categories makes it more difficult to effectively estimate what the maintenance and preservation need is at the regional scale, as well as to conduct other types of cross-jurisdictional needs assessments.

In addition, major gaps in datasets within jurisdictions, insufficient resources to collect new data, and a lack of access to tools required to process condition data have impacted some jurisdictions' ability to accurately and comprehensively estimate need at the local scale as well.

These limitations in articulating current and future maintenance and preservation needs lead to a less comprehensive approach to planning and delivering investments at the regional and local levels, reduce opportunities for cross-jurisdictional collaboration and shared resources, and potentially decrease competitiveness for funding opportunities.

Maintenance and Preservation is Underfunded across the Region

While asset condition data and estimates of need at the regional scale are incomplete, we know from interviews and stakeholder discussions that years of deferred maintenance have led to jurisdictions across the region facing significant maintenance and preservation backlogs, particularly when it comes to pavement and bridges. Many agencies are experiencing budget shortfalls and existing resources allocated to maintenance and preservation have not been sufficient to address these backlogs or, in some cases, prevent them from growing.

Different jurisdictions face different types of challenges in funding their maintenance and preservation needs. For example, jurisdictions with a high concentration of freight routes traveled by heavy haul trucks often face a large backlog of pavement rehabilitation and reconstruction work that leaves little funding for proactive preventative maintenance, ensuring that the backlog will continue over time. Some jurisdictions are unable to obtain maintenance grants because their assets are in poor condition (leading to a perpetual cycle of disinvestment), while others struggle to meet growing compliance requirements for assets such as stormwater infrastructure or Americans with Disabilities Act (ADA) compliant curb ramps. In addition, maintenance and preservation often competes directly with other funding priorities, such as capacity investments, in the budgeting process. Constrained budgets mean that decision makers sometimes make the difficult choice to allocate fewer resources towards maintenance and preservation than is necessary.

Maintenance and Preservation in the Regional Transportation Plan

The plan commits, as a high priority, to funding the maintenance, preservation and safe operation of the existing transportation infrastructure. The methodologies used to estimate these needs across transportation assets incorporate not only the cost of meeting the existing backlog, but also of maintaining a certain state of good repair. PSRC worked with stakeholders to determine specific definitions for each asset. For example, pavement being in a "state of good repair" is defined as being in satisfactory condition per the industry standard Pavement Condition Index rating system. For bridges, a "state of good repair" means (among other things) that a bridge is replaced in a timely manner when it has reached the end of its useful service life (per WSDOT's useful life definitions). The plan's financial strategy reflects a concerted effort to develop informed estimates of maintenance and preservation need.

Some examples of the major investments assumed in the plan for maintenance and preservation include:

- Over $10 billion to replace and preserve the region's bridges and culverts. Specific to bridges, nearly 12% of locally owned bridges will need to be replaced by 2050, at an estimated cost of $2.6 billion, and 7% of state-owned bridges at an estimated cost of $1.7 billion.
- The plan assumes 11 of Washington State Ferries' existing 21 ferries will need to be replaced by 2050 at an estimated cost of $2.7 billion. Including the need for five new ferries to replace retired vessels as well as to serve as relief vessels, the total investment in the plan is $3.8 billion.
- Maintaining and preserving the region's roadways – including addressing the existing backlog – is a $28 billion investment. The needs of I-5 alone are estimated to be at

Seismic Retrofits

Washington state has the second highest risk in the country of large, damaging earthquakes. In the Puget Sound region, earthquakes have the potential to damage critical transportation infrastructure such as bridges.

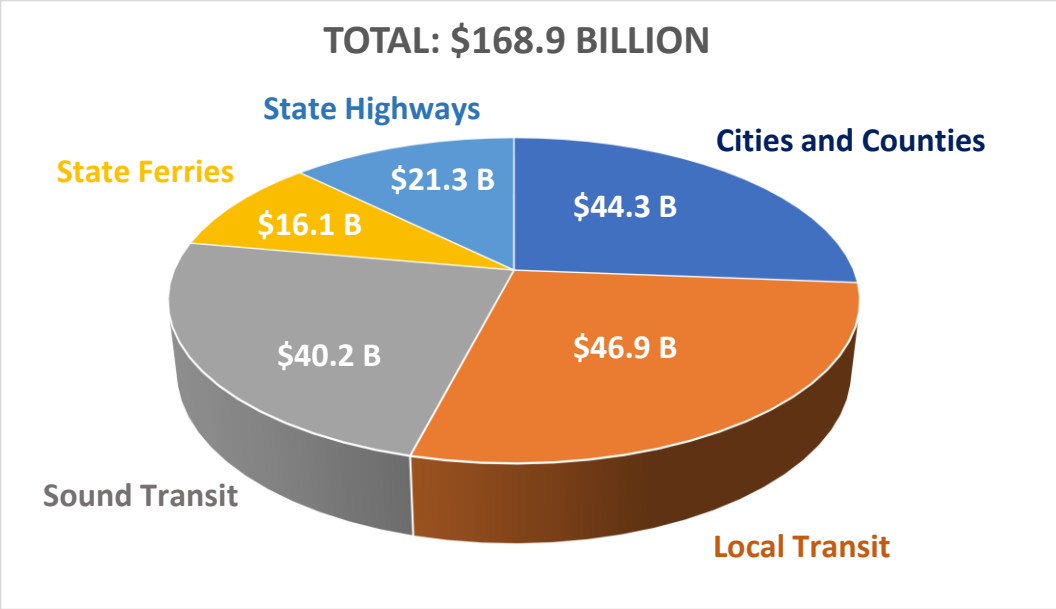
WSDOT has identified bridges around the state in need of seismic retrofit. Much has been accomplished over the last two decades, but much work still remains. An estimated need of $1.1 billion or more exists for bridges in the Puget Sound region.

To manage this large need, WSDOT has focused on lifeline routes, consisting of a network of critical corridors supporting essential services and emergency response. Important to note is that I-5 through Seattle is a high-cost corridor and currently unfunded.

least $2.5 billion based on the most recent data available. This investment includes pavement, bridges, fish barriers electrical and other necessary preservation needs. Nearly 1/5th of the state's total preservation needs by cost are on I-5.

As shown in Figure 28 below, the plan identifies a total of $168.9 billion in estimated need to maintain, preserve, and operate the existing system, which represents 56% of the total investment planned between 2022 and 2050.

Figure 28 - Maintenance, Preservation, & Operations Expenditure Estimates ($2022 Constant)



What's Ahead?

While the RTP financial strategy captures the full maintenance and preservation need of the system through 2050, the findings above indicate that maintenance and preservation remain underfunded and that agencies are often unable to meet the full need in the short-term. Some key action steps for the future include:

- PSRC will continue to refine methodologies and analysis tools to reflect needs and impacts related to maintenance and preservation. This may include consideration of opportunities and tools available to evaluate impacts to the transportation system if it is not fully maintained and preserved into the future, or alternative scenarios reflective of current trends in the levels of investment.
- Continued monitoring of overall investment levels in maintenance and preservation should occur, as well as the use of various funding mechanisms.
- Given the significant preservation needs on I-5, more complete and current data should be routinely gathered to inform decision makers and identify actionable steps moving forward.

Summary

The investments, programs, strategies, and actions presented in this chapter will work together as an integrated multimodal transportation system supporting the vision for an equitable, sustainable and prosperous region.

Investments address the critical task of repairing and maintaining existing transportation assets, building a more well-rounded transportation network, and making the current system work more efficiently and safely for all users.

Building, maintaining, and operating this integrated system will be a significant undertaking, requiring a sustained commitment to raising and deploying resources, working together, and continuing to innovate and respond to change.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3019

Chapter 2- Performing for People, Environment, and Mobility

Introduction

Transportation is not an objective in and of itself, but rather a means to meet the needs of people. With a goal to meet those needs in an equitable and environmentally responsible way while improving mobility, the RTP must be evaluated relative to outcomes related to people, climate, the environment, and mobility.

PSRC has an integrated performance-based planning program that examines historically observed data and develops forecasts for the future using the latest modeling techniques. Integrated throughout the planning process, measures are organized by regional outcomes that have been developed to assess the regional policies and objectives in VISION 2050.

Prioritization measures were used to assess how well projects submitted into the plan would meet these outcomes. These measures were also used to evaluate the overall performance of the Regional Transportation Plan.

Federal transportation regulations include emphasis on a performance- and outcome-based planning approach. The objective of this approach is for states and metropolitan planning organizations (MPOs) to invest resources in projects that collectively will make progress toward achieving national goals. To track progress, Federal regulations require that a set of performance measures be established along with targets. These are reviewed in the System Performance section of this chapter.

The Federal Highway Administration defines the Congestion Management Process (CMP) as “a systematic and regionally accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meets state and local needs.” This approach provides multiple benefits, including a structured process for analyzing congestion, an objectives-driven, performance-based approach, a forum for increased collaboration, and more effective and efficient use of resources. Each metropolitan planning organization the size of PSRC is federally mandated to develop and implement a CMP consistent with the requirements established in 23 CFR 450.320.

In the central Puget Sound region, the CMP is integrated throughout all planning stages rather than conducted as a stand-alone process. PSRC is using a new interactive, Transportation System Visualization Tool to inform the CMP, by providing users with the ability to view regional performance data according to parameters that are adaptable to other regional corridor and sketch planning efforts. This approach integrates well with the assessment of the plan and allows regional performance data not only to be considered throughout the PSRC planning process, but also to be integrated into other efforts throughout the region.

State Environmental Policy Act (SEPA)

Alternative approaches to developing a regional transportation system were evaluated in the Environmental Impact Statement (EIS) for the region's transportation plan adopted in 2010. Preparation of the EIS included extensive agency coordination and public comment over many months. The EIS contained information that allowed regional decision makers to craft a transportation plan that addresses critical regional policy objectives, including improved air quality, reduced greenhouse gases, improved water quality, public health, mobility, and support for the region's growth strategy. VISION 2050, adopted in October 2020, also went through an extensive environmental review process, which included evaluating the impacts of an updated regional transportation network based on that evaluated in 2010. The VISION 2050 Supplemental EIS contains specific potential measures, actions, and programs to mitigate impacts associated with implementation of the planned transportation system. Building on this analysis, PSRC has prepared a SEPA addendum to support the 2022-2050 Regional Transportation Plan. Information on the 2022 Addendum will be available on PSRC's website at psrc.org.

People

Public Engagement

The Regional Transportation Plan is responsive to current and future needs of users of the regional transportation system. To better understand these needs, PSRC worked alongside its membership, community, and other stakeholders to make sure that the views, priorities, and perspectives of the region's residents are reflected in the plan. People from all parts of the central Puget Sound region representing many races, ages and income levels have been involved in the development of the plan.

As a planning agency, PSRC makes decisions that shape transportation, land use, and the natural environment. In the past, many of these decisions have excluded the voices of people of color, people with lower incomes, and other communities who have been left out of the decision-making process. PSRC's continued focus on community engagement explores new ways for the agency to work with community members in developing priorities for its work. Engaging with community in new ways and ensuring Black residents and communities of color have a strong role in informing the plan were priorities.

This has also taken place during the global COVID-19 pandemic, impacting the ability to meet in person throughout the planning process. This challenge was an opportunity to deploy new techniques for engaging with PSRC members and communities, offering some real advantages through virtual engagement opportunities, which will be discussed further in this section.

Several key themes emerged throughout the public engagement process. PSRC members, stakeholders and community members have emphasized future transit investments and needs for accessing transit, maintenance of existing transportation infrastructure and the role the plan has in advancing racial equity. Affordability of transportation was a consistent theme, as was addressing issues caused by transportation infrastructure and systems, often in marginalized communities. Climate change and the need to reduce greenhouse gases was top of mind in youth group outreach, in public survey responses, and follow-up interviews. These topics were all taken up by the Transportation Policy Board discussions and emphasized throughout the plan.

Outreach and COVID-19

Even before the COVID-19 pandemic began, PSRC focused on an inclusive public engagement strategy to reduce barriers to participation. In response to limited opportunities for in-person engagement and public participation, some completed activities and planned strategies include:

- Offering a public opinion survey in multiple formats and languages
- Offering virtual public meetings at a range of times and days to provide options to accommodate different schedules and availability
- Posting an overview video on the project website so people could watch at a time that works for them
- Opportunities to provide public comments online, at PSRC board meetings, and other forums
- An online open house with background information about various sections of the draft plan, with opportunities to comment or ask questions
- Direct, targeted outreach to jurisdictions, Tribes, and community-based organizations

For more information about how various stakeholders were engaged during the plan development process and how this meets state, federal and PSRC requirements, see Appendix E (Public Outreach and Engagement).

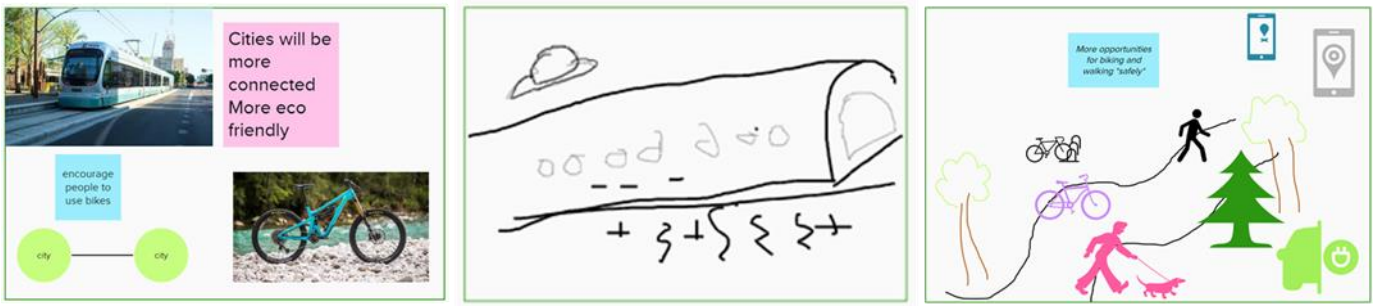
Targeted Outreach for Different Transportation Users

This section outlines how staff from PSRC engaged with members of the community throughout the plan development process, how decision-makers were informed on what staff were hearing, and how voices of the community influenced what is in the plan.

Youth Outreach

Youth throughout the region have unique views on the transportation system and their own priorities for the future of transportation out to 2050. To learn more about these priorities and engage with youth, PSRC met with middle and high school students. From March to June 2021, staff joined five youth committees and community groups to meet with close to 70 students.

Figure 29 - Youth Transportation Visions



The youth were highly concerned about the impacts of climate change in the communities where they live. In 2050 they would like to see a transportation system that embraces innovative and transformational new technologies to be more sustainable and with better connections to transit and alternatives to car ownership, such as walking and biking. They also had ideas about reimagined personal car ownership, and better accessibility for people with different mobility needs – including youth without access to cars. These issues are discussed in different sections of the plan. Figure 29 captures some of the youth session white board work.

Future of Transportation Survey and Interviews

To learn more from a wide range of residents, PSRC conducted two surveys for the Regional Transportation Plan. These surveys covered existing needs of transportation infrastructure, motivators or barriers to the use of public transportation, priorities for the future regional transportation system, and the impact of COIVD-19 on travel work and behavior. Follow up interviews were conducted to explore feedback shared in the survey and hear more from individuals about their personal experience of the transportation system. One of the surveys was of a large representative sample of the region's residents, while a second similar survey was posted on PSRC's website for anyone interested to complete.

An extensive outreach plan was developed to reach people with low incomes, people who are Black, Indigenous or people of color and people who use simplified Chinese, traditional Chinese, Spanish

and Vietnamese to participate in both surveys. Responses were collected in multiple languages and follow up interviews were conducted to validate and build on information in the surveys. The top five priorities of the future transportation system from survey respondents were:

- Reliable, well-maintained roads and highways
- Reliable, well-connected transit service for local neighborhoods
- Expanded transit to major destinations
- Complete bike/ped facilities
- High-speed rail

These issues are all addressed in different sections of the plan.

Coordinated Mobility Plan

The Coordinated Mobility Plan is a component of the Regional Transportation Plan that addresses the mobility needs of populations experiencing challenges due to their age, income, or abilities. For the plan development, between 2020 and 2021, PSRC conducted Coordinated Mobility Plan outreach to communities and mobility coalitions in King, Kitsap, Pierce, and Snohomish counties. The primary purpose of the outreach was twofold: 1) to identify transportation challenges of population groups covered in the plan, including youth, older adults, people with disabilities, people with low incomes and others, and 2) to jointly develop strategies to address the needs.

Key needs identified through these conversations include reduction in travel times – particularly transfer wait times, more transportation services at times when they are needed, more and better information about available services, and better access to health and wellness destinations including medical facilities, pharmacies, and grocery stores. Affordability was also a priority, as well as better connected American with Disabilities Act-accessible infrastructure. There was also recognition of the need for better regional coordination across the wide variety of services and service providers for this growing group who will have greatly increased needs by 2050. The Coordinated Mobility Plan identifies actions and strategies to meet these needs, as well as documentation of the outreach and engagement conducted to develop the plan. See Appendix B (Coordinated Mobility Plan).

Community Focus Groups

In collaboration with a consultant, PSRC is conducting five virtual focus groups comprised of 10-12 people each to gain insights on the future of regional transportation, infrastructure priorities and concerns, perceptions of local transportation conditions, and current barriers to transportation access. The focus groups will build upon insights received from transportation surveys and interviews conducted by PSRC in 2021. Information from these focus groups will be included in the final plan document.

Interviews with Business and Labor Groups

The region's Economic Development District Board adopted the new Regional Economic Strategy in December 2021. During its development, PSRC conducted a series of interviews with regional employers, industry groups, chambers of commerce, ports, and others to determine priorities for supporting and growing the region's economy. Through these discussions, stakeholders identified important transportation issues such as ensuring the reliable and efficient movement of goods

throughout the region to support regional supply chains and exports. To meet these needs, regional gateways, such as deep-water ports and airports, need to have the capacity to accommodate projected demand for cargo and passengers. In addition, new technologies such as electrification can help transform the region's transportation system to meet regional environmental goals.

PSRC plans to conduct additional targeted interviews with business organizations and employers to dig deeper on the needs of commercial users of the transportation system in winter 2022. This section will be updated in the final draft Regional Transportation Plan to reflect what is learned.

Outreach Techniques

PSRC Website and Engagement Platform

PSRC maintains a website about its programs and activities, including a meeting calendar and electronic copies of agendas, public comment periods, comments received, data products, publications, and other relevant information. The website offers web streaming of meetings and often other interactive features like comment forms, surveys, presentations, or searchable maps.

Social Media

PSRC maintains a blog and social media accounts to provide up-to-date information to members and the public. Throughout the development of the Regional Transportation Plan the blog has been used to provide timely information on what is happening with the plan update and feedback heard so far during the various engagement activities

Presentations and Meetings

PSRC provides regular briefings and presentations to boards and standing committees throughout the planning process. In addition to consulting with the agency's organizational and advisory committee structure, PSRC staff regularly attends other regional policy and advisory group meetings. PSRC staff give regular briefings to the subarea transportation planning forums in the region. These forums are composed of elected officials and staff who address transportation planning issues in their subareas.

Online Open House and Draft Plan Comment Period

PSRC will conduct a 45-day public comment period at the release of the draft plan. To solicit comments, an online open house will share information about the plan. PSRC will accept comments in a variety of formats, including through an online comment portal, email, and mail.

All comments received will be responded to and reviewed by staff. These will all be shared with the Transportation Policy Board, Executive Board and General Assembly as they work to finalize and adopt the plan. This section will be updated to reflect comments received prior to recommendation to the PSRC General Assembly for Regional Transportation Plan adoption.

What's Ahead?

Local jurisdictions and transportation agencies are starting to update local comprehensive plans and identify new transportation projects to serve the region's growing communities. As part of these

planning efforts, when conducting community engagement and outreach, extra attention should be paid to understanding the needs and views of historically marginalized groups. PSRC has a variety of tools – displacement risk mapping, an access to opportunity index, a Central Puget Sound Demographic Profile – that can help its members design equitable public engagement processes. As part of its ongoing work on a Regional Equity Strategy, PSRC is developing additional resources and tools, such as an equitable development toolkit and equitable engagement guidance, that should be used in project-level planning, environmental review, and in engaging the public to better understand the needs of the region's residents. These resources should be available in fall 2022. PSRC will also continue to engage with members and the community to highlight the goals of the region's plans and to connect this work to local planning efforts.

Figure 30 - Youth Planning for the Future

Advancing Equity Through Transportation

Every day, people from diverse communities move throughout the region, commuting to jobs, dropping children off at childcare, getting to the doctor's office, or visiting family and friends. A core policy focus of the Regional Transportation Plan advances the development and operation of an equitable transportation system, providing economic and other opportunities for all residents in central Puget Sound.

PSRC acknowledges that the region has a history of discrimination based on race, national origin, and other socioeconomic characteristics. Inequitable planning policies and practices disproportionately limited access to opportunities and created undue burdens for many marginalized communities in the central Puget Sound region. As the region becomes increasingly diverse, providing equitable access to transportation, especially to historically marginalized and underserved communities, is critically important to the overall health of the region.

Equity is an overarching goal addressed throughout VISION 2050 and the Regional Transportation Plan. VISION 2050 calls for the region to develop a coordinated effort to better assess and address issues related to the goal of providing opportunity for every resident, regardless of race, ethnicity, income, age, ability, or other socioeconomic characteristics. Equity-related transportation policies in VISION 2050 include:

- Implement transportation programs and projects that provide access to opportunities while preventing or mitigating negative impacts to people of color, people with low incomes, and people with special transportation needs.
- Ensure mobility choices for people with special transportation needs, including persons with disabilities, older adults, youth, and people with low incomes.

What is Equity?

Equity is a foundational premise for the policies and outcomes in the Regional Transportation Plan. In the plan, equity is defined as when all people have the resources and opportunities that improve their quality of life and help them to reach their full potential. Those affected by economic hardship, communities of color, and historically marginalized communities are engaged in decision-making processes, planning, and policy making. Differences in life outcomes cannot be predicted by race, class, or any other identity.

Building from VISION 2050, the Regional Transportation Plan centers equity to provide a safe and equitable transportation system for all in the region, reducing the likelihood that race and other demographic factors continue to predict who has access to opportunities. Applying an equity approach allows PSRC to better understand how transportation services and investments impact different communities and to ensure the plan meets the transportation needs of historically marginalized and underserved communities. PSRC integrated an equity focus during the development of the plan through a series of board engagements and discussions, enhanced public engagement processes, and completion of an equity analysis on the performance of the plan for historically marginalized transportation users. See Appendix F (Regional Equity Analysis) for more detailed information.

Changing Regional Demographics

The Regional Transportation Plan pays particular attention to the needs of communities that may have historically faced disadvantages and underinvestment, including:

- People of color
- People with low incomes (below 200% of the federal poverty level)[41]
- People with disabilities
- Older adults (aged 65 and above)
- Youth (ages 5-17)
- People with limited English proficiency

Impacts of COVID-19

It is important to note that although the immediate effects of the COVID-19 pandemic have significantly impacted travel patterns of marginalized and underserved communities, the ongoing, longer-term impacts of the pandemic are still largely speculative. PSRC will continue to monitor the impacts of COVID-19 to ensure equitable transportation outcomes for all residents in the region.

These groups have been identified because of their potentially unique transportation needs, and to ensure that they benefit from transportation system improvements and are not disproportionately burdened or harmed. The region has become increasingly diverse with 36% of the population identifying as a person of color, and 20% are people with low incomes. Of the 1 million people added to the region since 2000, 84% were people of color.

The region also continues to age. By 2050, 20% of the region's population is forecast to be over the age of 65, compared to 14% in 2019. The region's older residents have distinct transportation needs. More detailed analysis for older adults, youth, people with disabilities, and people with limited English proficiency is described in the Specialized Transportation section and Appendix B (Coordinated Mobility Plan).

Additional demographic information about specific population groups, including maps, can be found in PSRC's 2021 Demographic Profile.

Analyzing Equitable Outcomes

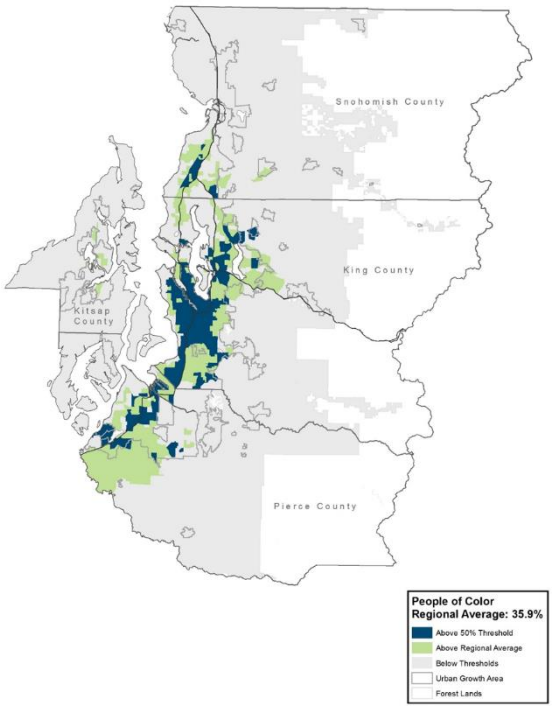
To better understand how transportation investments may benefit or burden these historically disadvantaged communities, PSRC identified parts of the region that have higher concentrations of people of color, people with low incomes, and people with specialized transportation needs than the regional average. These areas were analyzed to identify potential impacts and outcomes of transportation investments to these communities. See Figure 31 for an example map. Some representative measures are discussed below, but a more complete analysis, along with all of the regional maps identifying areas of the region with high concentrations of vulnerable populations, can be found in Appendix F (Regional Equity Analysis).

[41] Due to the high cost of living in the central Puget Sound region, PSRC established the threshold for defining people with low incomes as individuals in households with incomes less than 200 percent of the federal poverty level. In 2019, the federal poverty level for a family of four was $25,750 and 200 percent threshold was $51,500.

Access to transit. Compared to today, major improvements in transit networks will lead to better access to reliable and high-quality transit for areas with higher concentrations of people of color and people with low incomes (82% and 79%, respectively) compared to the regional average (59%). With forecasts showing people within these areas driving less and using transit at a higher rate than the regional average, these investments will meet critical transportation needs.

Travel times. Similarly positive outcomes of plan investments for people of color and lower incomes are seen in forecast travel times. By the year 2050, the average person in the region is forecast to spend about 34 minutes each day traveling, a 15% reduction compared to 2018. People of color and with lower incomes are forecast to drive less than 30 minutes on average per day in 2050, which is an 18% reduction compared to the time they drive today.

Figure 31 - People of Color, 2019



Cost. The cost of transportation can have a dramatic impact on households, particularly those with lower incomes. Forecasts generally show slightly lower household transportation costs for people of color, people with low incomes, people with disabilities, youth, older adults, and people with limited English proficiency than white residents and the region as a whole. However, this measure can be deceiving as these costs represent a higher proportion of household incomes, and while nominal costs may be lower, they can have greater impact on a household with lower income.

Environmental Exposure. As described in the VISION 2050 Final Supplemental Environmental Impact Statement (SEIS), environmental health inequities exist in the region, and health outcomes vary by place, race, and income. Based on locations of people of color and people with low incomes, these populations may experience localized air quality and noise impacts from proximity to transportation infrastructure. At a regional level, there are no discernable differences in air pollution levels between these areas and others as they are produced at a regionwide scale. Noise impacts are not modeled by PSRC. Increased access to transit and denser and more walkable communities could provide increased benefits to vulnerable populations if mitigation measures are successfully implemented to prevent displacement. Mitigation measures specific to environmental health, air quality, and noise should be identified by transportation project implementers as local projects are designed and developed.

Equity Analysis Summary

The Regional Transportation Plan is committed to advancing equity in the central Puget Sound region through the implementation of equitable transportation investments in historically marginalized and underserved communities. Demographic trends show that the region is becoming more racially diverse, residents are living longer, and the number of populations with transportation challenges due to socioeconomic characteristics will continue to grow by 2050. Moreover, currently, a higher share of

people of color are low-income compared to the regional average and Black or African American households are more likely to be cost-burdened than any other race. To provide a strong quality of life and improved health outcomes for underserved and historically marginalized communities, the region will need to continue adapting transportation services and create more places with opportunities in easy reach.

While there are both positive and negative differences between outcomes of these and other measures, the analysis did not indicate any systematic disproportionate burdens of proposed transportation investments on historically marginalized and underserved communities regionwide. Areas that today have higher concentrations of people of color or with lower incomes are well served by planned multimodal transportation investments. Many of the metrics show better outcomes than for the region as a whole, or very similar results. However, potential benefits or burdens from individual projects – past, present, and future – could affect these communities and will need project-level evaluation, analysis, and mitigation. PSRC will continue to work with the Equity Advisory Committee to refine methodologies and employ new approaches to its equity analyses, with particular attention to environmental justice analysis and disproportionate exposure of people of color, those with lower incomes, and other marginalized groups to environmental harms.

Resources for Project-Level Analysis and Mitigation

As part of the development of the Regional Transportation Plan, PSRC created an online resource called the PSRC's Transportation System Visualization Tool, which has data on various aspects of the transportation system, including bicycle and pedestrian facilities, regional freight assets, traffic signals, Transportation Demand Management Programs, specialized transportation services and other information. The tool has been developed to display these data sets in context with other regional information such as demographics, regional centers, and transit stations, among others. Demographic layers include people with low incomes, people of color, older adults, persons with disabilities, youth, people with limited English proficiency, and a combined layer of areas with people with low incomes and people of color. The tool should be useful for local jurisdictions and transportation agencies in understanding the demographics in areas with proposed transportation projects.

Recent growth in the regional economy and pressure on the housing market has led to displacement of residents and businesses when neighborhood conditions have forced residents to move. This has disproportionally affected people of color and people with lower incomes. PSRC has developed an interactive displacement risk mapping tool and interactive report that can help areas of particular risk.

PSRC has also developed a regional Opportunity Mapping Tool to identify neighborhoods relatively rich in resources, assess who has access to these areas, determine how to connect residents in areas with lower opportunity to areas of higher opportunity, and understand what might be done to improve outcomes in places with relatively less access to opportunity. Refining and updating these tools is part of the PSRC Regional Equity Strategy work.

The Washington Environmental Health Disparities Map is another good resource for local jurisdictions and project implementers to assist in the spatial evaluation of local community needs. Jurisdictions are encouraged to use these and other resources to assess risks to communities as part of ~~in~~ transportation project development.

In the development of VISION 2050 and recent work to update the 2022 Policy Framework for PSRC's Federal Funds, PSRC's members and community stakeholders identified a heightened concern for racial and social equity, elevating the different impacts that regional and local transportation investments may have on people of color and people with low incomes. Additionally, many stakeholders note past harms that communities have suffered from previous investments, such as freeways built through neighborhoods or environmental exposure due to proximity to airports and freeways. These, too, should be addressed when opportunities to make improvements to existing infrastructure arise. Implementation of appropriate mitigation strategies will be necessary to avoid disproportionately high and adverse effects on historically disadvantaged communities.

One resource identifying potential mitigation measures is the VISION 2050 Final SEIS, and can also be found in Appendix F. The mitigation measures highlighted throughout the Final SEIS and the policies and actions in VISION 2050 are critical steps to ensure that the region's growth between now and 2050 does not adversely affect its residents, especially those with the highest needs. The goal should be to determine how transportation investments should be made to best support those in need by considering both history and current conditions and for future positive outcomes to be equitably distributed.

What's Ahead?

Moving forward, PSRC will continue to expand on equity in all aspects of regional transportation planning. This will include continued refinement and updating of data and approaches to evaluating equity and equitable outcomes, as well as the development of additional tools and methodologies. PSRC's Equity Advisory Committee has begun implementation of the multi-part and ongoing Regional Equity Strategy and the agency has integrated equity into the policy framework for the distribution of the federal funds PSRC manages. See Chapter 4 for additional future steps. PSRC will continue to collaborate with its members and community partners to advance equity to meet the region's equity goals.

Climate and Environment

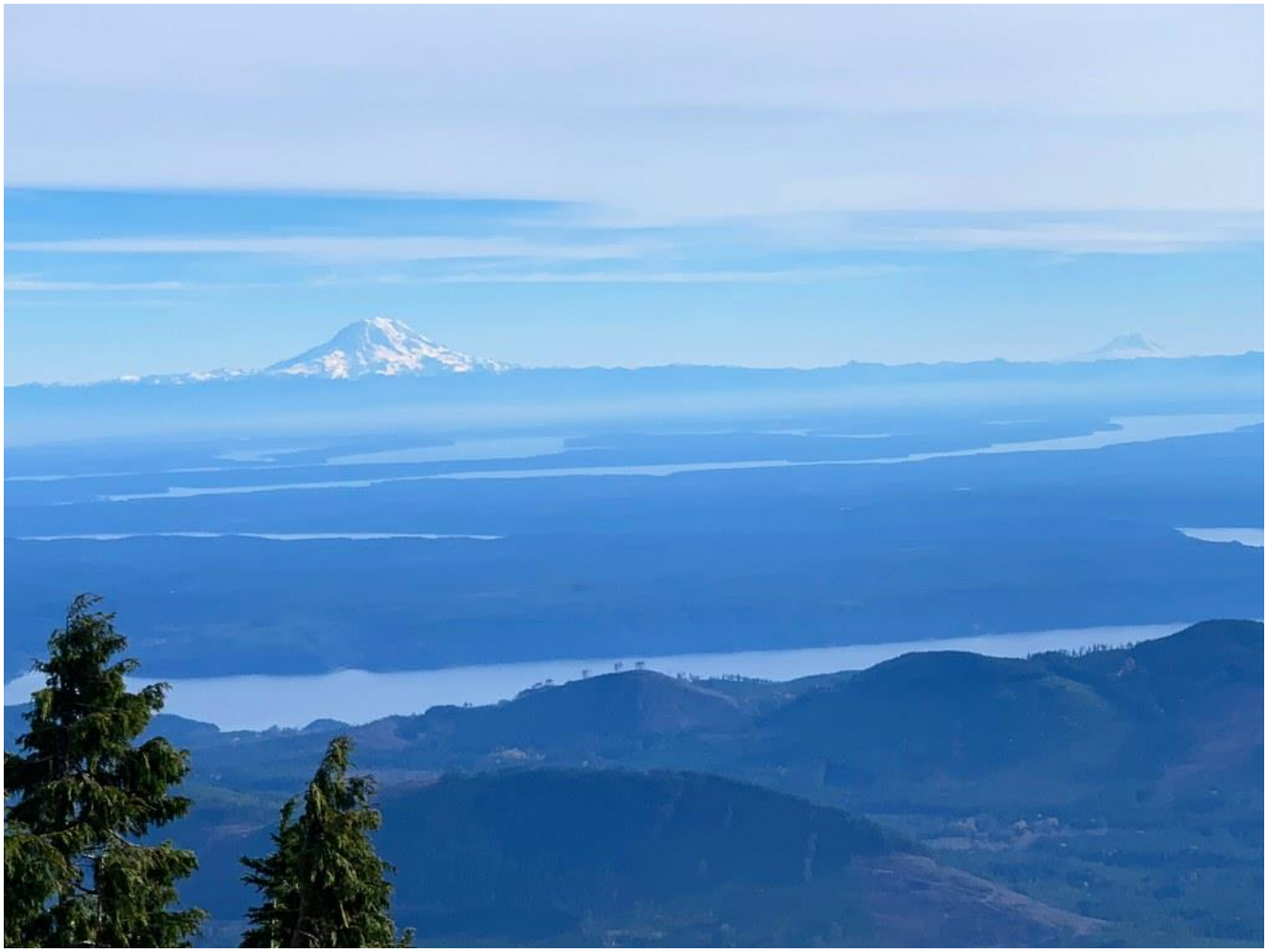
Climate

Climate change is a primary focus of VISION 2050, with a goal for the region to substantially reduce emissions of greenhouse gases that contribute to climate change in accordance with the goals of the Puget Sound Clean Air Agency (50% below 1990 levels by 2030 and 80% below 1990 levels by 2050) as well as to prepare for climate change impacts.

The challenges to meeting this goal are great. In 1990, the region was home to approximately 2.75 million people and almost 1.37 million jobs, with travel of almost 62 million miles a day (an average of 22.6 miles per capita). By 2050, the region is expected to grow to more than 5.82 million people (more than double from 1990) and more than 3.16 million jobs.

There are numerous solutions required to reach the regional climate goals – no one solution will get us there, and all are necessary for success. The Regional Transportation Plan includes the adopted Four-Part Greenhouse Gas Strategy, recognizing that decisions and investments in the categories of **Land Use, Transportation Choices, Pricing and Technology/Decarbonization** are the primary factors that influence greenhouse gas emissions from on-road transportation and are factors for which

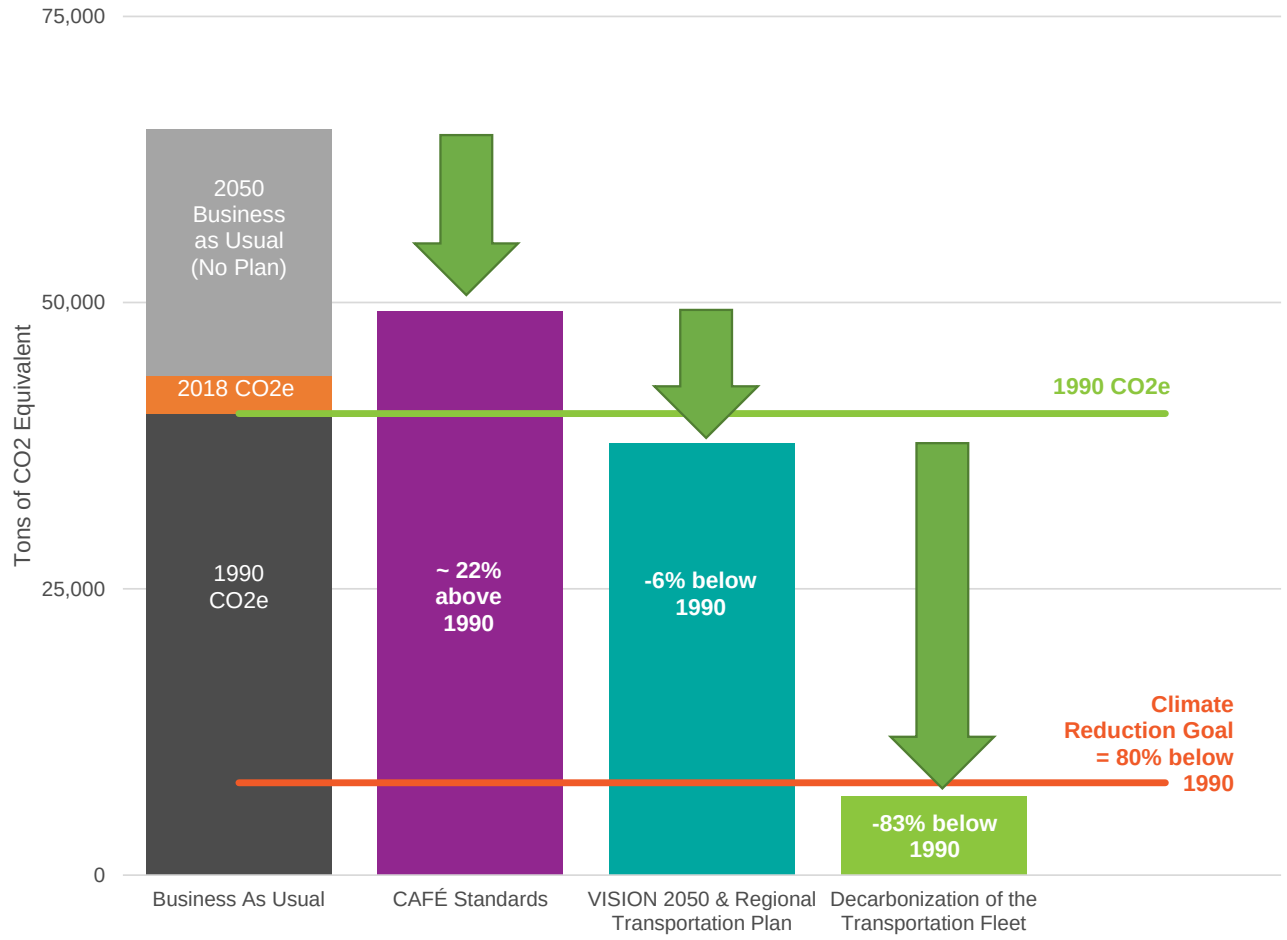
Figure 32 - Mt. Rainier from Kitsap County



PSRC's planning efforts have either direct or indirect influence. The plan identifies ongoing work to advance actions within each category, as well as necessary future steps to ensure full implementation.

With full implementation of the Greenhouse Gas Strategy, the region is on track to achieve the climate goals with a forecasted **-83% reduction** in GHG emissions below 1990 levels by 2050. Figure 33 highlights the impacts of the various steps required to meet the regional climate goals.

Figure 33 - Steps to Meet Greenhouse Gas Reduction Goals

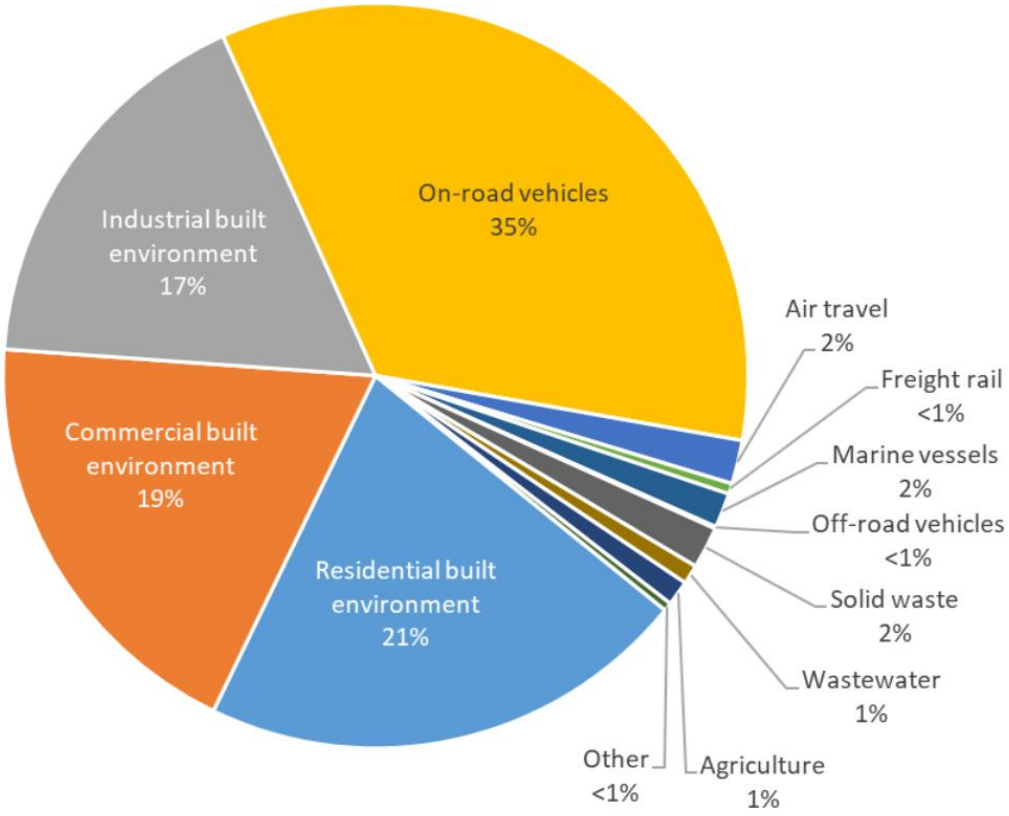


More information is provided in this section on the background of emission sources in the region and how the region has changed since 1990, as well as information on each step identified above to reach the climate goals.

Inventory Of Emissions

Addressing climate change requires an understanding of the sources of greenhouse gas emissions in the region. Figure 34 below illustrates the most recent inventory of greenhouse gas emissions, by sector.

Figure 34 - Regional Greenhouse Gas Emissions Inventory, 2015 (Puget Sound Clean Air Agency)



An update of the regional emissions inventory is currently underway. The Puget Sound Regional Emissions Analysis Project, a partnership of eight agencies and organizations around the region including PSRC, will provide a comprehensive update of regional greenhouse gas emissions and identify pathways for achieving equitable emission reductions across all sectors.[42] This work is expected to be complete at the end of 2022.

As the inventory shows, on-road transportation – which is the sector relevant to PSRC's Regional Transportation Plan and emissions analysis – represents approximately 35% of total greenhouse gas emissions produced in the region. To address emissions from this sector, in 2010 PSRC adopted a four-part Greenhouse Gas Strategy, encompassing the categories of Land Use, Transportation Choices, Pricing and Technology / Decarbonization.

Each of these categories is described later in this section, illustrating past successes, current activities, and future potential.

[42] Puget Sound Regional Emissions Analysis (kingcounty.gov), a project led by King County in partnership with PSRC, PSCAA, Kitsap County, Pierce County, Snohomish County, City of Seattle, Seattle Public Utilities and the King County-Cities Climate Collaboration (K4C)

How Has the Region Changed Since 1990?

In order to understand the challenges of meeting regional climate goals, it is also important to understand where we are starting from. The region has accomplished many things since 1990:

- Passage of the Growth Management Act in 1990 helped the region focus growth within the existing urban footprint. This led to more than 96% of total population growth in 2018 occurring within the Urban Growth Area as compared to 72% in 1990.
- Sound Transit was established and planned a high-capacity transit network for the entire region. In addition, transit agencies across the region have constructed a variety of projects:
    - 7 bus rapid transit routes
    - 3 passenger-only ferry routes
    - 2 light rail lines serving over 20 stations
    - 2 streetcar lines

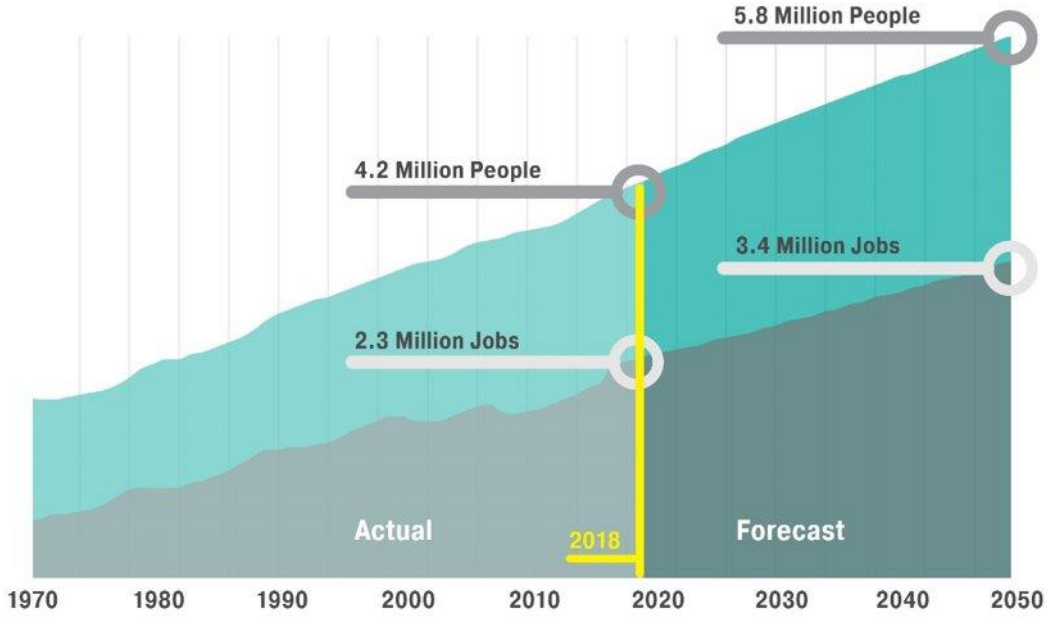
Corporate average fuel economy standards – or CAFE – were set at the national level beginning in 1978. CAFE required auto manufacturers to meet a target for an average fuel economy for the entire vehicle fleet. These standards rose steadily through the early 1980s, but then remained flat at 27.5 miles per gallon (mpg) for the passenger vehicle fleet until 2011. The standards for light trucks saw some additional improvements through 2007, with a fleet average requirement of 24.0 mpg. In 2007, the Energy Independence and Security Act updated the standards for the combined passenger vehicle and truck fleet to 35 mpg by model year 2020. These standards apply to specific model year vehicles in the future; with older vehicles still part of the vehicle fleet, the average combined fuel economy of the regional fleet during this timeframe rose to approximately 28 mpg. In this timeframe the heavy-duty truck fleet was also required to reduce fuel consumption and emissions by about 15% by model year 2018.

Despite these changes, overall greenhouse gas emissions from on-road transportation in 2018 were still approximately 8% above 1990 levels. This is largely because the region gained approximately **1.4 million people** in this timeframe. Vehicle miles traveled (VMT) per person have decreased since 1990 levels to about 21.4 miles per capita per day (compared to 22.6 in 1990). However, the growth in total VMT has been about 1.5% per year. While regional transit ridership has seen robust growth of more than 2.1% per year on average since the Great Recession, many residents today still lack access to high quality transit.

What Does the Region Look Like If Vision 2050 And the Regional Transportation Plan Are Not Implemented?

The region is expected to grow by **1.6 million people** and **1.1 million jobs** by 2050. See Figure 35. If the region continued its activity levels the same as it did in 2018, greenhouse gas emissions could increase by more than **53% over 1990 levels.** The region has a plan to meet the climate goals, but it will require everyone doing their part to achieve results.

Figure 35 - Population and Employment Projections for Central Puget Sound Region to 2050



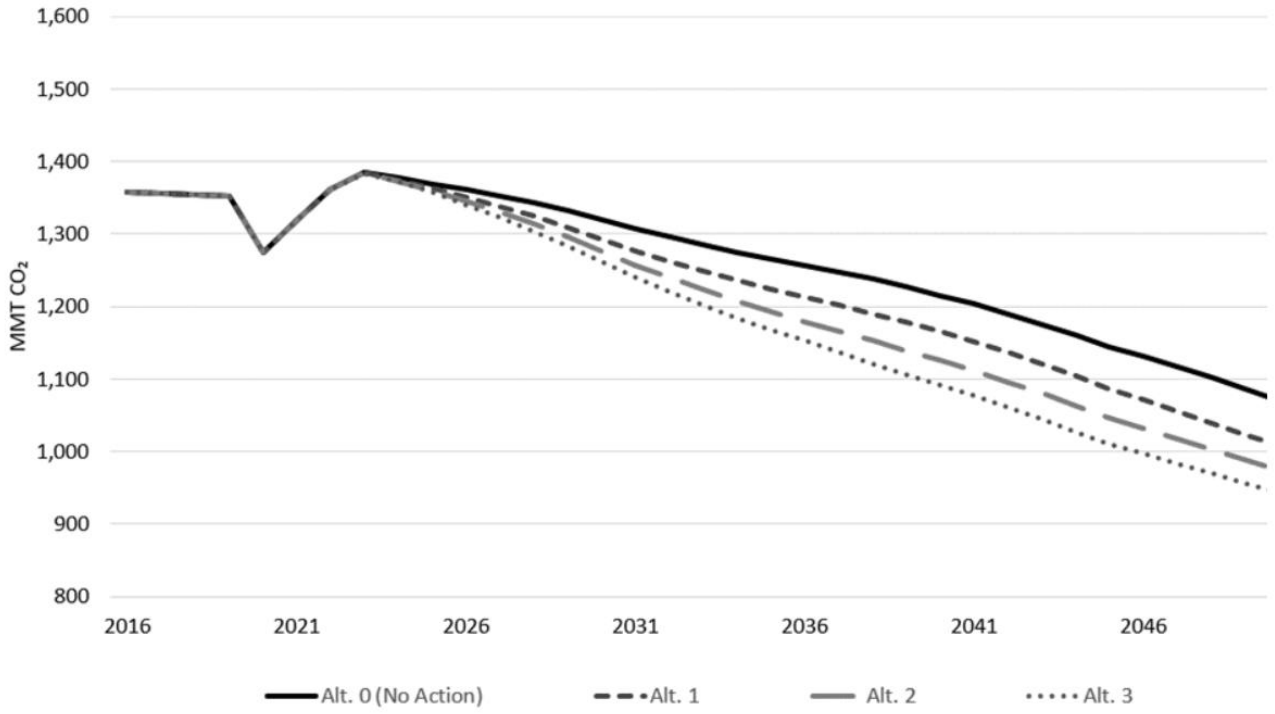
Greenhouse Gas Strategy

The following sections describe each of the three main steps in Figure 33, and how the region can reach the 2050 climate goal.

Corporate Average Fuel Economy (CAFE) Standards

For future model year vehicles, more aggressive revisions were adopted in 2009 and 2011 that would bring the fuel economy target of the passenger vehicle and light duty truck fleet up to 54.5 mpg by 2025. Since that time there have been fluctuations in the proposed standards for the future vehicle fleet. In 2020, the standards were revised downward to a fleet average of approximately 40 mpg by 2026. In 2021, however, the standards were once again proposed for revision, to bring the fleet average up to 48 mpg by 2026. The public comment period of the Draft Supplemental Environmental Impact Statement for this proposal closed at the end of October 2021. Figure 36 below illustrates the impact over time from the 2020 adopted standards (Alternative 0) and the new proposed standards as documented in the Draft Supplemental EIS.

Figure 36 - Projected Annual Carbon Dioxide Emissions ($MMTCO_2$) from All U.S. Passenger Cars and Light Trucks by Alternative[43]



$MMTCO_2$ = million metric tons of carbon dioxide

Regarding heavy duty trucks, the second phase of the earlier standards was adopted in 2016 and applies to model years through 2027. This results in further fuel economy and emission reductions by up to 25%.

The future fuel economy standards alone (as currently adopted) result in decreasing emission levels to approximately 22% above 1990 levels.

VISION 2050 and the Regional Transportation Plan: Land Use

Over the last decade, significant progress has been made to advance the land use and growth policies adopted by the region. A few highlights include:

- Development of updated local growth targets, consistent with the VISION 2050 transit-focused Regional Growth Strategy. These targets will provide the framework for upcoming 2024 comprehensive plan updates.
- Building from the Growing Transit Communities Partnership in 2013, work has continued to advance transit-oriented development throughout the region, including a regional advisory committee housed at PSRC and recent work on a regional housing strategy.

[43] Source: Corporate Average Fuel Economy Standards Model Years 2024-2026, Draft Supplemental EIS, US DOT National Highway Traffic Safety Administration, August 2021

- Local agencies have been proactive in land use planning activities to leverage major transit investments, including light rail, bus rapid transit, and commuter rail.

The region is expected to add 1.6 million people and 1.2 million jobs by 2050. VISION 2050 adopted a **regional growth strategy that focuses 65% of population growth and 75% of job growth by 2050** to be in regional growth centers and near high-capacity transit. Overall, 98% of growth between 2018 and 2050 will be within the urban growth area.

These efforts to focus growth, particularly around high-capacity transit, are key components of the Greenhouse Gas Strategy and support the reduction of emissions into the future. Further potential exists in continuing to work towards a greater jobs-housing balance throughout the region, supported by policies in VISION 2050.

VISION 2050 and the Regional Transportation Plan: Transportation Choices

Significant investments in multimodal transportation have been made over the last decade, including new and extended trails, new and expanded transit lines, expansion of the high-occupancy vehicle lane system, improvements to freight corridors and many other examples. Over the years the region has continued to support these investments through the passage of funding mechanisms such as Connecting Washington, Sound Transit 3, and local ballot measures such as for the expansion of Kitsap Transit Fast Ferries and extensions to Community Transit's Swift bus rapid transit network. In addition, a significant accomplishment was the adoption of long-range transit plans by each of the region's transit agencies and the development of an integrated regional transit network.

Key system investments that have come online since 2018 include:

- Kitsap Transit's third Fast Ferry between Kingston and Seattle
- Community Transit's Green Line
- Extension of Sound Transit's Link Light Rail to the University of Washington and Northgate

The investments in a sustainable, efficient and multimodal transportation system reflected in the Regional Transportation Plan include the following highlights by 2050:

- 70% of the plan's investment in system improvements are for transit, resulting in:
- 36 bus rapid transit routes
- 10 passenger-only ferry routes
- 116 miles of light rail and over 80 stations
- A tripling of transit boardings by 2050
- Over 59% of households and 76% of jobs within ½ mile of high-capacity transit
- A 19% reduction in VMT per capita and an additional 6.3 million hour of transit service as compared to 1990 levels

In addition to the transformational transit expansion, the majority of the plan's remaining projects provide multimodal improvements, including bicycle and pedestrian network connections, HOV lanes, and various operational and efficiency improvements. These investments support 48% of all transit bus passenger volumes and 46% of all truck miles throughout the region. All told, the projects in the

plan add only 5% of freeway and arterial lane miles to the system by 2050. More information on the projects in the plan is found in Chapter 1 and Appendix D.

Many smaller scale and local investments are not able to be captured in PSRC's analysis, but these investments also support the policy objectives of VISION 2050 and the Regional Transportation Plan and can help to achieve long-term emission reductions. Examples of these investments include sidewalks and bicycle lanes, particularly connecting to transit, transportation demand management programs, and operational efficiencies and technology. See Chapter 1 for more information on these investments.

VISION 2050 and the Regional Transportation Plan: Pricing

There are current pricing mechanisms in place today on regional facilities, including the toll systems on the Tacoma Narrows Bridge, Interstate 405, State Route 167, State Route 520 and State Route 99. In addition, policies and practices such as parking fees can be considered part of an overall pricing system that has the potential to raise revenue for transportation investments and also manage travel demand and encourage the use of non-drive-alone travel.

Additional state facilities are anticipated to have some form of managed lane system in the future, as reflected in the project list and the Streets and Highways section of the plan. In addition, since 2010 the financial strategy of the Regional Transportation Plan has included a transition from the gas tax to a user pricing system in the later years of the plan. How the pricing lever is set can determine the potential for additional emission reductions and the management of demand as noted above. The Regional Transportation Plan currently assumes a road usage charge system in place after 2030 at 10 cents per mile in the peak period and 5 cents per mile in the off-peak period. These rates are higher than those assumed by the Washington State Transportation Commission as part of its work to study a road usage charge system, which are similar to the gas tax of 2.4 cents per mile. More information may be found in Chapter 3 and Appendix J (Financial Strategy).

The combination of these three elements of the Greenhouse Gas Strategy – Land Use, Transportation Choices and Pricing - along with the current CAFÉ standards, result in decreasing emission levels to 6% below 1990 levels.

Technology / Decarbonization

The region is expected to add over 40% more people and jobs by 2050. The categories described above related to focusing growth, providing travel options and pricing the system are critical elements of the Greenhouse Gas Strategy and are necessary to reduce emissions by 2050. However, a significant potential for emission reductions and an essential component of the long-range strategy comes from decarbonization of the transportation system, including improvements to both vehicles and fuels.

Significant federal actions have been taken over the last decade to improve the fuel economy of vehicles and reduce emissions from fuels, including updates to the CAFÉ standards, improved fuel efficiency of heavy-duty vehicles and implementation of the national Renewable Fuel Standard. While there has been fluctuation in these rules, progress continues to be made. Most notably, over the last year there has been tremendous activity related to the advancement of zero emission vehicles and cleaner fuels, both at the national and state level.

The Regional Transportation Plan reflects the transition of the region's vehicle fleet by 2050, based on the currently adopted CAFÉ standards and the historic trend of fleet turnover and the average age of vehicles in the region. Beyond these assumptions, the Greenhouse Gas Strategy further identifies the potential emission reductions from a decarbonization of the transportation system, most notably from implementation of a low carbon fuel standard and the expected transition to zero emission vehicles for both passenger vehicles and heavy-duty vehicles such as trucks and buses.

The plan assumes the passage of the more aggressive federal fuel economy standards that were proposed in 2021, as well as the recent passage by the state of a low carbon fuel standard. Both of these elements support the overall transition of the vehicle fleet to zero emissions. For the purposes of this analysis, the plan estimates that at least 90% of passenger vehicles and 50% of trucks will need to be zero emission by 2050. This is consistent with assumptions by the state regarding a necessary phasing out of gasoline and diesel-powered vehicles by mid-century in order to achieve the emission reduction goals.[44]

In 2021, the Washington State Climate Commitment Act was signed into law, which, among other things, establishes a "cap and invest" program. In 2021 the Clean Fuel Standard was also signed into law, requiring the carbon intensity of fuels to be reduced by 20% by 2038. The Washington State Legislature also provided direction related to EV infrastructure, including the adoption of building codes and development of tools for forecasting charging infrastructure needs. These actions in 2021 build upon previous state actions spurring the advancement of a zero-emission transportation system. More information may be found on the Department of Ecology's website.

Varying levels of vehicle turnover between the two categories will produce different overall results, but based on current federal, state and regional activities, this transition is rapidly advancing and over the next several years significant investment in electric vehicle infrastructure in particular is expected and planned.

With full implementation of the Greenhouse Gas Strategy, including all of the categories and actions identified above, emission levels can reach 83% below 1990 levels.

Analysis Background

As Figure 33 above illustrates, with investment and focus on each of the four categories in the Greenhouse Gas Strategy, the region's climate goals are in reach. It is important to note that the goals encompass all sectors of the economy as noted above, and other sectors are also expected to deliver emission reductions to help the region and the state achieve their goals.

The Regional Transportation Plan and the Greenhouse Gas

Potential emission reduction opportunities from other sectors include improved building energy efficiency, renewable energy production, reduction of industrial emissions, and the reduction of food waste. The Washington State Department of Ecology has more information on the variety of programs and regulations in place to reduce greenhouse gas emissions from all sectors of the economy.

[44] Washington State Energy Strategy 2021

Strategy are consistent with state of the practice and the work and directives related to reducing carbon emissions from the transportation sector as laid out by national, state and regional partners. For example, the Washington State Energy Strategy[45] states that a balanced approach of two complementary elements – reducing vehicle miles traveled and decarbonizing the system – holds the most promise for achieving results and calls for action to electrify as many vehicles as possible and invest in the infrastructure required to do so, as well as the development of land use plans that reduce vehicle miles traveled and increase the shares of transit, bicycling and walking. The United Nations' Sustainable Development Solutions Network[46] cites the pathway for accelerating deep decarbonization in the U.S. transportation sector to include a principal strategy of electrification followed by the reduction of vehicle miles traveled while enhancing accessibility and mobility. Regionally, the Puget Sound Clean Air Agency also focuses their climate efforts within the transportation sector on implementation of low carbon fuels, advanced technology vehicles and alternative modes of travel from driving alone.[47]

The assumptions behind the results in Figure 33 above are based on the comprehensive modeling and analysis of the investments and forecast conditions in the Regional Transportation Plan and the regional growth strategy as outlined in VISION 2050. Within the categories of Land Use, Transportation Choices and Pricing, the assumptions and investments are summarized in the sections above and additional details are also provided throughout this document and in the appendices. For example, the project investments are detailed in Appendix D (Regional Capacity Projects and Administrative Procedures) and corresponding system results described in the System Performance section and Appendix H (System Performance). Details behind pricing assumptions are further described in Chapter 3 and Appendix J (Financial Strategy). VISION 2050 provides more detailed information on the distribution of growth identified in the regional growth strategy.

Further, PSRC's estimation of travel and emissions data are based on a robust and comprehensive set of modeling and analysis tools representing the integrated and iterative connection between land use and transportation. Appendix I (Modeling Tools) provides a summary of these tools, which include use of the following:

- a regional macroeconomic model to forecast households, population and jobs to 2050
- a land use model to project the location of future population and employment
- an activity-based travel model to estimate travel patterns and volumes on the transportation system at an individual link basis throughout the region and for multiple time periods
- the U.S. Environmental Protection Agency's Motor Vehicle Emissions Simulator tool to develop emission rates based on current regional inputs of vehicles, fuels and other conditions

The four tools above are integrated into a system to evaluate outcomes from the land use and population assumptions built from VISION 2050 and the transportation projects, network attributes and operational assumptions in the Regional Transportation Plan.

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[45] https://www.commerce.wa.gov/growing-the-economy/energy/2021-state-energy-strategy/

[46] https://www.unsdsn.org/Zero-Carbon-Action-Plan

[47] PSCAA Strategic Plan, 2014-2020, https://www.pscleanair.gov/DocumentCenter/View/445/2014-to-2020-Strategic-Plan-PDF?bidId=

Implementation / What's Ahead?

As noted throughout this section, significant work has been accomplished over the last several decades in each of the categories within the Greenhouse Gas Strategy, but significant work remains if the climate goals are to be achieved.

Land Use

Cities and counties are beginning the process to update their comprehensive plans, with major periodic updates to be completed by 2024 for those in the central Puget Sound region. These comprehensive plans are a key part of the implementation of the regional growth strategy and the policies and objectives identified in VISION 2050. The adoption of growth targets in line with VISION 2050 as well as supportive regulations and implementation actions are critical in helping to achieve regional and local goals. Local jurisdictions across the region are working to identify zoning changes and programs that encourage developers to build more housing to meet the needs of residents, including those who work in communities but cannot afford to live there. Communities with existing or planned high-capacity transit are committing unprecedented levels of resources to station area planning to ensure transit-oriented development can help to absorb the region's expanding population and build high-quality neighborhoods, while minimizing traffic, costly sprawl and greenhouse gas emissions.

Transportation Choices and Pricing

The Regional Transportation Plan identifies the multimodal investments to expand transportation choices by 2050 as described above and includes a financial strategy that identifies the funding mechanisms necessary to implement them. As described in Chapter 3, local transit has the greatest need for new revenue sources, and the steps necessary to secure that funding must be taken in order to realize both the region's climate and mobility goals. Additional details on the pricing mechanisms of the plan, including implementation steps, are found in Chapter 3 and in Appendix J (Financial Strategy).

Technology / Decarbonization

Significant activity is underway at all levels to transition to zero emission vehicles and cleaner fuels, particularly electric vehicles (EVs). Since 2019 PSRC and the Puget Sound Clean Air Agency have partnered on a Regional EV Collaboration to provide technical assistance and an information sharing platform to jurisdictions and other stakeholders to support the advancement of electric vehicles and infrastructure. Upcoming work includes development of a web-based clearinghouse and a Regional EV Plan, as well as coordination with partner agencies such as the Washington State Department of Commerce. In addition, PSRC participates in the West Coast Collaborative Alternative Fuel Infrastructure Corridor Coalition, a partnership organized by U.S. EPA to support the transition of medium and heavy-duty vehicles and equipment to cleaner alternative fuels.

While there is great momentum on these advancements, it will take even greater commitment and action to achieve the transition and support the region's climate goals by 2050. In addition to the activities noted above at the regional scale, there are many statewide and national efforts and programs underway. To highlight just a few:

- The Washington State Legislature passed House Bill 1287 in 2021, regarding Zero Emission Vehicle Preparedness; the bill directs the Departments of Transportation, Commerce and Ecology and the Office of Equity to, among other things, develop a mapping and forecasting tool to assist with the planning of publicly available charging infrastructure.
- The Energy Program at the Washington State University has a variety of resources and programs related to alternative fueled vehicles, including specific legislative direction in 2019 to provide technical assistance and education to public agencies.

The recently signed Infrastructure Investment and Jobs Act provides significant new funding for zero or low emission buses, ferries and school buses as well as EV infrastructure. For example, Washington state is expected to receive $71 million to support the expansion of the EV charging network. The act also provides substantial funding for multimodal transportation and other programs that will advance implementation of the Regional Transportation Plan.

Further support of this zero emission transition is reflected by the number of major automakers announcing a carbon neutral future: e.g., General Motors plans to stop selling gas and diesel vehicles by 2035; by 2040, Honda plans to phase out gasoline cars in North America; Toyota plans on introducing 70 electric models to the market by 2025 and has a goal of being carbon neutral by 2050. In addition, numerous private companies and corporations have committed to reducing emissions, and many have signed on to The Climate Pledge. The Climate Pledge is a community of organizations committed to working together to decarbonize the economy and reach net zero carbon emissions by 2040. Within the Puget Sound region, companies such as Microsoft, Amazon, Alaska Airlines and Convoy have all signed on to the pledge, but many other companies are also taking actions to address climate change.

The region should continue this work to advance the transition to a zero-emission transportation system, leveraging all of the efforts identified above.

PSRC will begin work to develop a 2030 transportation network and inputs corresponding to the Four-Part Greenhouse Gas Strategy, including land use, pricing and decarbonization assumptions. An analysis of 2030 forecast conditions will then be conducted, in alignment with the region's 2030 climate goal in addition to the 2050 goal. PSRC will continue to work with partner agencies including the Puget Sound Clean Air Agency on developing a climate implementation strategy for achieving the climate goals and to monitor progress.

Air Quality

The region is in attainment for all pollutants regulated by the U.S. Environmental Protection Agency under the National Ambient Air Quality Standards (NAAQS). These pollutants include carbon monoxide, ozone, particulate matter, sulfur oxides, nitrogen oxides and lead. At various points

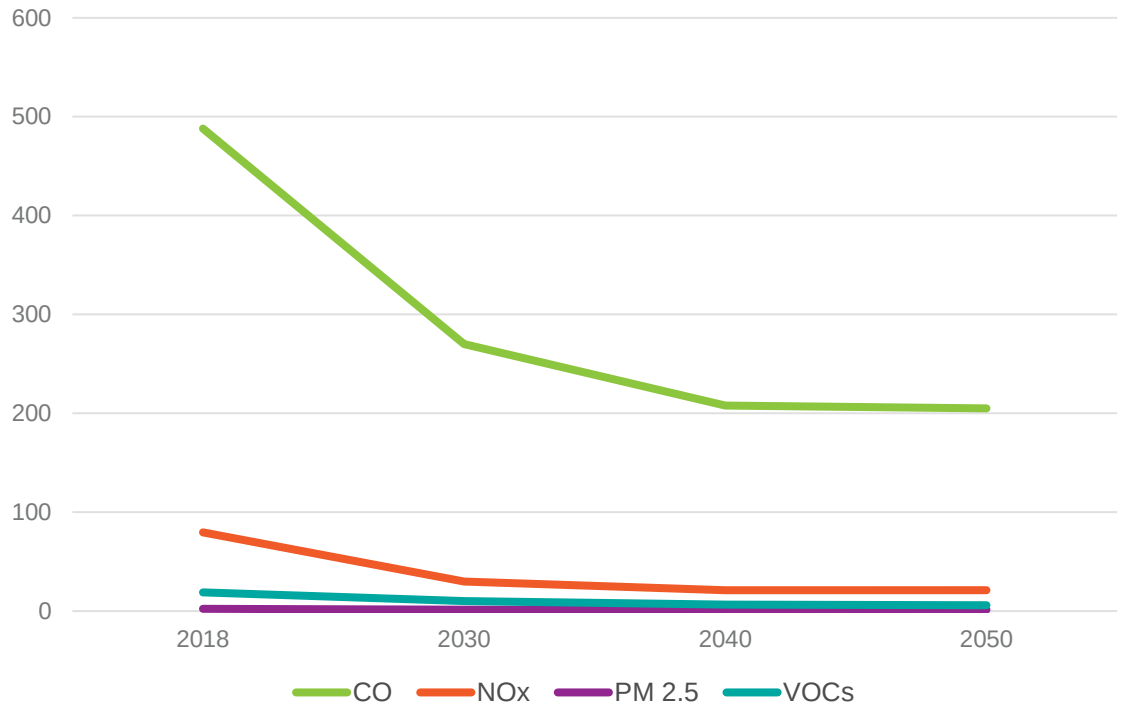
Transportation Conformity

Federal and state transportation conformity requirements ensure that the Regional Transportation Plan will not impede the region from meeting and maintaining the air quality standards. Full documentation on the formal conformity analysis and finding is included in Appendix G (Air Quality Conformity Analysis).

in the past the region had exceeded the federal standards for several of these pollutants, but over time emission levels have continued to decrease and all standards have been successfully met and maintained for many years.

As illustrated in Figure 37, the emissions analysis of the plan demonstrates a continuing downward trend for the criteria air pollutants of most concern in the region, and levels are well within the established limits for the pollutants for which conformity still applies in the region.

Figure 37 - Criteria Air Pollutant Emissions, 2018-2050 (tons/day)



Ongoing Review and Consultation

PSRC coordinates on a regular basis with an interagency consultation group consisting of the U.S. Environmental Protection Agency, the Federal Highway and Transit Administrations, Washington State Department of Ecology, Washington State Department of Transportation and the Puget Sound Clean Air Agency to monitor emission trends and emerging issues and to ensure compliance with all federal and state requirements.

Vehicles and fuels continue to get cleaner, and the foundation of the Regional Transportation Plan to develop a sustainable multimodal transportation system serving a focused regional growth strategy will ensure the region continues to maintain air quality through 2050. However, in the near term the region and its partners continue to monitor pollutants of concern such as diesel particulates, which is identified by the Washington State Department of Ecology and the Puget Sound Clean Air Agency as the air pollutant most harmful to human health.

The investments described in Chapter 1 of the RTP and the actions described in the Climate section of this chapter support the continued reduction of all harmful pollutants and their impacts to health and the environment.

Resilience

Building resilience is critical to helping the region's communities prosper. VISION 2050 understands this importance and stresses the need to identify and address the impacts of climate change and natural hazards on water, land, infrastructure, health, and the economy while specifically paying attention to the most vulnerable populations in our region. VISION 2050 provides specific direction to advance the resilience of our region's transportation system by incorporating redundancies, preparing for disasters, and coordinated planning for system recovery.

What is resilience?

According to the National Academies of Sciences, Engineering and Medicine, resilience is defined as "The ability to prepare and plan for, absorb, recover from, or more successfully adapt to actual or potential adverse events." Resilience encompasses preparing for impacts, mitigating future impacts, and the ability to recover to a "normal," pre-event state.

Building resiliency into the region's transportation system includes a variety of different factors. Key among them are ensuring routes remain viable for delivery of food and medical services; strengthening infrastructure to withstand flooding; retrofitting key bridges to prepare for earthquakes; and coordinated planning efforts such as emergency routing plans for critical systems closures.

Equity in Resilience Planning

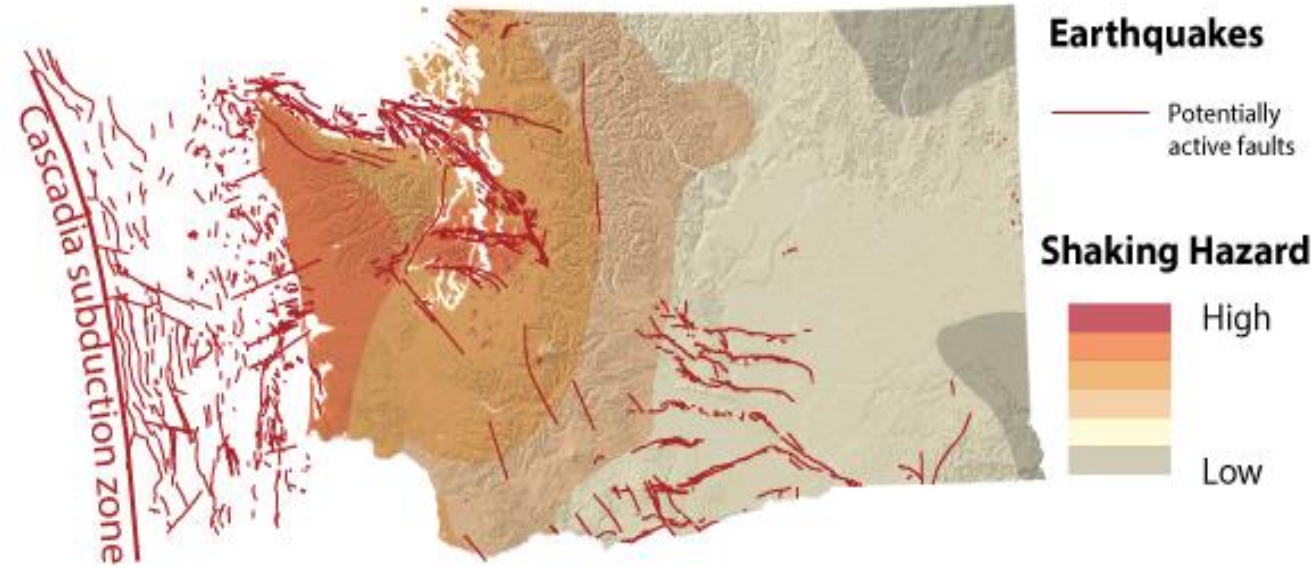
Delays and disruptions can affect access to transit and travel times, which disproportionately impacts low-income residents and people of color. These impacts can affect livelihoods by inhibiting access to jobs, school, healthcare, and other critical services. Effective resilience planning should consider the populations most susceptible to network and service disruptions.

Relevant Hazards in the Central Puget Sound

Seismic Hazards

The West Coast of the United States lies along an active tectonic area, making Washington state and the central Puget Sound region at risk for significant seismic hazards. According to the Washington State Department of Natural Resources, Washington has the second highest risk in the country of large, damaging earthquakes. There are dozens of active faults in the state, the largest being the Cascadia subduction zone. Due to the proximity to several potentially active faults, the region faces elevated risks of shaking hazards. See Figure 38.

Figure 38 - Relevant Seismic Hazards in the Central Puget Sound[48]



Earthquakes occur nearly every day in Washington. While most of are too small to be felt or cause any damage, larger earthquakes cause significant damage to communities. A study by the Federal Emergency Management Agency (FEMA) found that the annualized earthquake loss (AEL) in Washington is $438,524,000, second only to California. Moreover, the AEL for the Seattle-Tacoma-Bellevue Metropolitan Area is $284,200,000, making it the fifth highest value for metropolitan areas in the nation[49].

The region is also susceptible to tsunamis, which are large, destructive waves caused by earthquakes, landslides, or volcanic eruptions. These are most commonly associated with geological events along the coastal areas, but they can also occur in inland areas as a result of landslides. There have been several major tsunami events in recorded Washington history. See Figure 39.

The Washington State Department of Natural Resources, University of Washington, and National Oceanic and Atmospheric Administration (NOAA) have jointly created detailed tsunami inundation maps to detail present-day risk.

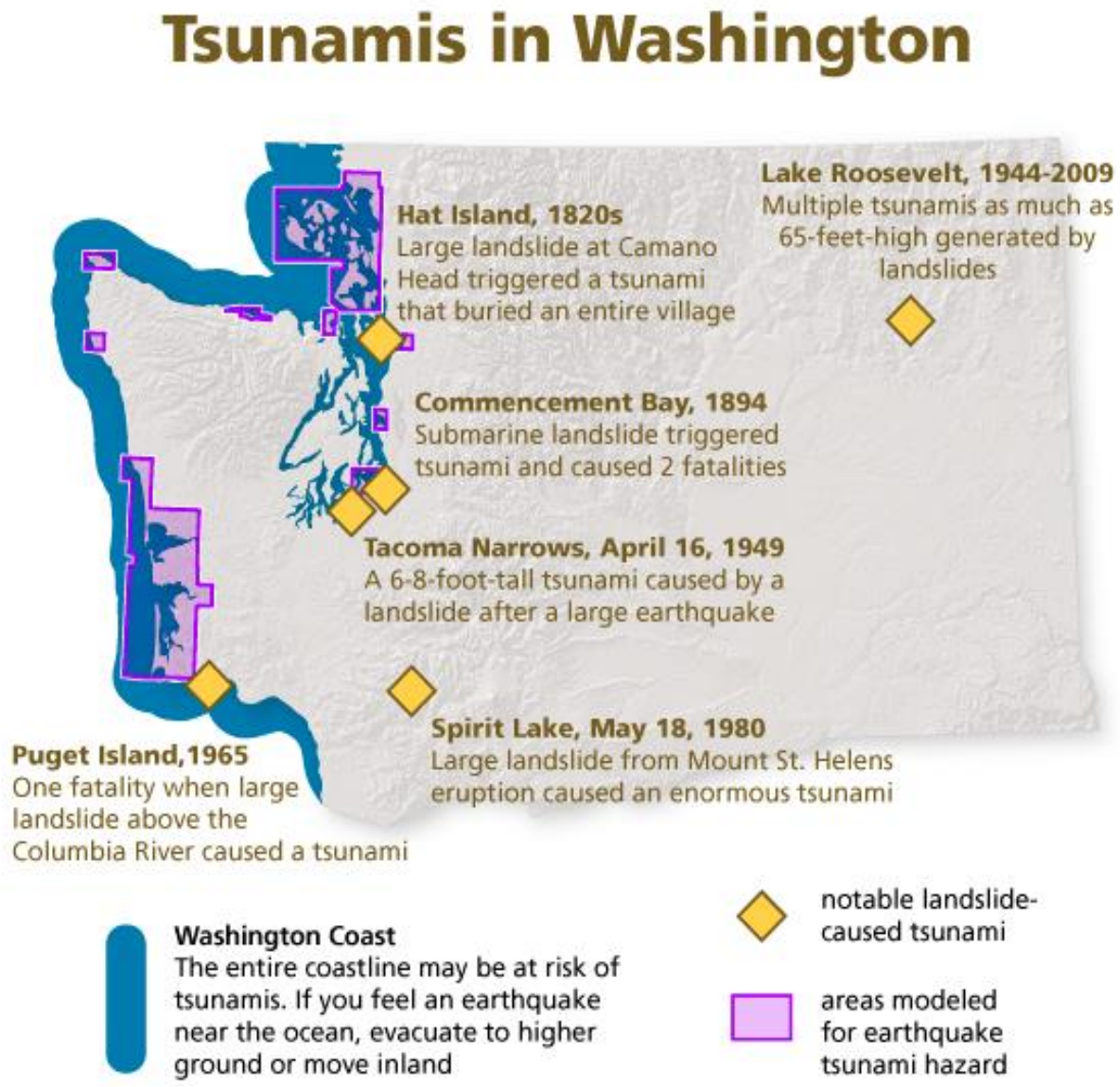
Washington is one the most landslide-prone states in the country, according to the Washington State Department of Natural Resources (DNR). Several hundred landslides occur in the state annually, leading to infrastructure damage, route closures, and environmental damage. Common causes of landslides include intense rainfall, earthquakes, changes in water levels, and loss of vegetation along slopes, among others. DNR, in cooperation with NOAA, has developed a shallow landslide hazard forecast map, providing daily forecasts for precipitation-induced shallow landslides in Washington state, using recent and predicted rainfall. This is a beta version, intended to show relative hazards,

[48] Source: Washington State Department of Natural Resources, 2007

[49] https://www.fema.gov/sites/default/files/2020-07/fema_earthquakes_hazus-estimated-annualized-earthquake-losses-for-the-united-states_20170401.pdf

rather than firm predictions of whether a landslide will occur: https://www.dnr.wa.gov/slhfm.

Figure 39 - Tsunamis in Washington[50]



Climate related hazards

Climate change poses many challenges to the central Puget Sound region. According to the *State of Knowledge: Climate Change in Puget Sound,* published by the Climate Impacts Group at the University of Washington, the potential key impacts include[51]:

[50] Source: Washington State Department of Natural Resources, 2021

[51] https://data.cig.uw.edu/picea/mauger/ps-sok/PS-SoK_2015.pdf

- Increased temperatures
- Variable precipitation
- More frequent and intense rainfall
- Sea level rise
- Ocean acidification
- Decreased snowpack and higher winter streamflow
- Increased landslide risk and erosion
- More frequent and intense flooding
- Impacts to salmon and other species
- Altered growing seasons

There are widespread consequences to these climate change impacts. Specific to the built environment and transportation network, potential effects include:

- Accelerated deterioration of highways
- Flooding of roadways and increased stormwater issues
- Storm surge damage to docks and other facilities
- More frequent landslides
- Rail buckling from higher temperatures
- Reduction in aircraft lift and efficiency due to higher temperatures
- Reduced water levels affecting ships and barges

An efficient, dependable transportation system is a cornerstone to a functioning community and region. The system provides critical access to jobs, healthcare, food, and essential services. Transportation also serves as the backbone of the regional economy through the delivery of goods and other essential services such as power and water. Building resiliency into the transportation system is crucial to the success of the region.

Economic Impacts

Building resilience into the transportation system is critical to maintaining economic vitality. Effective resilience strategies can help reduce business interruption and revenue loss, allowing communities to return to self-sufficiency faster after natural disasters.[1]

The multimodal regional transportation network serves as the backbone of the economy and plays a significant role in sustaining jobs and supporting the national and international trade economies. According to a recent study by WSDOT, Washington is the second-most trade-dependent state in the nation with total imports and exports valued at $126.8 billion each year. Nearly half of all jobs in Washington are freight dependent.[2] At this scale, even a modest interruption can have an adverse impact on the economy. A King County study found that just a one-day shutdown of economic activity in floodplain areas would result in at least $46 million in foregone economic output.[3]

[1] https://www.fema.gov/sites/default/files/2020-07/social-economic-benefits.pdf.

[2] https://wsdot.wa.gov/publications/fulltext/freight/Freight-Plan-2017SystemPlan.pdf

[3] https://your.kingcounty.gov/dnrp/wlr/flood/flood-control-zone-district/pdf/floodplain-economic-connections.pdf

Existing efforts

Much work is being done at all levels of government to promote resilience. The following initiatives are by no means an exhaustive list of everything being done but is a high-level summary of relevant and active initiatives on resilience planning.

The federal government recently established the Climate Policy Office and the National Climate Task Force. These initiatives are part of the current administration's approach to coordinate efforts to mitigate the effects of climate change across all departments of government. Additionally, Congress passed the Infrastructure Investment and Jobs Act, which provides $50 billion to protect against climate impacts.

Several state offices have ongoing initiatives to promote resilience, including WSDOT, Department of Commerce, Department of Ecology, and Department for Natural Resources. In February 2020, the Department of Natural Resources released a Plan for Climate Resilience. The report details the threats climate change poses for the state and provides recommendations for mitigating them. In 2021 the Washington State Legislature directed the Department of Commerce to develop guidance for counties and cities to address climate change, including resilience, in the upcoming updates to their comprehensive plans. The process is being conducted in partnership with numerous state agencies and other stakeholders.

At the regional level, PSRC has partnered with other regional agencies, local and Tribal governments, and organizations to form the Puget Sound Climate Preparedness Collaborative (PSCPC). Founded in 2017, the PSCPC creates a forum for peer learning and exchange of information, ideas, and opportunities related to climate preparedness. Through regional collaboration, the PSCPC hopes to leverage limited resources, reduce duplication of efforts, facilitate institutional learning, and increase the effectiveness of individual community and organization adaptation efforts.

What's Ahead?

VISION 2050 establishes clear guidance for resilience planning and acknowledges the importance of local action. Specifically, VISION 2050 includes one local action and one regional policy related to resilience in transportation planning.

> **Regional resilience policy:** Advance the resilience of the transportation system by incorporating redundancies, preparing for disasters and other impacts, and coordinated planning for system recovery.
>
> **Local Resilience action:** Cities and counties will update land use plans for climate adaptation and resilience. Critical areas will be updated based on climate impacts from sea level rise, flooding, wildfire hazards, urban heat, and other hazards. The comprehensive plans will identify mitigation measures addressing these hazards including multimodal emergency and evacuation routes and prioritizing mitigation of climate impacts on highly impacted communities and vulnerable populations.

The 2024 comprehensive planning process provides an opportunity to advance resilience planning at the local level. Incorporating resilience into the existing comprehensive plan structure allows for more coordinated policy development and engagement. Intergovernmental communication can help planners better understand the threats faced in their communities and what efforts have already taken place to build resilience into public infrastructure. Common partners within each agency include the Public Works Department and Office of Emergency Management.

PSRC is working to prepare more detailed guidance on planning for resilience for the 2024 comprehensive plan update process. These efforts will be done in partnership with the Puget Sound Climate Preparedness Collaborative and will include guidance for incorporating resilience into broader

transportation planning efforts.

Additional Resources

PSRC Web-Based Maps

PSRC staff created additional resources to move resilience planning forward. A web-based map of regional hazards provides an interactive interface to view relevant hazards for communities in the central Puget Sound region and understand what threats the transportation system faces. Map features include overlays such as the transportation network, public infrastructure, and key demographic data. These maps can be used as an introductory tool to understand how to effectively plan for a resilient and equitable transportation system.

FEMA National Risk Index

The FEMA National Risk Index was created to show a visual scale of which communities face the most challenges. The index considers expected annual loss, social vulnerability, and community resilience. Data are available at the countywide and census tract level. Census tract data allow for a neighborhood-level analysis of vulnerability.

Water Quality

Though beautiful from a distance, Puget Sound is in serious trouble. Human actions over the past century have damaged Puget Sound by degrading the water quality, water quantity, and habitats of the region. The transportation system impacts water and habitat by blocking fish passage and polluting and diverting water. The region's transportation and growth plans support Puget Sound recovery by addressing these issues. VISION 2050 calls for reducing stormwater pollution from transportation facilities and improving fish passage through retrofits and updated design standards and, where feasible, integrating with other improvements to achieve multiple benefits and cost efficiencies. Key to implementing these regional plans and policies is the update of local comprehensive plans.

Sources of water pollution from the transportation system include land-based vehicles, airplanes, and recreational and commercial ships. Vehicles and trains contribute pollutants from tire and brake pad wear, washing detergents, and oil leaks. Airplanes contribute de-icing compounds and oil and fuel leaks. Ships contribute anti-fouling compounds, oil and fuel leaks, sewage, and ballast water. Impervious surfaces from the transportation system, such as parking lots, maintenance yards, and roads, collect these pollutants and often deliver them directly to streams, lakes, and other water bodies. They also divert and concentrate flows by blocking the infiltration of rainwater. This in turn degrades water quality and habitat by increasing erosion, particularly during heavy rains. In addition, vehicles and vessels are sources of greenhouse gas emissions and particulate matter. Although these pollutants initially enter the air, they can also contaminate surface waters. The Washington Stormwater Center provides research and assistance on stormwater issues, such as recent findings on the lethal effects of tire chemicals on coho salmon.

Transportation infrastructure such as roads and bridges can impact wildlife habitat by creating fish passage barriers. These barriers, typically road culverts and dikes, are found throughout the region. WSDOT, cities, counties and other partners are working to remove, replace, and restore culverts to

recover salmon passage. The Infrastructure Investments and Jobs Act will provide new funding to accelerate this work. The Washington State Department of Fish and Wildlife has an inventory of fish passage barriers and can help to prioritize restoration projects. Roads can also fragment other types of wildlife habitat.

While the transportation system has many challenges related to water quality, many partners are working to address these issues under the umbrella of the Puget Sound Partnership. Implementing the Regional Transportation Plan provides the opportunity to improve water quality when strategies and best practices such as those listed below are used. Many of these are reflected in the Action Agenda for Puget Sound, the Partnership's roadmap for Puget Sound recovery. Adding projects and programs that incorporate these best practices to transportation and comprehensive plans will help to improve water quality.

- Reducing vehicle miles traveled to decrease the amount of pollutants generated.
- Replacing toxic products such as copper brake pads with safe alternatives.
- Using and promoting cleaner fuels and vehicles.
- Minimizing impervious surfaces and using low-impact techniques and materials to manage runoff volumes and treat and infiltrate runoff.
- Adding stormwater retrofits to roads and facilities that lack up-to-date stormwater infrastructure.
- Incentivizing developers to add more stormwater infrastructure to their projects.
- Increasing street sweeping and cleaning of stormwater pipes and catch basins.
- Restoring streams, buffers, and floodplains alongside transportation facilities.
- Improving spill response and cleanup coordination for transportation infrastructure and implementing pollution prevention techniques.
- Educating drivers and operators about reducing pollution from oil leaks, emissions, and other pollution sources.
- Removing fish passage barriers.

There are many examples across the region of jurisdictions implementing these best practices. The City of Puyallup has turned 8th Avenue and other streets in Puyallup into green streets. The National Association of Transportation Officials has developed the Urban Street Stormwater Guide for integrating green stormwater infrastructure into many types of urban streets. Salmon Safe offers standards and certification for transportation infrastructure. A high-impact retrofit example is the regional stormwater treatment facility added to the entrance of Tacoma's Point Defiance Park. The facility treats stormwater from the 800 acres of roads and land above it. Seattle took advantage of a real estate development opportunity to build the Swale on Yale, which treats the stormwater from 600 acres of roads and land in north Capitol Hill. A developer integrated green stormwater infrastructure into a new building's landscaping to treat runoff from the Aurora Bridge, going above and beyond requirements. The Building Green Cities guidebook provides information for jurisdictions on creating low-impact development incentive programs to encourage these development practices. VISION 2050 contains policies and actions that support these best practices. The Regional Transportation Plan supports this work by encouraging incorporation of these best practices into projects and programs.

Many of the solutions that improve water quality provide multiple benefits. For example, reducing vehicle miles traveled also reduces greenhouse gas emissions, and managing runoff through green stormwater infrastructure helps to reduce urban heat island effects.

As transportation projects are planned and developed, project implementers should consider how to minimize impacts and improve hydrological function. PSRC will continue to coordinate on water quality issues with the Puget Sound Partnership and other regional, state, and federal stakeholders.

Health

The Regional Transportation Plan addresses public health in a variety of ways, including through protection of the environment and reducing emissions as noted in the sections above but also through the advancement of active transportation and improved safety.

While traditionally the issue of public health encompasses a broader set of factors and strategies – such as disease control, managing health conditions and improving access to health care – there has been increased emphasis over the last decade on the relationship of public health to the built environment and how people travel. A lack of transportation choices, how neighborhoods are designed, the locations of services and other destinations, and the proximity to sources of pollution can all influence individual health.

The Regional Transportation Plan contains a substantial expansion of the region's integrated transit network by 2050, encouraging alternate modes of transportation other than driving, and improving the reliability and convenience of the system. In addition, the plan includes specific investments that will improve nonmotorized access to the transit system. Further, PSRC's Transportation System Visualization Tool, which has interactive maps with community information in relation to existing infrastructure, can help local agencies better understand future needs and opportunities to continue to make improvements in these connections and overall safety.

Future Conditions

The plan's emphasis on a sustainable, multimodal transportation system results in a continued reduction of emissions by 2050, which is another important connection to improved public health. Shifting to a transportation system that produces zero emissions will also mitigate potential health impacts that are beyond the scope of the analysis in the plan, such as local exposure to pollutants near individual pollutant sources or roadways. More information is found in the Air and Climate sections of this chapter, demonstrating the continued downward trend of all pollutants into the future, as well as the steps necessary to achieve a zero-emission transportation future.

Safety is a key policy focus area in the plan and is addressed in each relevant section of the plan. Emphasis on a Safe Systems Approach for the transportation system, which addresses safety for all users, is described later in this chapter. Special attention is placed on improving bicycle and pedestrian safety. The Regional Transportation Plan contains significant investment in multimodal transportation options, including bicycle and pedestrian infrastructure. Information on these investments and policies may be found in Chapter 1.

Representatives from the public health agencies of each of the region's four counties are active at PSRC's varied committees and boards. There is continued and increased attention to public health concerns as they relate to the nexus with transportation – emissions, active transportation and safety

– and this attention spans the breadth of PSRC's planning processes. These range from the development of long-range plans to the project selection process for PSRC's federal funds. The integration of equity in each of these conversations is also key and will continue to be a primary focus as investments and decisions are made to implement the Regional Transportation Plan and the region's vision.

What's Ahead?

PSRC will continue to work with health agency partners on best practices, data collection and inclusion of available relevant tools in planning processes and project selection – such as the Washington State Environmental Health Disparities Map as an additional layer along with the many other resources provided in PSRC's web based mapping resources.

Mobility

System Performance

The Regional Transportation Plan is guided by and builds from the policy direction and goals identified in VISION 2050. PSRC has a robust data and analysis program that applies state of the art practices to evaluate plan performance against these priority policy objectives. In addition to the performance metrics themselves, the analysis is further delineated across multiple geographies. These include:

- The entire four-county region
- Each of the four counties
- Designated centers and regional geographies as identified in VISION 2050
- Areas of the region containing higher numbers of specific population groups – people of color, people with low income, older adults, youth, people with disabilities and people with limited English proficiency

Appendix F contains the full Regional Equity Analysis and background information on specific population groups in the region. Appendix I contains background information on PSRC's suite of modeling and analysis tools. Lastly, Appendix H contains more detailed information on the plan performance as it relates to all available performance metrics across these geographic areas. Included in this section are highlights of key performance metrics and a summary of overall plan performance.

Priority Performance Objectives

VISION 2050 lays out the following goal for the transportation system, providing direction for the development of the Regional Transportation Plan:

> *The region has a sustainable, equitable, affordable, safe and efficient multimodal transportation system, with specific emphasis on an integrated regional transit network that supports the Regional Growth Strategy and promotes vitality of the economy, environment and health.*

In addition, early in the development of the plan, PSRC's Transportation Policy Board identified six key policy focus areas for deeper discussion and evaluation:

- Safety
- Equity
- Climate
- Access to transit
- Local agency needs
- Forward thinking investments

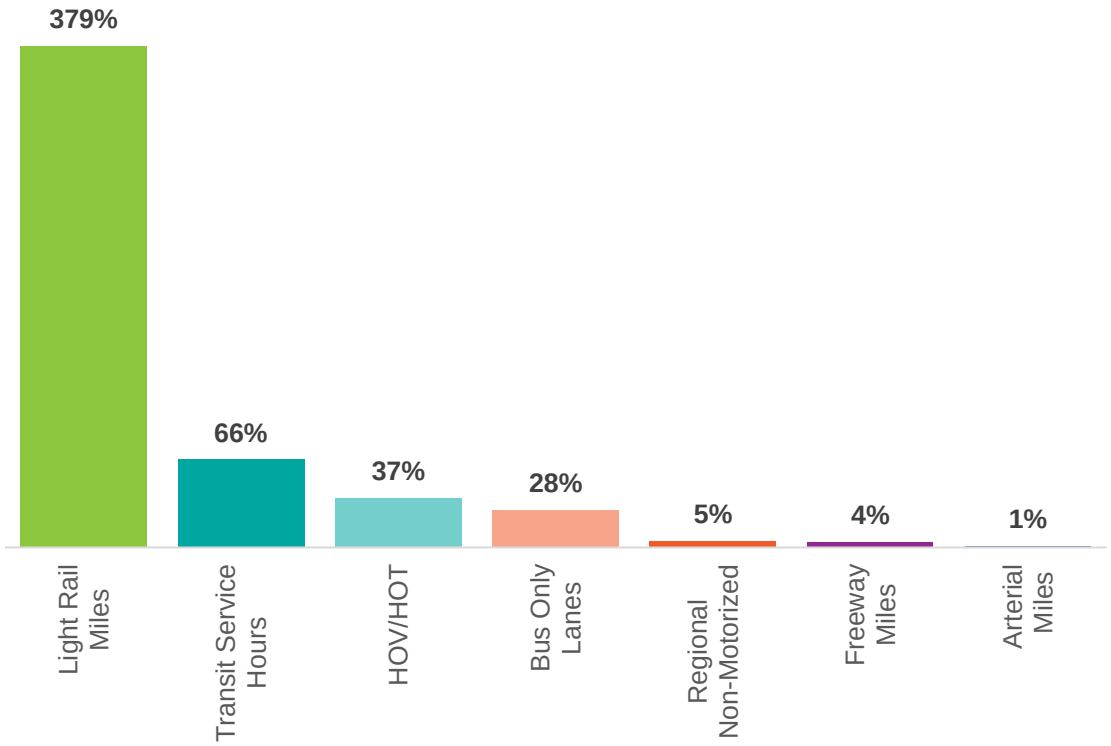
Highlights of key metrics that demonstrate the performance of the plan in meeting the priorities and policies contained in VISION 2050 are illustrated below. In addition, each applicable section of the plan also summarizes key findings, both of the existing conditions of the transportation system as well

as the expected outcomes from implementation of the Regional Transportation Plan.

Lane Miles / Transit Service

The investments in the plan are focused on providing transportation options that provide a sustainable, equitable, affordable, safe and efficient multimodal transportation system. Figure 40 highlights the percent change in the transportation system by mode between 2018 and 2050. As highlighted, the greatest increases in network capacity are for transit services including high-capacity transit. Although general purpose freeway lane-miles are estimated to increase by approximately 4% by 2050, even greater investments are planned for the region's High Occupancy Toll (HOT) lanes (37% increase), Bus-Only lanes (28% increase) and overall transit service (66%).

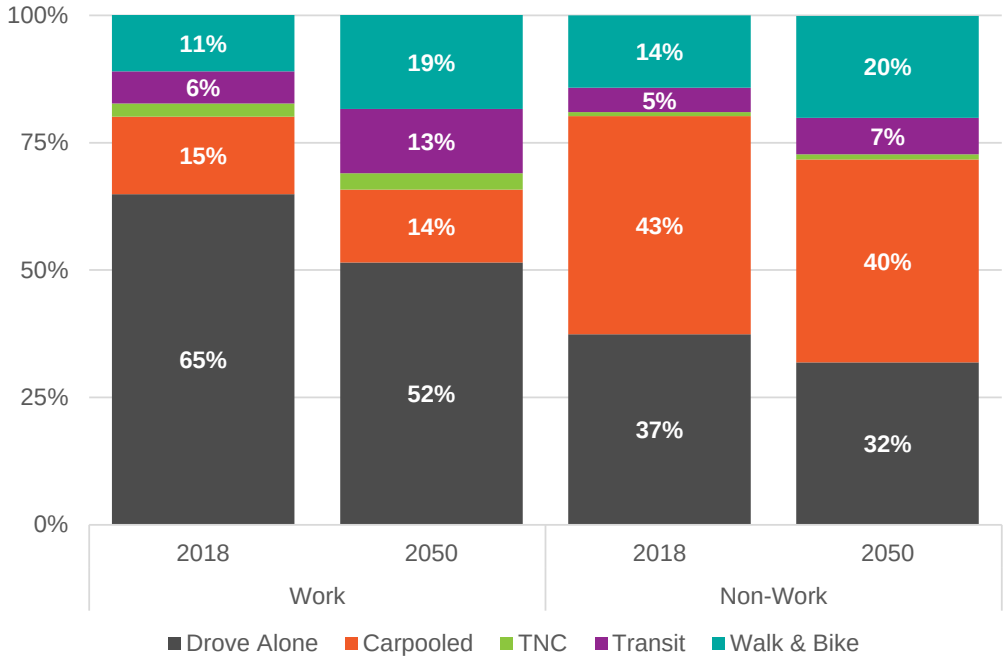
Figure 40 – Percent Change in Transportation Network by Type



Mode Share

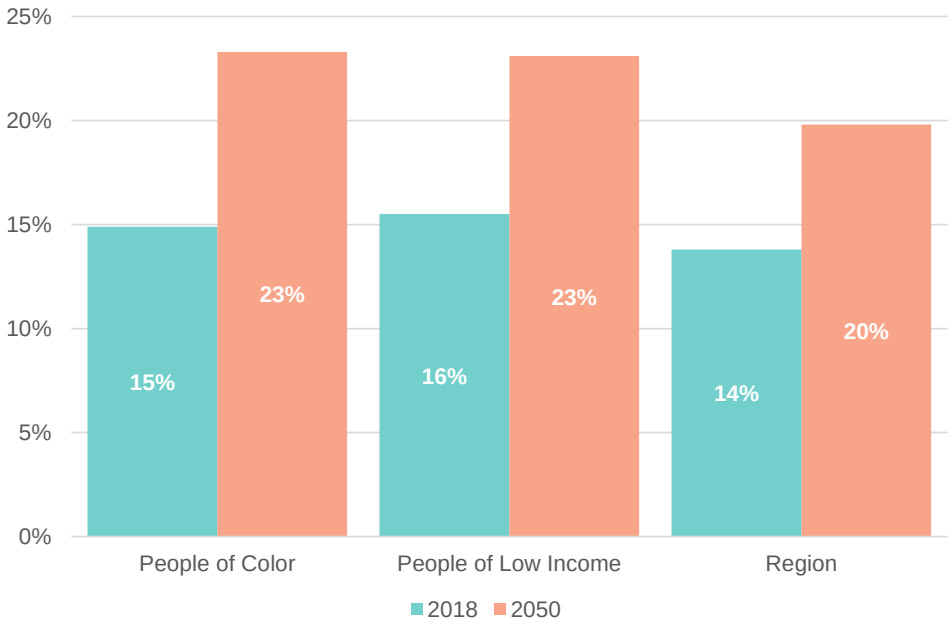
By the year 2050, single-occupancy vehicle (SOV) mode shares to work are forecast to decrease to approximately 52%. Reductions in SOV mode share are accompanied by increases in walking, biking and transit, which in 2050 are forecast to account for approximately 32% of all work trips made in the region, up from 17% today. See Figure 41.

Figure 41 - Regional Mode Share for Work and Non-Work Purposes



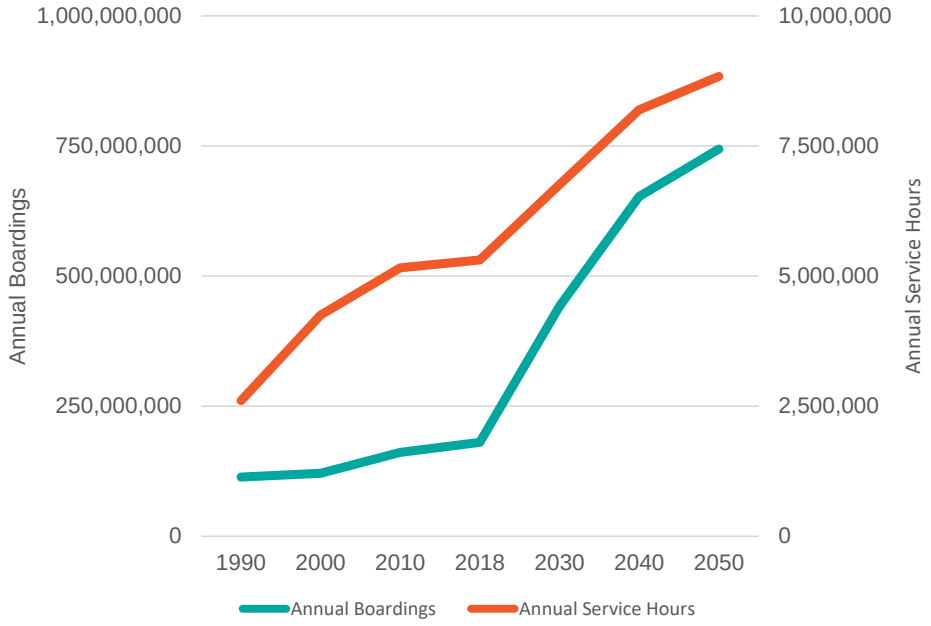
People of color and people with low incomes tend to walk and bike more frequently for transportation purposes than the regional average. By 2050, almost ¼ of all trips by people of color or lower incomes would be made by walking and biking – up from about 15% in the base year. See Figure 42.

Figure 42 - All Trip Walk & Bike Mode Share by Equity Geography



Transit use is forecasted to more than triple by 2050 – driven by increased transit service across the entire region. See Figure 43.

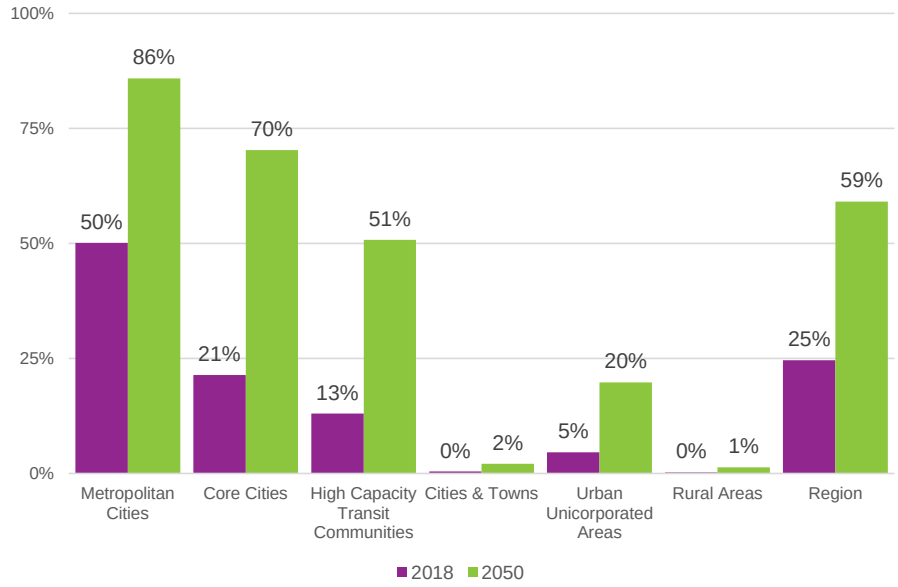
Figure 43 - Annual Transit Boardings and Service Hours



Transit Access

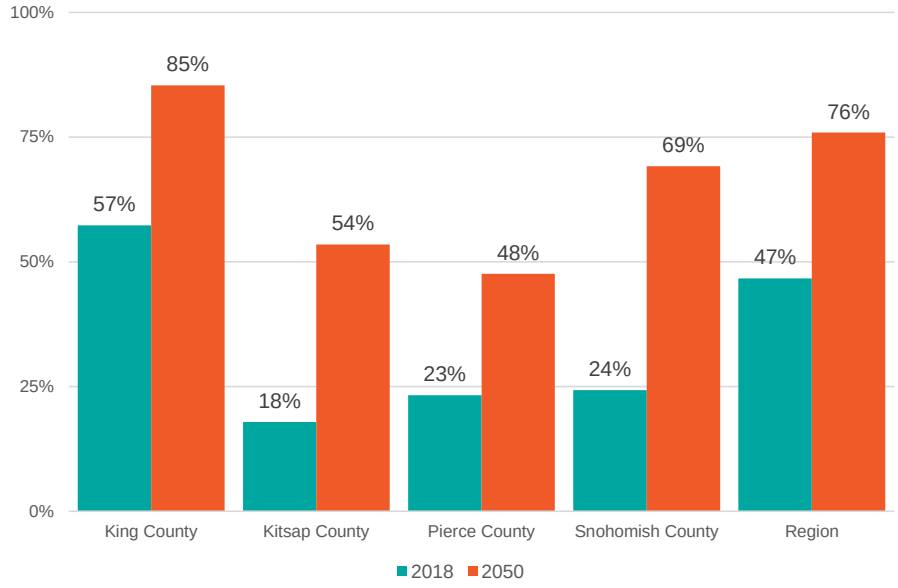
In 2018, approximately 25% of all households in the region lived within ½ mile of high-capacity transit. By 2050, almost 60% of all households are forecasted to live within ½ mile of high-capacity transit. See Figure 44.

Figure 44 - Share of Households within 1/2 mile of High-Capacity Transit



In 2018, approximately 47% of all jobs in the region were located within ½ mile of high-capacity transit. By 2050, that number is forecast to grow to over 75% of all jobs with some of the largest growth in job access by high-capacity transit in Kitsap and Snohomish counties. See Figure 45.

Figure 45 - Share of Jobs within 1/2 mile of High-Capacity Transit



Travel Time, Delay and Vehicle Travel

Strategic investments combined with an increasing set of travel options help to minimize the overall level of congestion growth in the region. Although the overall amount of delay for all vehicle modes increases between 2018 and 2050, as seen in Figures 46 and 47 below, growth in congestion per household is estimated to be approximately 7% lower in 2050 than it was in 2018. It is also worth noting that despite population, job and truck trip growth of over 40% between 2018 and 2050, overall vehicle miles traveled (VMT) and congestion are growing at less than half that rate.

Figure 46 - Annual Delay for Households and Trucks

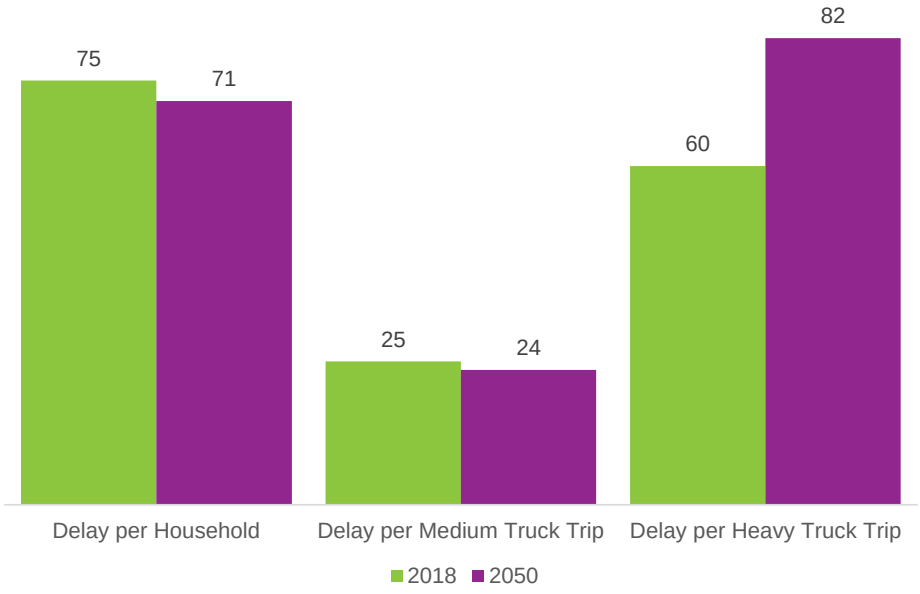
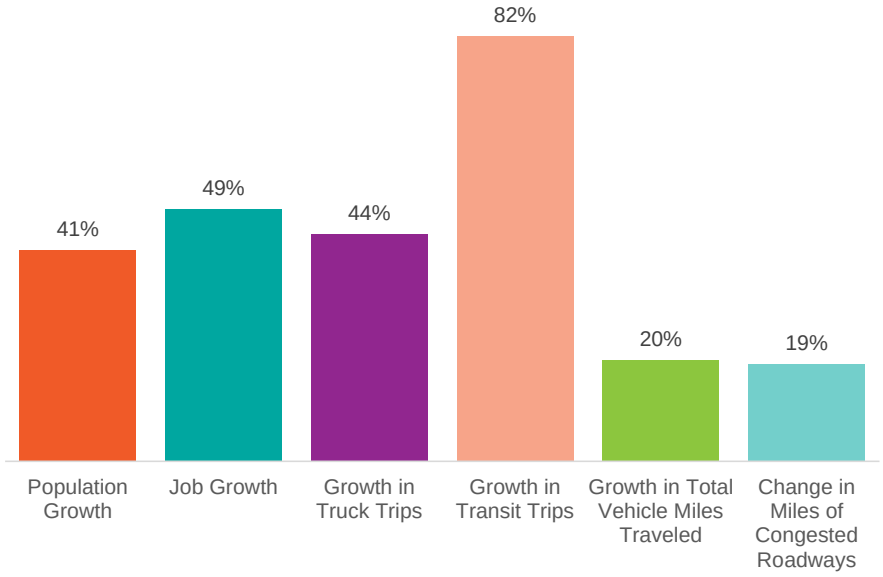
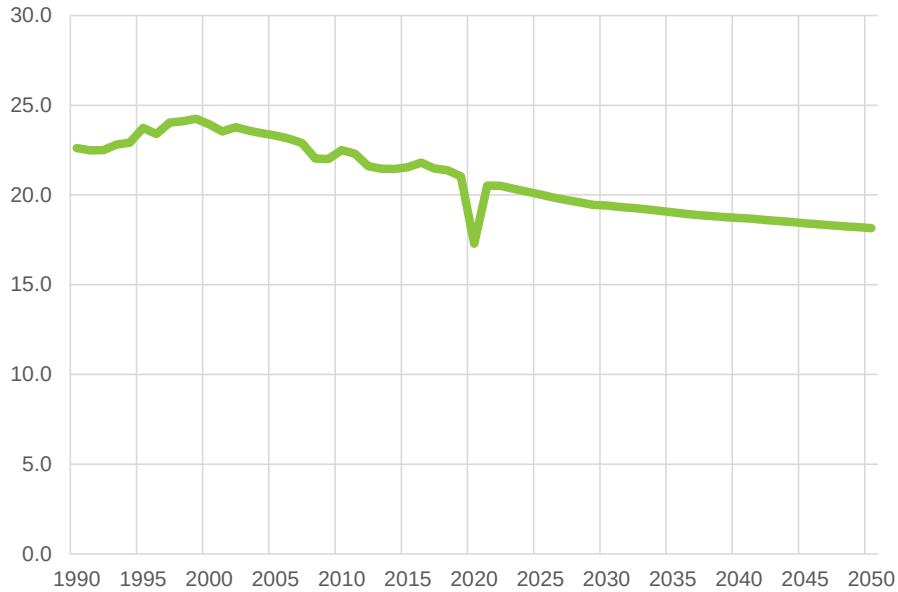


Figure 47 - Percentage Change of Various Metrics



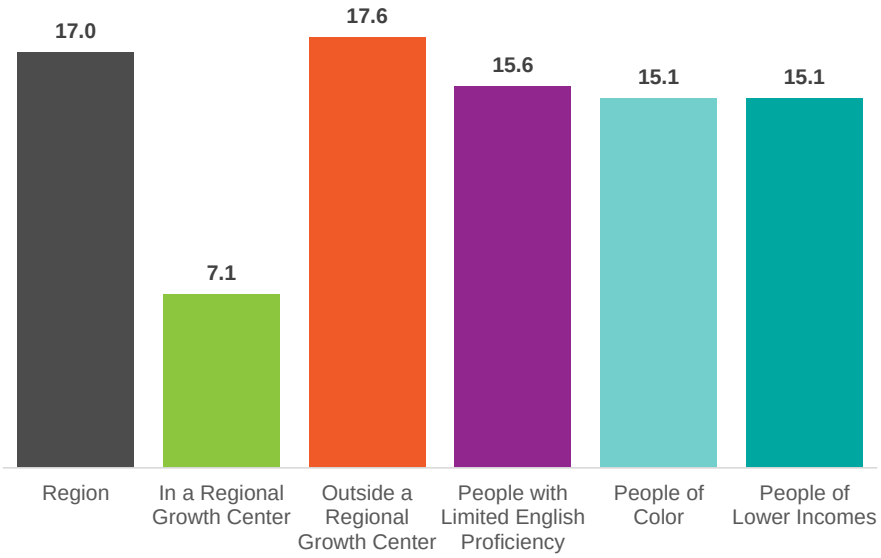
Vehicle miles traveled peaked in the late 1990s at around 24 miles per person per day. See Figure 48. In 2018, the average miles driven per day had decreased to about 21 miles per day. Over the next 30 years, the average distance driven per capita is forecasted to decline even further to approximately 17 miles per day per person.

Figure 48 – Vehicle Miles per Capita



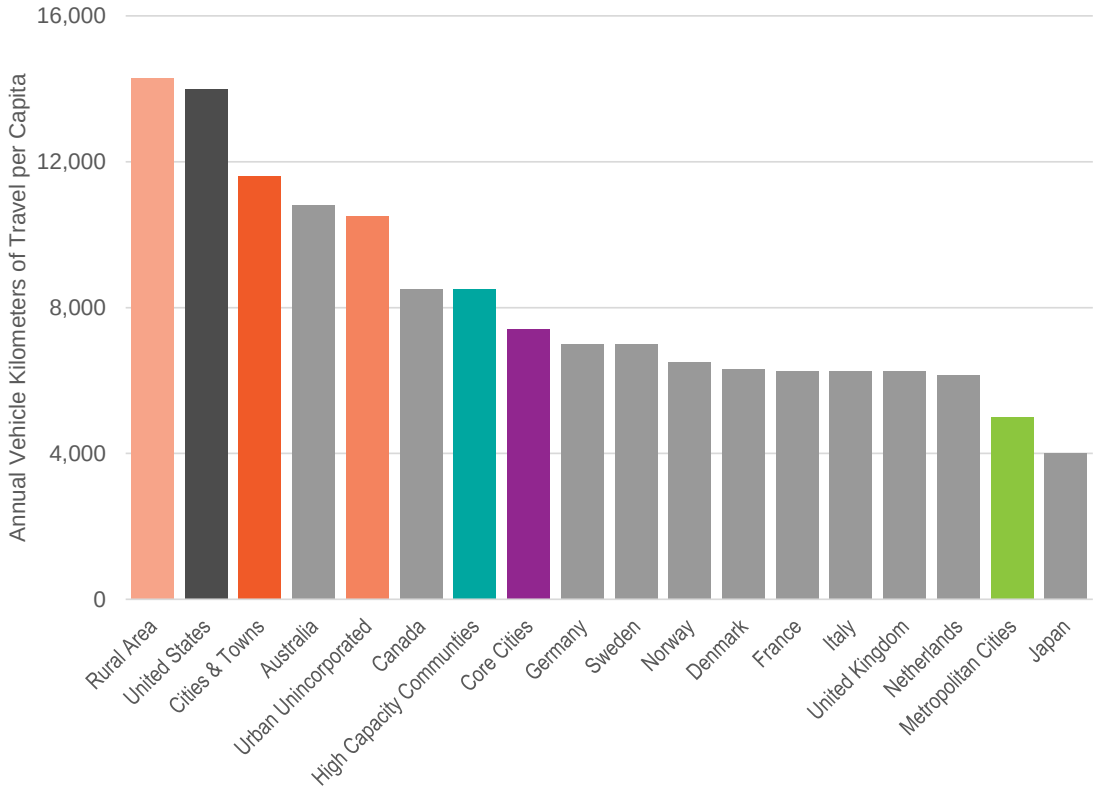
Vehicle miles driven per capita vary greatly across the region as well as by equity focus areas. For example, as illustrated in Figure 49, even though the average resident of the region travels almost 17 miles per day in 2050, people of lower incomes travel about 15 miles per day and people living in regional growth centers travel around 7 miles per day.

Figure 49 - Vehicle Miles per Capita by Geography



Under VISION 2050, growth between 2018 and 2050 is focused near high-capacity transit stations. The majority of these investments are located in the VISION 2050 regional geographies of Metropolitan Cities, Core Cities and High-Capacity Transit Communities, the most urbanized and densely developed parts of the region. As shown in Figure 50, driving in these places is more like many European countries than to other parts of the United States.

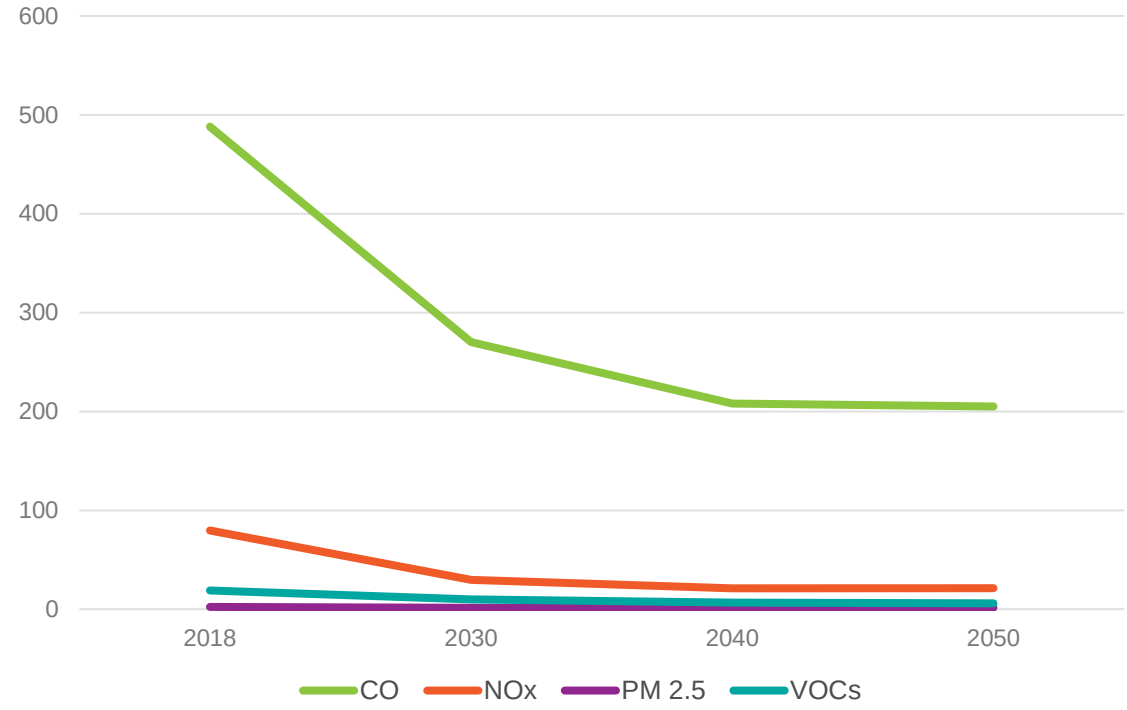
Figure 50 - Vehicle Kilometers Traveled per Capita by Regional Geography Comparison



Emissions of Criteria Air Pollutants

As seen in Figure 51, emissions of criteria air pollutants are projected to continue a downward trend through 2050. More details on criteria air pollutants as well as the climate analysis may be found earlier in this chapter in the Air Quality and Climate sections.

Figure 51 - Change in Daily Tons of Criteria Pollutants, 2018-2050



Federal Performance Targets

Under federal law, states and Metropolitan Planning Organizations such as PSRC are required to establish targets related to safety, bridge and pavement condition, air quality, freight movement and performance of the National Highway System. PSRC's adopted targets are illustrated in the Figure 52 below.

Figure 52 - Federal Performance Targets

Performance Measures	Initial PSRC Board Action	Update Schedule
Transit Asset Management	Approved June 2017	Must incorporate into each new TIP or RTP
Safety Performance	Approved January 2018	Annual
Bridge and Pavement Condition	Approved October 2018	Every 4 Years
System Performance		
Congestion Mitigation and Air Quality Improvement Program (CMAQ)		
Transit Safety	Approved Sept. 2021	Must incorporate into each new TIP or RTP

Metropolitan Planning Organizations are also required to describe how the Regional Transportation Plan addresses and advances the established targets. The charts above describe the plan's performance as it relates to a variety of metrics, including air quality and mobility. In addition, Appendix D contains the list of Regional Capacity Projects in the draft RTP, and the Figures 53 and 54 below describe these investments and how they support the performance categories identified above.

Figure 53 – System Improvements – All Projects and Programs ($)

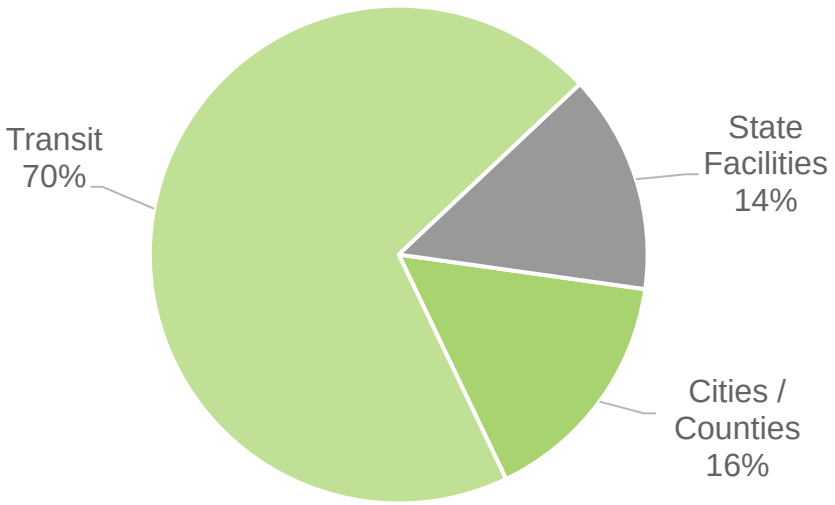
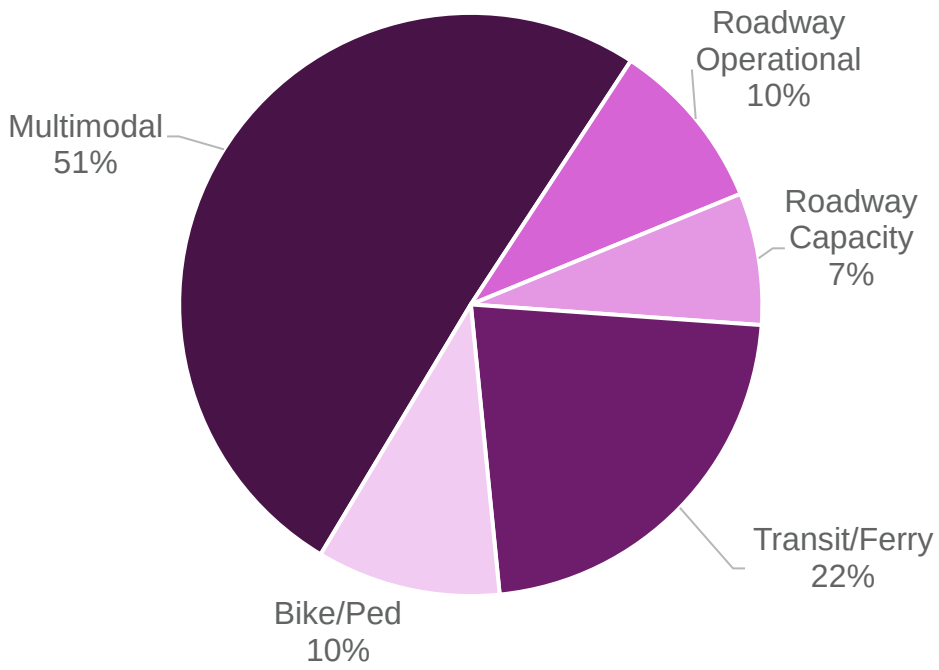


Figure 54 – Regional Capacity Projects by Type – Financially Constrained Plan (# of projects)



The plan's multimodal transportation investments support the air quality and mobility targets. In addition to the Regional Capacity Projects, which are only a portion of the total investments in the plan, the financial strategy – described in greater detail in Chapter 3 and Appendix J (Financial Strategy) – describes the larger share of investments in the plan, encompassing maintenance, preservation, operations and other programmatic investments that address a variety of system improvements such as safety, mobility and efficiency. It is important to note that 56% of the plan's total expenditures are investments in maintenance and preservation across modes and facilities. Chapter 1 further discusses maintenance and preservation investments, inclusive of all assets – roadways, bridges, transit, etc.

Specific to freight, 44% of the regional capacity projects in the plan provide improvements on a designated T1 or T2 freight facility. Furthermore, projects in the plan improve facilities that carry 46% of truck volumes in the region.

Many of the plan's projects will contain specific elements aimed at addressing safety when they reach the design and implementation stage, but many projects and investments in the plan will provide safety benefits that are not explicitly identified on a project list. For example, many of the programmatic investments in the plan will provide improvements that separate modes, improve intersection turning movements, upgrade lighting, add curb ramps and pedestrian crossings or simply bring facilities and assets up to current design standards. Chapter 1 describes ongoing work related to safety in greater detail, and safety is also addressed in each relevant section throughout the plan.

Regarding the CMAQ emissions target, Appendix B of PSRC's 2021-2024 Regional Transportation Improvement Program (TIP) provides information on the estimated emissions reduction from the projects selected for PSRC's 2023-2024 CMAQ funds. The previous 2019-2022 TIP provided information on the emissions benefits for prior years' funds, and the next TIP, covering the years 2023-2026, will do the same. All projects in the TIP are consistent with and implement the investments and direction in the RTP and are consistent with and implement the adopted regional targets. See

Appendix H (System Performance) for more detail on adopted Federal Performance Targets.

Congestion Management Process

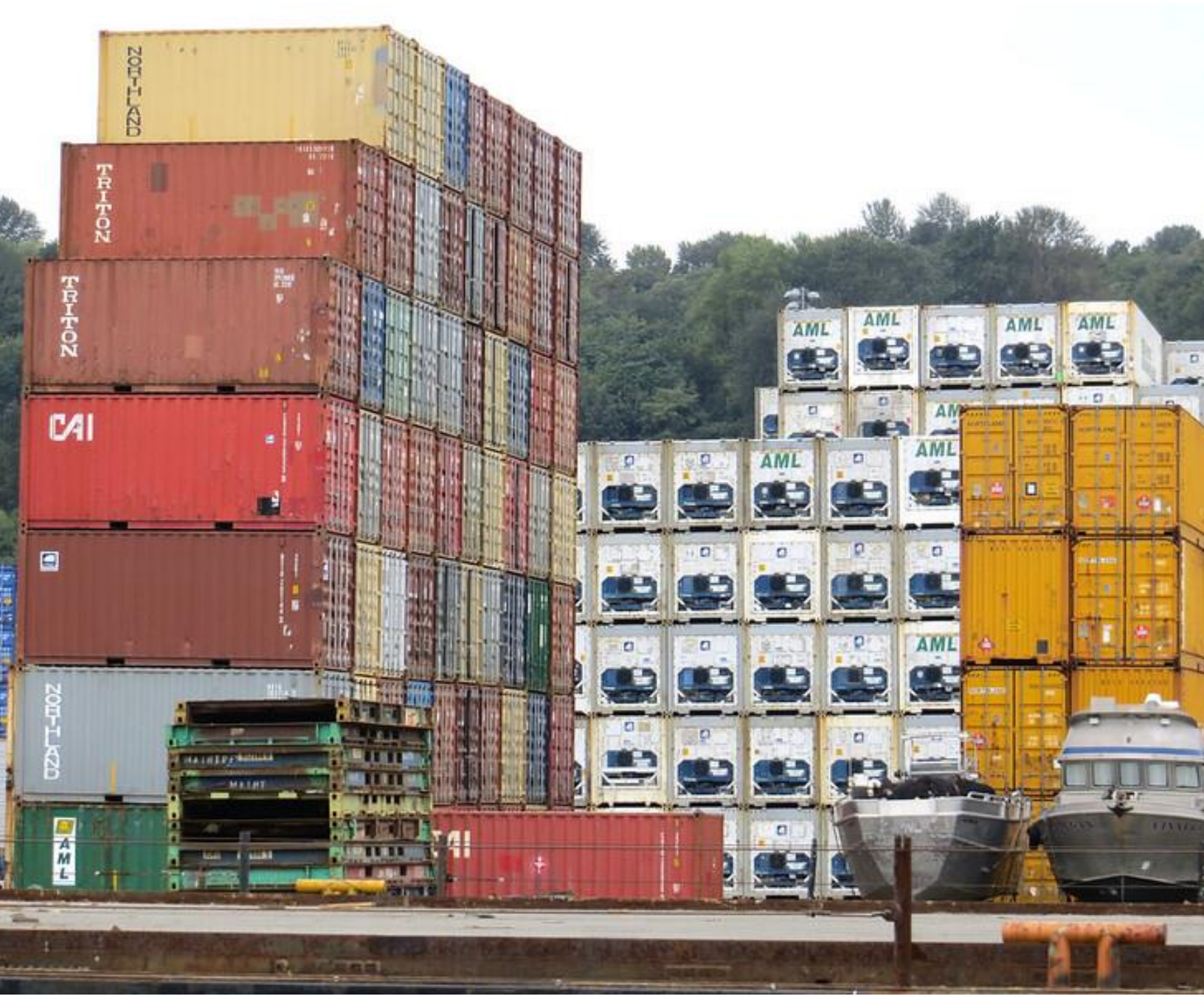
The Federal Highway Administration defines the Congestion Management Process (CMP) as "a systematic and regionally-accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meets state and local needs."[52] Metropolitan areas such as PSRC with populations of over 200,000 are required to develop and implement a CMP as an integrated part of the transportation planning process.

PSRC's approach to the CMP includes full integration throughout multiple levels of the planning process. This is evident from the performance measures analyzed during the development of VISION 2050 and the Regional Transportation Plan, to the criteria used in PSRC's project selection process for federal funds, to the continually evolving data collection and reporting on system conditions. New for this RTP, PSRC conducted extensive data collection and research on a variety of transportation system elements and developed an online Transportation System Visualization Tool to assist in both regional and local planning and analysis. This tool contains information on current conditions as well as conditions under the planned investments through 2050; both can be found on PSRC's website. In addition, each element of the plan draws on notable findings from these tools and identifies needs and opportunities for future investment. This information is available for local jurisdictions and agencies as they begin updating local comprehensive plans and long-range transportation plans to address identified deficiencies and transportation needs.

Summary

The Regional Transportation Plan supports the policies and objectives of VISION 2050 for a sustainable, equitable, affordable, safe, and efficient multimodal transportation system. The investments in an integrated and expansive regional transit network along with operational and strategic capacity investments across all modes support the implementation of the regional growth strategy and the growth in population and jobs through 2050. Additional details of plan performance may be found in Appendix H (System Performance) and Appendix F (Regional Equity Analysis).

[52] https://ops.fhwa.dot.gov/plan4ops/focus_areas/cmp.htm


NORTHLAND
TRITON
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Chapter 3 – Paying for the Plan

Overview of Financial Strategy

The Regional Transportation Plan includes a forward-looking financial strategy that identifies revenue sources to cover projected costs needed to maintain, operate, and improve the region's transportation system through the year 2050. It provides a feasible forecast of how state, regional and local agencies can pay for what needs to be built and maintained through the life of the plan to meet the transportation needs of a region expected to see significant population and economic growth in the coming decades.

Under federal law, the Regional Transportation Plan must make reasonable financing assumptions, accounting for existing or new revenue sources which can be expected to be available over the life of the plan. Investments in transportation infrastructure and services are strongly linked to growth in the broader economy. As the region grows, it will be important to ensure that there is the fiscal capacity to make investments in the transportation system.

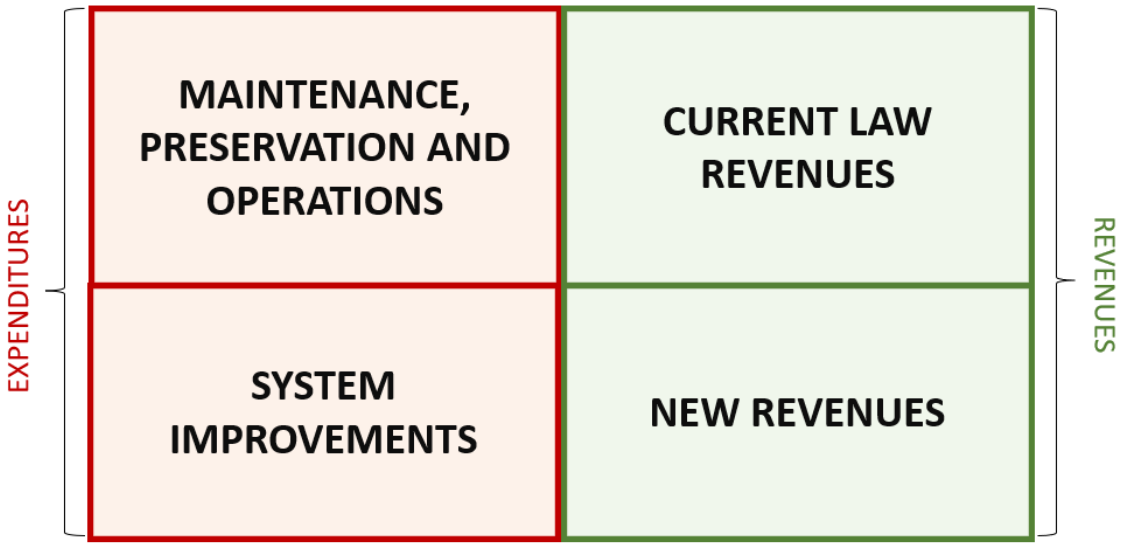
As highlighted in Figure 55, the financial strategy includes four primary components. Expenditure estimates include:

- Costs associated with maintaining, preserving, and operating the existing transportation system
- Costs associated with improving the transportation system to meet the needs of a growing region

Revenue projections to cover these costs include:

- Current law revenues, which include any transportation revenue source currently available to implementing agencies
- New revenues, which include sources not currently available for use but that can be reasonably assumed to be available

Figure 55 - Building Blocks of Financial Strategy



PSRC has put substantial effort into developing estimates for these components by using historic expenditure and revenue data, reviewing local comprehensive plans, engaging directly with jurisdictions from across the region, and convening a peer exchange panel of transportation and public finance experts on the methodology of the plan's financial strategy.

Expenditures

Transportation investments are implemented by numerous agencies that, for the purposes of financial analysis, are organized by implementing agency type. These are the same agency types to which estimated revenues are allocated: cities; counties; local transit; Sound Transit; state ferries; and state highways.

Maintenance, Preservation, and Operations

Federal and state transportation policies place a high priority on the maintenance, preservation, and optimization of existing transportation infrastructure and services. The Regional Transportation Plan addresses these mandates by emphasizing efficient maintenance, preservation, and operation of the transportation system, including roadways, bridges, transit, pedestrian and bicycle infrastructure, traffic signals and various other critical transportation assets.

The region commits as a top priority to fully funding the maintenance, preservation, and operation of existing infrastructure in a safe and usable state. Maintaining the region's roads, bridges, buses and trains, and other assets is critical to keeping people and goods moving throughout the region. Ranging from the replacement of fiber-optic cable to seismic retrofits and paving projects, these behind-the-scenes investments make the transportation network function in a safe and usable manner. If timed correctly, these types of investments can be highly cost-effective and are critical to help sustain regional mobility for both people and goods.

Preservation and maintenance needs on all facilities and for all transportation assets are included as part of the plan's financial strategy. For this update, PSRC continued its effort to more accurately capture future costs associated with maintaining and preserving assets and services by incorporating increasingly sophisticated methods to estimate these needs. The two primary goals for this effort were to, where possible: (1) estimate costs using an outcome-oriented approach, and (2) to develop processes that capture future needs rather than reflect extrapolations of historic levels of investment. For types of assets where this was not possible, PSRC used a more general approach for estimating future needs, which largely relied on historic investment information compiled using Washington State BARS (Budgeting Accounting and Reporting System) data. More detail on the methodologies used to develop these estimates can be found in Appendix J (Finance Strategy).

The total investment projected for maintenance, preservation and operations in the Regional Transportation Plan is just under $170 billon. This makes up approximately 56% of all plan investments.

System Improvements

System improvements encompass a wide variety of investments, including the Regional Capacity Project List (a line-itemed list of larger scale projects that are tracked over time), as well as all other smaller-scale projects and programs that are expected through the life of the plan. From this mix of

projected spending on system improvements, 70% is devoted to transit investments. By 2050 the region will have created 36 bus rapid transit routes, 10 passenger-only ferry routes, and 116 miles of light rail including more than 80 high-capacity transit stations. The remaining 30% is forecast to go towards an array of state and local facilities. Among the projects in the Regional Capacity Project List, the majority are providing multimodal investments, including transit, ferry, and bicycle and pedestrian improvements. In addition, there are projects focused on improving travel flow and increasing the efficiency of roadway operations. These projects serve facilities that cumulatively carry almost half of the region's transit bus passenger volumes and freight truck miles. More information may be found in Chapter 2.

System improvement spending was captured in the financial strategy through direct engagement with member agencies, a detailed review of local comprehensive plans, and the utilization of Washington State BARS data. More information can be found in the Financial Strategy and Regional Capacity Project List appendices.

The total investment projected for system improvements in the Regional Transportation Plan is just under $130 billion. This makes up approximately 44% of all plan investments.

Expenditures Summary

Total investments in the plan through 2050 equal $300 billion. Figure 56 highlights the plan investment split between maintenance, preservation & operations and system improvements, while Figure 57 shows the breakdown by agency type.

Figure 56 - Plan Investment Expenditures by Investment Type, $2022 ($300.2B total expenditures)

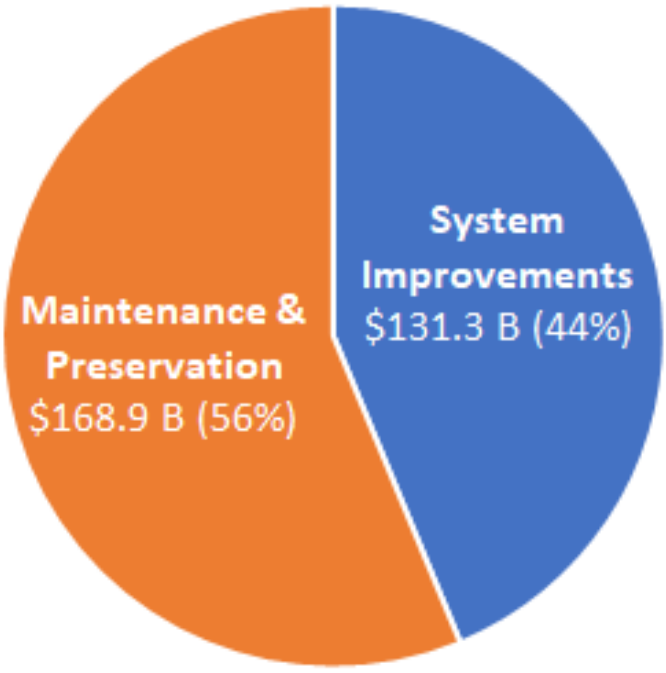
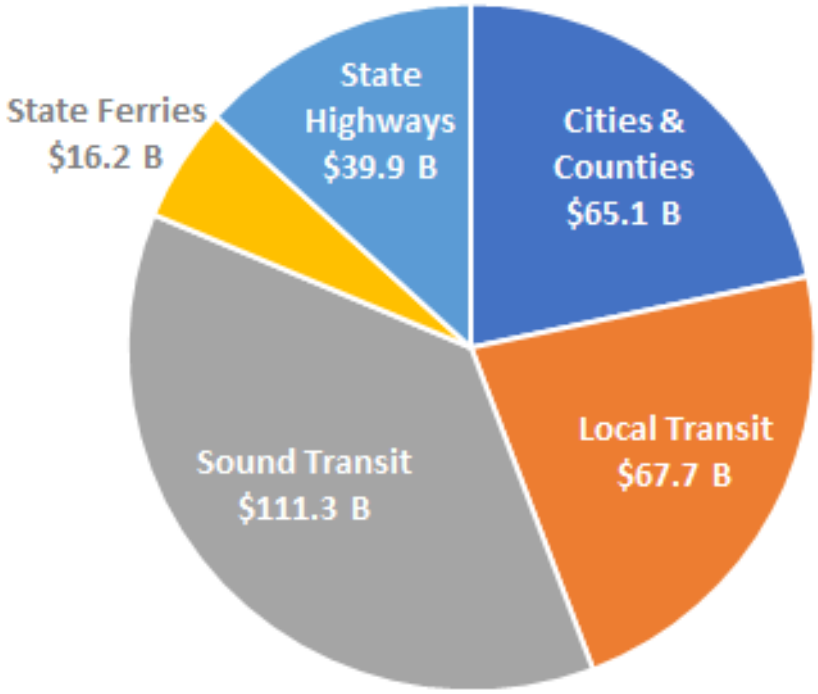


Figure 57 - Plan Investment Expenditures by Agency Type, $2022 ($300.2B total expenditures)



Based on PSRC's projections of regional personal income, residents of the central Puget Sound region will pay approximately 2% of personal income on public sector transportation through 2050. This is consistent with the share of personal income that historic records indicate residents have paid over the last several decades.

Revenues

Similar to expenditures, transportation revenues are grouped into the following categories: cities; counties; local transit; Sound Transit; state ferries; and state highways.

Current Law Revenues

The starting point in the development of the plan's financial strategy is an estimate of future revenues that will be available under current authority (i.e., current law revenue). When compared with plan investment costs, the current law revenue estimate provides the basis for determining the gap that must be filled by new revenues.

Transportation funding in the region draws mainly from a few primary tax bases, including motor fuel and retail sales, motor vehicle market value, assessed property valuation, and other fees such as vehicle registrations and licenses. In addition to these sources, transportation funding is also drawn from a combination of other sources, such as city and county general funds, fares, and other fees.

Historically, transportation revenues have fluctuated year over year; however, the broader trend has shown an upward trajectory. Factors in this trend include the passage of statewide transportation packages in the early to mid-2000s and more recently in 2015, as well as voters' willingness to increase taxes in support of local and regional investments, such as Sound Transit 3 in 2016.

Current law revenues are projected through the PSRC Regional Transportation Revenue Model, a tool that utilizes historic revenue data, forecasts from the regional economic model, and projected distributions of employment and population to estimate what future revenues will be. These estimates are distributed across the different transportation categories mentioned above: cities, counties, local transit, Sound Transit, WSDOT, and WSF. In addition to using the Revenue Model, PSRC staff manually integrates and projects revenues from recently passed transportation-based ballot measures. These measures have not yet been integrated into the historic revenue data and are not captured through the model.

The total current law revenues estimated to be available for transportation through the life of the Regional Transportation Plan are just over $255 billion. This covers approximately 86% of all plan costs.

New Revenues

Although a substantial portion of the plan (86%) is covered by projected current revenue sources, a 14% revenue gap remains that needs to be filled with new revenue sources. These are sources not currently available but can be reasonably assumed to be available in the future.

Through previous stakeholder work and research on emerging sources, PSRC developed a menu of options representing various new and expanded sources that could provide additional revenue above and beyond current law sources.

- **User Fees.** Forecasts indicate that in the coming decades national and state gas tax revenues will likely see a dramatic decline. Changes in vehicle technology, increasing capital costs, and inflation will continue to compromise the purchasing power of fuel tax proceeds.

  The Washington State Transportation Commission has determined that a road usage charge (RUC) is feasible and could produce the needed revenue to eventually replace the gas tax and fund the state's long-term transportation needs. Following a successful 2018 RUC pilot study, in 2020 the Commission recommended enactment of a small-scale RUC program as a first step in a gradual transition away from taxing motor fuel to fund the upkeep of state roads and bridges. The state Legislature directed the Commission to further explore some specific aspects of a potential RUC program.

  A key benefit of a RUC as a funding mechanism is tied to equity; motorists pay solely based on how much they "use" the system measured in miles driven. This is in line with how other public utilities such as electricity and water are paid for and – unlike the gas tax – it does not penalize drivers who are unable to afford more fuel-efficient vehicles. At the same time, some users (such as those in rural areas and areas with poor transit service) may not have any reasonable alternatives to driving and the RUC system as eventually deployed must take mitigation for those users into account.

  Since 2018, the Regional Transportation Plan's financial strategy has assumed flexibility in the use of revenues generated by a RUC to fund a wide variety of transportation improvements beyond roadways, without the restrictions of current motor fuel taxes. That assumption is maintained in this financial strategy.
- **New Local Sources.** Cities and counties can increase transportation-related taxes and fees and use new local options for transportation funding. This includes new vehicle license fees,

road and property tax levy adjustments, impact and development fees, and taxes on parking. In addition, cities and counties can utilize new revenue tools such as indexing the current state fuel tax to inflation, creating new carbon taxes on fuels, and addressing prior legal decisions on the implementation of street utility fees.

- **New Transit/Ferry Sources.** In addition to increasing local transit sales tax and fares, transit operators can diversify their revenues by looking into other sources such as an employee head tax, an increase in license service fees, and carving out a greater transit share for the Motor Vehicle Excise Tax.
- **Other New State Fees.** Since the transition to a use-based fee model will likely take a substantial amount of time, the state will need to use additional, near-term revenue sources to cover more immediate needs. Potential sources include a license and registration fee increase and a weight fee increase.

These options provide a menu of potential choices, any mix of which could fill the 14% (approximately $43 billion) gap in the financial strategy. In total, the available revenue that could be generated from these sources exceeds $70 billion, providing a range of pathways for covering the needed revenue.

Summary of Financial Strategy

Figure 58 below provides a summary of expenditure and revenue projections by program area.

Key Findings:

- Current Law Revenues are projected to meet 86% of estimated investment needs. New Revenues will be needed to address the remaining 14%.
- Local Transit and Ferries will have the greatest reliance on new revenue sources, at 32% and 40% respectively.
- Counties are more reliant on local sources of revenue, although there are significant differences among them, and approximately 28% of revenues must come from new sources.
- Cities rely more heavily on general fund transfers for transportation to varying degrees.

More detailed estimates for the Counties and Cities program areas can be found in Appendix J (Financial Strategy).

Figure 58 - Projected Transportation Revenues and Expenditures in the Central Puget Sound Region, 2022 - 2050

(millions of $2022 dollars)

	NEEDS			REVENUES		
	Maintenance, Preservation and Operations	System Improvements	Total	Current Law	New Revenue	Total
Counties	$ 14,100	$ 2,700	$ 16,800	$ 12,100	$ 4,700	$ 16,800
Cities	$ 30,200	$ 18,100	$ 48,300	$ 44,900	$ 3,400	$ 48,300
Local Transit	$ 46,900	$ 20,800	$ 67,700	$ 45,800	$ 21,900	$ 67,700
Sound Transit	$ 40,200	$ 71,000	$ 111,300	$ 111,300	$ -	$ 111,300
State Ferries	$ 16,100	$ 100	$ 16,200	$ 9,900	$ 6,400	$ 16,200
State Highways	$ 21,300	$ 18,600	$ 39,900	$ 33,600	$ 6,300	$ 39,900
TOTAL	**$ 168,900**	**$ 131,300**	**$ 300,200**	**$ 257,400**	**$ 42,800**	**$ 300,200**

What's Ahead?

While the RTP financial strategy captures the full maintenance and preservation need of the system through 2050, the findings above indicate that maintenance and preservation remain underfunded and that agencies are often unable to meet the full need in the short-term. Some key action steps for the future include:

- PSRC will continue to refine methodologies and analysis tools to reflect needs and impacts related to maintenance and preservation. This may include consideration of opportunities and tools available to evaluate impacts to the transportation system if it is not fully maintained and preserved into the future, or alternative scenarios reflective of current trends in the levels of investment.
- Continued monitoring of overall investment levels in maintenance and preservation should occur, as well as the use of various funding mechanisms.
- Given the significant preservation needs on I-5, more compete and current data should be routinely gathered to inform decision makers and identify actionable steps moving forward.
- In order to fully implement the plan, cities, counties, transit agencies, and the state should take steps to pursue the new funding mechanisms identified in the plan to fill any revenue gaps into the future.
- Regional partners should continue laying the groundwork for deployment of a Road Usage Charge (RUC), with early implementation beginning in 2030. In addition, policy decisions on the collection and distribution of this funding should be made, with flexibility provided in the application of a RUC in the central Puget Sound area. The State of Washington should consider convening an inclusive group of local and state leaders, agency staff, and other stakeholders to have RUC policy discussions prior to adopting enabling legislation.


Kitsap Fast Ferries
BICYCLES MUST BE WALKED

Chapter 4 – Big Ideas and Implementation

The Regional Transportation Plan is a living document and will continue to evolve. The plan is revised every four years and as time passes, new projects will be identified and refined. Some of these will formally enter the plan and be advanced by project sponsors, while others will remain big ideas for further exploration. This chapter discusses some of the longer-range conceptual transportation projects, as well as implementation actions and administrative processes used by PSRC to coordinate transportation planning at all levels of government.

Big Ideas for Longer Range Transportation Investments

A long-range plan should not only identify the projects and programs that are well-advanced in their planning, but also anticipate transportation needs decades from now, beyond the identified plans of project sponsors. This section of the Regional Transportation Plan explores some big ideas that have been identified by various groups and government agencies for the next generation of transportation improvements to further support mobility and the Regional Growth Strategy. As these big ideas evolve, it's PSRC's role to keep up with these emerging issues, act as a convener, and work with members to continue the regional conversation about the place for these types of projects in the future of the central Puget Sound region.

A Comprehensive Regional Active Transportation Network

Active transportation refers to transportation solutions that connect people of all ages and abilities to where they need to go using active modes such as walking and bicycling. The active transportation system includes a network of facilities such as off-road multi-use trails, on-road bicycle facilities, and sidewalks. Well-connected and complete networks that allow people to safely and comfortably access their jobs, transit, services, and community activities on foot, by bicycling, or rolling are needed to complete this system. The need for more and improved bicycle and pedestrian infrastructure will only grow as the region is expected to add another 1.6 million people by 2050.

The RTP's emphasis is on building out the region's active transportation networks as a seamless system providing access to transit and other destinations. Many agencies and organizations are working toward this vision: the Leafline Trails Coalition is working to promote a connected regional trail system as a multi-county spine for walking and bicycling; Disability Rights Washington advocates prioritizing a complete and accessible sidewalk and transit network; and local jurisdictions around the region are working to build and improve the active transportation network, through a variety of policy and implementation plans.

VISION 2050 and the Regional Transportation Plan call for the development of a comprehensive active transportation system that offers more travel choices while preserving environmental quality and open space. PSRC is working with communities throughout the region to plan for and implement efficient and effective bicycle and pedestrian projects and programs.

Inter-Regional High-Speed Rail

High-speed rail is a type of rail transportation that runs significantly faster than traditional rail, using a system of specialized trains and dedicated tracks. While there is no single standard that applies worldwide, lines built to handle speeds in excess of 124 mph are widely considered to be high-speed.

Led by Japan's development of the Shinkansen "bullet trains" in the 1960s, dozens of countries in Europe and Asia operate extensive national and international high-speed rail lines and networks, offering travel times and costs competitive to air travel.

Figure 59 – A Vision for Cascadia High Speed Rail

Only limited high-speed rail service is available in the United States today. Amtrak's Acela Express in the Northeast Corridor between Boston and Washington D.C. is considered high-speed rail. Florida's privately operated Brightline between Fort Lauderdale and West Palm Beach today operates only at speeds up to 79 mph, but by late 2022 it plans to begin service to Orlando at 125 mph, legally classifying it as a high-speed rail. An affiliated project called Brightline West is planning service between Los Angeles and Las Vegas, and California's High-Speed Rail Authority is constructing the first segment of a high-speed rail corridor that is planned to eventually link San Francisco and Los Angeles.

In the Pacific Northwest, Amtrak, in partnership with the states of Washington and Oregon, operates the Amtrak Cascades regional service between Eugene and Vancouver, B.C. Current track and safety requirements limit train speed to 79 miles per hour.

A series of recent studies and analyses (together known as The Ultra-High-Speed-Ground Transportation Study) conducted between 2016-2019 lay out a vision for new high-speed transportation infrastructure connecting the larger Cascadia Megaregion, stretching from Vancouver, B.C. in the north through Seattle and to Portland, OR in the south. Longer range visions include eventual extensions south to Eugene, OR, and east to Spokane, WA. See Figure 59.

This would be entirely new transportation service run by a new entity, with the potential to reduce travel times to under one hour between Seattle and each city, and to serve up to 3.1 million riders upon opening in the mid-2030s. Up-front construction cost estimates range from $24 billion to $42 billion. The studies estimate $355 billion in economic growth and 200,000 new jobs related to construction and ongoing operation of the service, as well as other benefits, such as reduction of 6 million metric tons of carbon dioxide emissions over first 40 years and the potential for zero emissions by using clean energy sources (hydro, wind, solar). In fall 2021, the states of Washington and Oregon and the province of British Columbia signed a Memorandum of Understanding to continue to advance this work. PSRC will participate on a Policy Committee to support the effort.

The Infrastructure Investment and Jobs Act passed in November 2021 identifies $66 billion in new funding for the Amtrak National Network, including funding for planning and developing new high

speed rail infrastructure and service. As more detail emerges about this and other new funding programs, partners in the Cascadia corridor should explore the opportunity to access some of these funds to advance the vision of high-speed rail linking the megaregion.

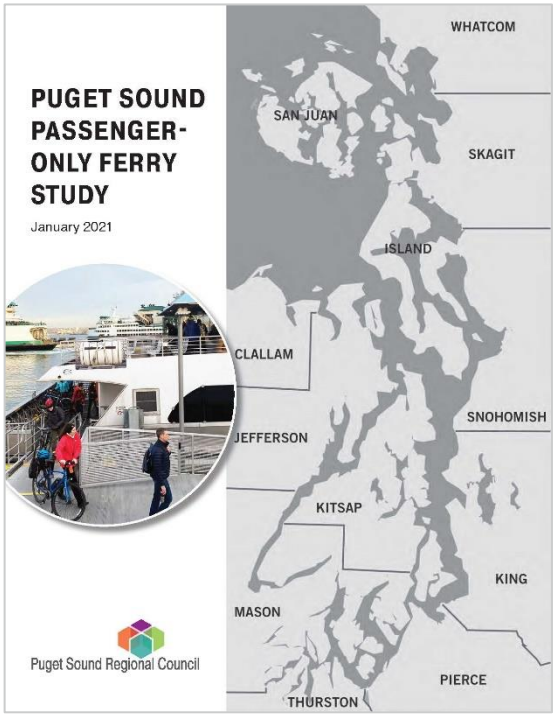
Passenger-Only Ferries

The Puget Sound region has a long history of reliance on waterborne transportation. Ferries play a key role in the regional transportation system and economy, connecting people to jobs, services, and recreation.

Today there are two providers of year-round passenger-only ferry service in the region: King County Metro and Kitsap Transit. Passenger-only ferry service and ridership has been expanding in recent years. With the success of these existing services, interest is growing in passenger-only ferry service as another public transportation option connecting to the regional transportation system. The existing routes provide time competitive transit options that have community support, resulting from a long-range planning process that addressed issues associated with operation within the unique marine environment as well as good intermodal connectivity at terminals.

In 2019, the Washington State Legislature directed PSRC to conduct a Puget Sound Passenger-Only Ferry Study across the 12 counties bordering Puget Sound and on Lake Washington and Lake Union. Completed in January 2021, the study reviewed potential routes and terminals, ridership demand, costs and use of alternative fuels, and suggests recommendations to accelerate the electrification of the ferry fleet. The study identified several potential passenger-only ferry routes within the central Puget Sound region, as well as a handful connecting the region to other parts of western Washington.

The Puget Sound Passenger-Only Ferry Study confirmed several issues to address in the successful planning and implementation of future passenger-only ferry service in the region and connecting the region to points beyond. One of the primary factors is to ensure that service is time competitive when compared to other transportation options, particularly land-based transit options serving similar corridors (rail or bus). The study also reinforced the importance of community support at both ends of a route and planning for terminal locations, multimodal connections to those terminal locations, and addressing issues such as Tribal fishing rights, sensitive habitat and marine mammal protection for the route. Communities interested in pursuing passenger-only ferry as a transit option should begin by assessing how the potential route will help the community implement the VISION 2050 Regional Growth Strategy and identify potential opportunities and obstacles to development of the service and necessary infrastructure. The community should also consider who the potential operator would be and work with that operator and other stakeholders to include the project within the Regional Transportation Plan.

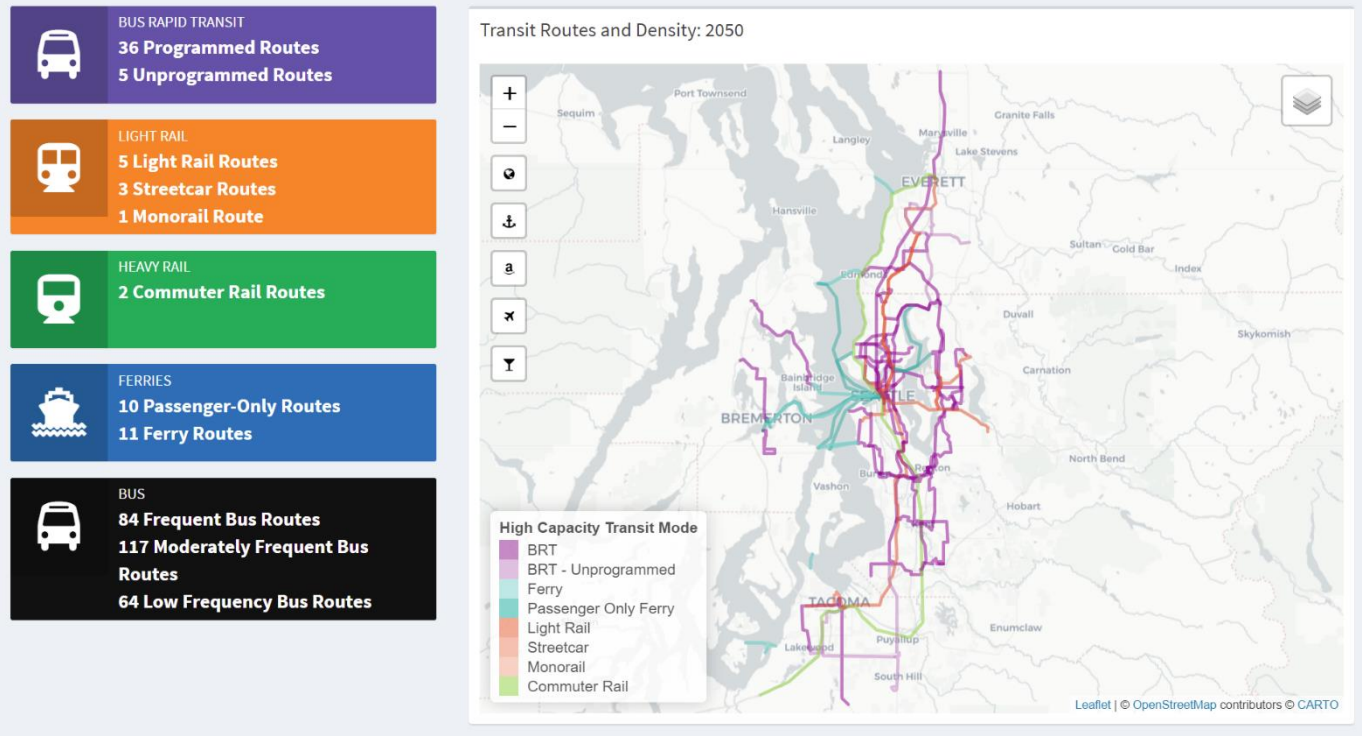


Future Regional High-Capacity Transit

In the early 1990s, state and regional leaders acknowledged that the Puget Sound region could not simply pave its way out of traffic jams and concluded that the region needed to create more transportation choices for the people who live and work here. VISION 2020 first imagined a 'spine' of regional light rail connecting growth centers, laying the groundwork for the creation of Sound Transit in 1996, which was created to plan and implement a regional high-capacity network to connect the region. In 2008, VISION 2040 refined the vision for high-capacity transit, imagining additional rail corridors, and the citizens of the region approved the ST2 package of north, south, and eastward extensions to the light rail network. Since then, Sound Transit has developed an additional investment package – ST3 – for a system of express buses, commuter rail, and light rail to provide faster, more dependable ways to connect people with their jobs, homes, shopping hubs, and regional destinations. The Sound Transit Long Range Vision Plan – updated in 2014 – is the conceptual framework for developing this transit network serving the urban areas of Snohomish, King, and Pierce counties.

As the region plans for growth to 2050, what transit investments might be needed after completion of ST2 and ST3? Where will additional investments be located? Are there any important corridors or destinations that lack service in Sound Transit's adopted service development plans? Advocacy groups have been fostering ongoing community conversations about how to improve transit service in the region over the long term. Given the long timelines from initial visions of new investments and the concrete plans for their implementation, the region should continue its conversation about the transit system it will need in the latter half of the 21st century.

Figure 60 – 2050 High-Capacity Transit System



As described in Chapter 1's Transit section, local transit providers also have long-range plans laying out planned transit corridors and service improvements, with bus rapid transit serving city and county destinations. See Figure 60. This local transit is well-coordinated with Sound Transit's longer distance

regional service and multimodal ferry connections with the region's ferry operators. As the region continues to grow, these local plans will need to be updated and decisions made about how some of these corridors served by local transit agencies can convert to higher capacity regional service.

Under the state Growth Management Act, the region's cities and counties are required to periodically update their comprehensive land use plans. The next updates, due in 2024, will have revised local growth targets and planned development densities, plans for new local growth centers, and other changes that will need close coordination with local transit agencies to ensure that planned growth will be served by the appropriate amounts and types of transit.

In the development of the Regional Transportation Plan, PSRC created an interactive, mapped Transportation System Visualization Tool to show currently planned transportation investments alongside planned development densities. PSRC's review of planned transit projects and future high growth areas revealed that local transit and Sound Transit's planned projects connect most high growth areas. After the 2024 updates are completed, PSRC can perform a regionwide assessment to determine whether any gaps need to be addressed.

Similarly, after updated local growth targets and comprehensive plans are developed, and new information is developed through continued monitoring of growth trends, bus rapid transit and other frequent transit routes should be reevaluated to see whether service levels will be adequate for existing activity and planned growth. The adopted Sound Transit 3 service plan has funded studies looking at the long-range needs of some of these corridors, including potential extensions of high-capacity transit southward from West Seattle to Burien, from Burien east to Renton, on northern Lake Washington, and from Bothell to Bellevue via Kirkland. The ST Long Range Plan identifies additional corridors, such as from Ballard to the University of Washington. Findings from these studies and upcoming updates to local transit long-range plans will provide an opportunity to refine planned routes and connections, and potentially to develop funding packages to implement them.

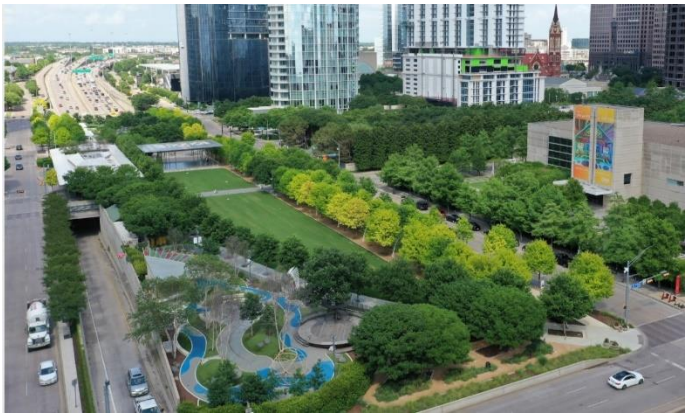
As light rail use increases and people use the system for local travel, another question that should be examined is whether express service along key segments of light rail corridors – such as between major cities and Sea-Tac International Airport – should be developed to preserve competitive travel times between greater distances.

PSRC will convene its members to have conversations about these longer-range transit questions and continue its historic tradition as a forum for articulating a vision for transit service in the region.

Reimagining and Repurposing Infrastructure

As highway infrastructure built in the mid-20th century continues to age, many cities around the country are re-evaluating their design and function and considering how they can be altered or replaced in ways that better meet the needs of today's cities. Examples are widespread, from Boston's Central Artery/Tunnel Project, San Francisco's replacement of the Embarcadero Freeway, Chicago's waterfront Millennium Park covering a former rail corridor, to Dallas' Klyde Warren Park over the Woodall Rodgers Freeway.

Figure 61 - An aerial view of Klyde Warren Park in Dallas. TX



The central Puget Sound region has numerous examples of reimagining infrastructure. The elevated Alaskan Way Viaduct was replaced with a tunnel and a park boulevard is under construction. The Seattle Art Museum's Olympic Sculpture Park is built over rail lines. The I-90 lids on Mercer Island and in central Seattle provide room for parks and schools, and WSDOT is currently constructing a new freeway lid at Montlake Boulevard as part of the SR 520 bridge replacement project.

In recent years, similar community efforts to reimagine and repurpose sections of I-5 through central Seattle have emerged. Lid I-5 is a community-led effort to create 17 acres – or about eight city blocks – of new usable space over a section of freeway in central Seattle. As the city continues to grow, land is at a premium, and this group sees anticipated work to seismically retrofit an aging I-5 as an opportunity to advance other community objectives at the same time. They imagine space for parks, schools, and housing development that would reconnect the First Hill and Capitol Hill neighborhoods to downtown Seattle. Feasibility studies commissioned by the group estimate that the effort would range from $1-2.5 billion, depending on different development scenarios. Additional opportunities to create lids over other parts of I-5 or other freeways may be identified as communities throughout the region plan to accommodate growth or reconnect neighborhoods.

Reimagining infrastructure can take other forms as well. Examples include innovative multipurpose infrastructure like stormwater parks as roadways have been retrofitted to improve stormwater treatment.

One example of this type of multipurpose infrastructure is the Manchester Stormwater Park, which treats stormwater from roads, parking lots, and residential and commercial properties in the small Kitsap County community of Manchester. Treatment cells around the perimeter of the park process stormwater through engineered filter media and plants. A spiral rain garden intercepts flows from groundwater and light storms and treats it in the rain garden. The stormwater park provides a

community gathering space for farmers' markets, celebrations, relaxation, and education. Before the stormwater park was built, Manchester did not have any stormwater treatment structures and stormwater drained untreated through one pipe into Puget sound. The project was initially designed to replace an aging and undersized outfall. However, Kitsap County recognized the opportunity for multiple benefits: treating a larger drainage area, reducing flooding, and providing a community amenity.

~~In recent years, similar community efforts to reimagine and repurpose sections of I-5 through central Seattle have emerged.~~ As WSDOT, local jurisdictions, and transportation agencies ~~and other partners~~ work to maintain preserve, and potentially replace aging infrastructure, PSRC should provide information about innovative national and international projects as models for these conversations.

Aviation

As described in Chapter 1, in 2019 the Washington State Legislature created the Commercial Aviation Coordinating Commission (CACC), which has been tasked with identifying and recommending a single preferred location for a new commercial service airport by February 15, 2023. In addition to recommending a new primary commercial aviation facility, the Commission will recommend additional ways to accommodate capacity needs at other facilities. PSRC participates as a member of the CACC and, together with regional partners, will represent the region's priorities and interests.

A new facility or facilities will be needed because projected demand for regional passenger enplanements is approximately 55,600,000 by 2050—nearly double 2018 demand, creating a gap in capacity for about 27 million unmet enplanements each year.

When planning to accommodate this demand, many factors affecting both existing and potential new capacity need to be considered, including access to airports, community and environmental impacts, and support for important regional industries. As population and jobs continue to grow in the region, roads will become more crowded and there will be limited space and interest in expanding highway capacity. Drive times from outlying areas to existing passenger aviation facilities will increase and residents in many parts of the region will need to drive well over an hour to access Sea-Tac International Airport. There is a possibility that new capacity will be in areas not currently planned for high-capacity transit. As Sound Transit continues to expand the Link light rail system, and as the region explores the possibility of high-speed rail and improved intercity rail, these and other multimodal solutions should be considered to increase access to the region's airports.

What's Ahead?

These are just a few examples of the types of questions about the future of transportation that are being talked about and explored regionally and nationally. Others, ranging from emerging technology like hyperloop and personal aircraft, will gain more specificity as work on these ideas continues. As we imagine the transformation of the region over the coming decades, far-ranging big ideas such as these should be explored as part of the ongoing regional conversation about the future of transportation.

Discussions with PSRC boards, member jurisdictions, and the public to date have highlighted support for continuing to lay the groundwork for the far future, but also to remember the needs of today, the importance of completing projects that are already in the Regional Transportation Plan, and that the

key issues of safety, equity, climate and maintenance and preservation will continue to be high priorities.

Administrative Procedures and Processes

The following sections identify PSRC administrative procedures and processes related to implementation of the Regional Transportation Plan, as well as how PSRC coordinates with other agencies and members.

Amending the Regional Transportation Plan

The Regional Transportation Plan contains administrative procedures for amending new or revised project investments into the plan. The plan contains a variety of investments — to preserve and maintain the transportation system, to improve the system's efficiency, and to expand the system with strategic capacity. These investments incorporate various modes of travel on a wide range of facilities, from local roads to major interstates. Most of these investments are considered "programmatic" in nature and are not called out as individual investments. These programmatic investments include, among other things, preservation, maintenance and operations, and capacity investments on local roadways.

Projects that seek to modify capacity on the regional system are required to be explicitly identified on the Regional Capacity Projects List and are subject to additional review and approval by PSRC's boards. These projects have been mapped on PSRC's Transportation System Visualization Tool, which has been a valuable and useful tool for the update of the Regional Transportation Plan. PSRC intends to regularly update this tool with relevant data in support of future RTP updates. Appendix D contains information on those investments in the plan that are required to be on the Regional Capacity Project List, and which are subject to PSRC's Approval process and the administrative procedures for the plan.

The Regional Transportation Plan is formally updated every four years. This generally provides a formal opportunity for new or revised projects to be amended into the plan. Amendments to the Regional Capacity Projects List between plan updates are made infrequently and are determined on a case-by-case basis. Projects must meet certain basic requirements prior to admission into the regional plan:

- The proposed investment meets the threshold of the Regional Capacity Projects List.
- The proposed investment has been derived from a comprehensive planning process.
- The proposed investment has the concurrence of all affected parties (for example, locally proposed investments on state-owned facilities would need to have WSDOT concurrence).
- The sponsor of the proposed investment provides information addressing the Regional Prioritization Framework, based on key VISION 2050 policy areas.

Per federal and state requirements, development of the RTP occurs every four years. A longer-term work program will be developed to consider the feasibility and possible benefits of aligning the schedules between the development of the next RTP and future project selection processes.

PSRC's Approval Process

Projects enter the plan as Candidate investments and must receive approval by PSRC's boards prior to implementation. In order for a project to receive Approval, the following must be met:

- Consistency with VISION 2050 Policies.
- Benefit–Cost Analysis (BCA) for investments greater than $100 million.
- Final environmental documentation from a NEPA or SEPA process.
- Planning requirements, such as Memoranda of Agreements, zoning changes, etc.
- Financial feasibility, demonstrating that the proposed project has a reasonable expectation of full funding.
- Air quality, to determine if the project as submitted for Approval is consistent with the regional air quality conformity determination.

See Appendix D.

Project sponsors seeking to add new Regional Capacity Project to the plan must submit an application that includes questions related to nine prioritization measures that evaluate response to and consistency with VISION 2050 policy areas. These include emissions, freight movement, jobs, multimodal alternatives (i.e., transit and bicycle pedestrian modes), Puget Sound land and water, safety and security, equity and access to opportunity, support for centers, and travel/congestion. PSRC commits to updating and refining these measures prior to the next plan update, including consideration of addressing "all ages and abilities" and a Safe Systems Approach for evaluating projects.

Regional Transportation Improvement Program

The Regional Transportation Plan coordinates state, regional, and local planning efforts for transportation in the central Puget Sound region and fosters the development and operation of a highly efficient, multimodal system that supports the regional growth strategy. That includes using regional resources for regionally significant investments and promoting coordination among transportation providers and local governments as they make transportation investments.

The Regional Transportation Improvement Program (TIP) reflects the implementation of the investments in the Regional Transportation Plan. Regionally significant projects must be explicitly listed in the plan and are subject to further review before they can proceed to implementation.

Regional significance is currently defined as those projects adding capacity to the regional system, as defined by specific thresholds for all modes including roadway, transit, nonmotorized, and ferry. Projects and investments below these thresholds are also subject to the policies in VISION 2050 and are contained programmatically in the plan's financial strategy but are not explicitly listed as projects. More information on these thresholds can be found in Appendix D.

The Regional TIP contains projects awarded PSRC's federal funds, other federally funded or state funded projects, and all other regionally significant projects that are required to be included in the region's air quality conformity determination. The TIP is a four-year programming document, so only those projects with current funds are shown. The TIP is updated on a monthly basis. All projects submitted are evaluated for consistency with VISION 2050 and the Regional Transportation Plan and are reviewed for financial constraint and air quality conformity requirements.

PSRC has procedures to monitor and track the implementation of projects and programs in the Regional Transportation Plan. Through the Regional TIP process, tracking of projects with PSRC's federal funds ensures the funds are being used efficiently and on a timely basis. Further, monitoring of project implementation occurs through both the Regional TIP process and the Regional Transportation Plan's approval process.

PSRC completes an Equity Analysis as part of each Transportation Improvement Program (For the most recent example see https://www.psrc.org/sites/default/files/tip2020-appendixf-equityanalysis.pdf). The analysis evaluates distribution by project mode (transit, roadway, bicycle/pedestrian, etc.), and proximity to and benefit or burden to different demographic groups.

Policy Framework for PSRC's Federal Funds

PSRC has an ongoing responsibility to establish and evaluate programming criteria that reflect adopted regional policy. The Policy Framework for PSRC's Federal Funds is updated and adopted by the PSRC Executive Board prior to each project selection process and is predicated on VISION 2050 policies that call for priority to be given to projects that serve regional growth and manufacturing/industrial centers, as well as locally identified centers. Project evaluation criteria are designed to support these policies and priorities and are reviewed and refined as part of the Policy Framework process.

A Project Selection Task Force is convened prior to each project selection process, to make recommendations on the Policy Framework. Prior to the next process the Task Force will take into consideration the adopted RTP and any guidance or emphasis areas included. A longer-term work program will be developed to consider the feasibility and possible benefits of aligning the schedules between the development of the next RTP and future project selection processes.

Prior to each project selection cycle PSRC conducts an analysis of the historic distribution of funds it manages by mode and county. This information helps the board to ensure that while certain transportation modes or parts of the region may receive a larger share of funds in an individual competition, funds are awarded equitably across the region and to a variety of project types over time.

As part of the development of the 2022 Policy Framework for PSRC's Federal funds both the safety and equity criteria were significantly enhanced. In addition, a commitment was made to conduct an evaluation of the recommended projects resulting from that competition, which will include working with PSRC's Equity Advisory Committee to debrief the process and conduct a new Equity Pilot Program, to be conducted in late 2022 or early 2023. Further, PSRC has committed to a board discussion in 2022 of the methodology for equitably distributing PSRC's FTA funds.

Policy and Plan Review

Long-range plans and policies are developed by the region's local jurisdictions, countywide planning groups, and transit agencies to help shape communities and plan for growth.

PSRC has established a process for the review of local, countywide, and transit agency plans. It is guided by: (1) the consistency provisions in the Growth Management Act, (2) state requirements for establishing common regional guidelines and principles for evaluating transportation-related provisions in local comprehensive plans, and (3) directives for coordination in PSRC's Interlocal Agreement and Framework Plan.

With the adoption of VISION 2050, PSRC updated the Plan Review Manual to reflect updated regional policies and provide details on how plans and policies are reviewed and certified. The manual provides guidance and VISION Consistency Tools for aligning plans and policies with VISION 2050 and requirements in state law.

Regional Guidelines and Principles

State law requires regional guidelines and principles to be established for regional and local transportation planning purposes (RCW 47.80.026). Among the factors these guidelines and principles are to address: concentration of economic activity, residential density, development and urban design that supports high-capacity transit, joint- and mixed-use development, freight movement and port access, development patterns that promote walking and biking, transportation demand management, effective and efficient transportation, access to regional systems, and intermodal connections. The region's multicounty planning policies adopted in VISION 2050 serve as the region's guidelines and principles.

Review of Local Comprehensive Plans, Certification of Transportation-Related Provisions

Local jurisdictions are asked to incorporate a brief report in future updates to their comprehensive plans that addresses: (1) conformity with requirements in the Growth Management Act for comprehensive plan elements, (2) consistency with the Regional Transportation Plan (including consistency with established regional guidelines and principles, physical design guidelines for centers, and compliance with federal and state clean air legislation), and (3) consistency with the multicounty planning policies. Information provided in this report will be a primary tool for developing PSRC's certification recommendation regarding the transportation-related provisions for PSRC boards to consider.

Review of Subarea Plans for Designated Regional Growth Centers and Regional Manufacturing/Industrial Centers

Current PSRC procedures specify that jurisdictions with regionally designated centers — either regional growth centers or regional manufacturing/industrial centers — are asked to prepare a subarea plan for each center. The subarea plan should be adopted within four years of the designation of the center. The plan should include a brief report (similar to the one prepared for the jurisdiction's comprehensive plan) that outlines how the plan satisfies Growth Management Act requirements for subarea plans, as well as regionally established criteria for center planning. This report will be a primary tool for developing PSRC's certification recommendation for PSRC boards to consider.

Review of Countywide Planning Policies and Multicounty Policies, Including Certification of Countywide Policies for Consistency with the Regional Transportation Plan

Countywide planning bodies are asked to include a report in updates to the countywide planning policies that addresses: (1) consistency of countywide planning policies and multicounty planning policies, and (2) consistency with the Regional Transportation Plan. This report will be a primary tool for the PSRC to develop a certification recommendation for consideration by PSRC boards.

Consistency Review of Transit Agency Plans

To coordinate transit planning with local and regional growth management planning efforts, transit agencies are requested to incorporate a report in their long-term strategic plans that addresses: (1) conformity of the strategic plan with state planning requirements for transit planning, (2) consistency with the Regional Transportation Plan, (3) compatibility of the strategic plan with multicounty planning policies, (4) compatibility of the strategic plan with the countywide planning policies for the county or counties in which the agency provides service, and (5) coordination with local governments within the agency's service area. The report should be considered and approved by the governing authority of the transit agency, and then transmitted to PSRC boards for review and comment.

Certification of Plans Prepared by the Regional Transit Authority

Washington state law requires PSRC to formally certify that the regional transit system plan prepared by the Central Puget Sound Regional Transit Authority — known as Sound Transit — conforms with the Regional Transportation Plan (RCW 81.104). On June 23, 2016, the Sound Transit Board adopted the Sound Transit 3 Regional Transit System Plan and placed it on the November 8, 2016 ballot. PSRC staff, together with Sound Transit staff, prepared a conformity report evaluating the Sound Transit 3 Regional Transit System Plan. On September 22, 2016, the PSRC Executive Board took action and found that the Sound Transit 3 System Plan conformed to the region's long-range plans at the time, VISION 2040 and Transportation 2040. These plans have been updated to VISION 2050, which serves as the region's equitable development strategy, and this 2022-2050 Regional Transportation Plan. PSRC will review and certify any updates to Sound Transit's regional transit system plan.

What's Ahead?

The following actions are drawn from "What's Ahead?" sections throughout this document, and also reflect ongoing projects and commitments. These highlight shared responsibilities of PSRC, its members, and other stakeholders to successfully implement the strategies, projects, and programs identified in the Regional Transportation Plan.

PSRC is working on many of the following implementation steps with its staff committees and other state and regional partners. PSRC will be working with the boards to review the priorities and timelines for the action items and future work as described in this section as they relate to PSRC's work program. This planning for future work, both in the near term and for the next biennial budget and work program, will begin shortly after plan adoption. Key implementation actions, described in more detail below, include developing a climate implementation strategy and a regional safety plan.

Chapter 1: An Integrated Multimodal Transportation System

Transit

- Support full build-out of the planned transit system.
- Identify new sources of revenue to address funding gaps.
- Prioritize access to transit, considering equity and safety; local context; transit supportive land use; affordable housing in proximity to transit; partnerships.
- Maintain and update transit agency long range plans.
- Improve regional coordination on mobility for people with specialized transportation needs. See the Coordinated Mobility Plan (Appendix B) for prioritized strategies and actions.
- Elevate the work and needs of ADA transition planning, including monitoring the progress and supporting the development and analysis of local plans. The board will discuss the future PSRC work program on this topic.
- Coordinate with public transit agencies and others on collecting data and analyzing performance of Mobility on Demand in the region.

Ferries

- Stabilize the aging ferry fleet.
- Identify new sources of revenue to address timely vessel replacement.
- Invest in new, greener vessels through electrification.
- Ensure pipeline of qualified ferry workforce.
- Maintain and update transit agency and WSDOT long range ferry plans.
- Continue collaborative efforts identify new passenger-only ferry routes.

Bicycle and Pedestrian

- Compile the information from this section into a stand-alone Active Transportation Plan. This stand-alone document will include the data and analysis included in the plan related to the

current and future bicycle and pedestrian network, and highlight the needs and priorities as identified for future work.

- Work with the Bicycle Pedestrian Advisory Committee to develop qualitative and quantitative active transportation performance measures and objectives, including analysis of "all ages and abilities" facilities.
- Improve bicycle and pedestrian network connectivity, particularly for accessibility to the transit system.
- Include equity in the evaluation of needs and priorities.
- Emphasize safety improvements for bicyclists and pedestrians.
- Continue to refine active transportation metrics.

Streets & Highways

- Complete strategic streets and highway projects such as the Puget Sound Gateway Program.
- Complete HOV and highway Express Toll Lane networks.
- Address seismic retrofit of aging highways and bridges.
- Identify new revenue sources to address gaps for local jurisdictions.
- Support implementation of the projects in the plan through local agency comprehensive plans.
- PSRC will continue to engage with stakeholders on the needs of the system and continued data collection and monitoring.
- PSRC will continue to participate in the development of state plans and programs.

Freight

- Consider freight needs in roadway design and pavement standards of local jurisdictions.
- Develop curbside management strategies and policies to accommodate commercial and residential deliveries, in addition to people traveling by walking, biking, or by vehicle.
- Local jurisdictions should actively engage with efforts being led by the State of Washington on truck parking. Support completion and implementation of the state's truck parking action plan.
- Consider freight issues on local comprehensive plan updates.
- Eliminate conflicts between freight movement and other modes of transportation.
- Continue to support collaborative freight groups, such as the PSRC Freight Advisory Committee and state-led freight efforts.
- PSRC will work with member agencies to compile best practices for design, management, and operation of freight transportation, and serve as a clearinghouse to help partner agencies share this information.

Aviation

- Promote coordinated planning and effective management to optimize the region's aviation system in a manner that minimizes health, air quality, and noise impacts to communities, including historically marginalized communities.

- Consider demand management alternatives as future growth needs are analyzed, recognizing capacity constraints at existing facilities and the time and resources necessary to build new ones.
- Support the state-led Commercial Aviation Coordinating Commission process of development of a new commercial aviation facility in Washington state.

TDM (Transportation Demand Management)

- Improve TDM integration in planning.
- Measure TDM program effectiveness and efficiency.
- Evaluate and address equity in TDM.
- Modernize the State of Washington Commute Trip Reduction law.

Technology

- Support member jurisdictions in monitoring emerging ITS activities, highlighting best practices, sharing technical assistance, and providing information on ITS assets and benefits.
- Support efforts to develop, evaluate, and implement emerging transportation technology.
- Jurisdictions should consider a multi-pronged approach to better highlight the benefits of ITS, including exploring more cost-effective options for retrieving data, developing and building more performance measures into ITS projects, and educating different groups on the benefits of ITS.

Safety

- Collect data and monitor state and regional safety trends, considering context such as population and employment growth, travel mode changes, and equity. Report to the board on an annual basis.
- Continue prioritization of safe infrastructure and separation of vulnerable modes in project development.
- Evaluate the safety revisions included in PSRC's project selection process for any further changes needed in subsequent funding competitions.
- PSRC will work with partners to develop guidance and compile best practices on effective safety measures and programs.
- PSRC will convene regional partners and stakeholders to discuss the challenges and solutions to continue to make progress towards meeting safety goals. This will include addressing the full spectrum of safety elements and a Safe Systems Approach.
- Develop a regional safety plan, including actions, targets and performance indicators. Seek resources for regional and local planning and projects.

Maintenance & Preservation

- Continue to prioritize maintenance and preservation.
- Identify and secure new revenues to adequately address maintenance and preservation.

- Refine methodologies and analysis tools to better assess maintenance and preservation needs.
- Monitor overall investment levels in maintenance and preservation.
- Consider future work programs to evaluate the impact to the system if it is not fully maintained and preserved into the future. This could potentially include alternative scenarios reflective of current trends in the levels of investment.

Chapter 2: Performing for People, the Environment, and Mobility

People

- Conduct extensive and effective public outreach as part of local jurisdiction and agency planning processes.
- Pay particular attention to understanding the needs and views of historically marginalized groups.
- Use data and tools to inform equitable public engagement processes.
- As part of the PSRC Regional Equity Strategy, support the Equity Advisory Committee, and develop additional resources and guidance to support local planning, including refinements to methodologies and scope of equity analyses. Develop approaches to evaluating displacement risk as part of equity analyses.
- PSRC will continue to engage with members and the community to highlight the goals of the region's plans and to connect this work to local planning efforts.
- PSRC will continue to expand on equity in all aspects of regional transportation planning. PSRC will continue to improve and refine how equity is integrated into the policy framework for the distribution of the federal funds managed by PSRC.
- PSRC will continue to collaborate with its members and community partners to advance equity to meet the region's equity goals.

Climate

- Update local comprehensive plans with planned land uses consistent with the VISION 2050 Regional Growth Strategy, and adopt supportive policies, regulations, and incentives.
- Implement the transit projects, programs, and service levels identified in the Regional Transportation Plan.
- Identify new revenues and funding sources for the unmet local transit need.
- Pursue implementation of a statewide Road Usage Charge (RUC) to begin replacement of transportation fuel taxes by 2030. Ensure that a RUC system has flexibility in the central Puget Sound to fund transit, bicycle, and pedestrian projects, and to incorporate demand management.
- Advance the transition to zero emission vehicles and cleaner fuels, particularly electric vehicles (EVs). PSRC will continue collaboration with the Puget Sound Clean Air Agency in the development of a web-based clearinghouse and a Regional EV Plan. Coordination will continue

with other partner agencies and groups such as the Washington State Department of Commerce and the West Coast Collaborative Alternative Fuel Infrastructure Corridor Coalition.

- In addition to the 2050 analysis year, PSRC will develop a 2030 transportation network and inputs corresponding to the Four-Part Greenhouse Gas Strategy, to conduct a 2030 analysis in alignment with the region's 2030 and 2050 climate goals. PSRC will continue to work with partner agencies including the Puget Sound Clean Air Agency on developing a climate implementation strategy for achieving the climate goals and to monitor progress.

Air Quality

- Continue to monitor pollutants of concern such as diesel particulates.
- Continue coordination and collaboration with the Puget Sound Clean Air Agency and other partners to ensure that the region meets federal and state transportation conformity requirements and air quality standards.

Resilience

- Advance the resilience of the transportation system by incorporating redundancies, preparing for disasters and other impacts, and coordinating planning for system recovery.
- Advance resilience planning through the 2024 comprehensive planning process.
- In coordination with the Puget Sound Climate Preparedness Collaborative, PSRC will work to prepare more detailed guidance on planning for resilience for the 2024 comprehensive plan update process, including guidance for incorporating resilience into broader transportation planning efforts.
- Continue efforts to improve the analysis of resilience and environmental justice.

Water Quality

- As transportation projects are planned and developed, project implementers should consider how to minimize impacts and improve hydrological function.
- PSRC will continue to coordinate on water quality issues with the Puget Sound Partnership and other regional, state, and federal stakeholders.
- Remove, replace, and restore culverts to recover salmon passage.

Health

- PSRC will continue to work with health agency partners on best practices, data collection and inclusion of available relevant tools in planning processes and project selection – e.g., the Washington State Environmental Health Disparities Map as an additional layer along with the many other resources provided in PSRC's web based mapping resources.
- Continue to refine and develop health measures and evaluation methodologies as part of regional planning.

Mobility

- PSRC will maintain state-of-the-practice analysis and data.
- PSRC will continue to refine its modeling an analyses methods, tools, and data, paying particular attention to historically underserved and marginalized populations.
- PSRC will continue to work to make its data and analysis available to its members and the public.

Chapter 3: Paying for the Plan

- In order to fully implement the plan, cities, counties, transit agencies, and the state should take steps to pursue the new funding mechanisms identified in the plan to fill any revenue gaps in the future.
- Continue laying groundwork for deployment of a Road Usage Charge (RUC), with early implementation beginning in 2030. PSRC will identify action steps necessary to implement this transition, as well as roles and responsibilities at the state, regional, and local levels.
- Make policy decisions on collection and distribution of user fees. PSRC members should advocate for flexibility in the application of RUC in the central Puget Sound area, as described in the region's 4-Part Greenhouse Gas Strategy and the RTP's Financial Strategy.
- The State of Washington should consider convening an inclusive group of local and state leaders, agency staff, and other stakeholders to have RUC policy discussions prior to adopting enabling legislation.
- PSRC will continue to refine methodologies and analysis tools, particularly to reflect needs and impacts related to maintenance and preservation.
- Given the significant preservation needs on I-5, more complete and current data should be routinely gathered to inform decision makers and identify actionable steps moving forward.

Chapter 4: Big Ideas and Implementation

Interregional High-Speed Rail

- PSRC will participate on a Policy Committee in support of the Washington, Oregon, and British Columbia Memorandum of Understanding to continue to advance work on a High Speed Rail Corridor.

Future High-Capacity Transit

- The region should continue conversations about the transit system it will need in the latter half of the 21st century. This will include expansion of modes such as commuter rail, light rail, bus rapid transit, and multimodal and passenger-only ferries.
- PSRC will convene its members to have conversations about these longer-transit questions and continue its historic tradition as a forum for articulating a vision for transit service in the region.

Reimagining and Repurposing Infrastructure

- As WSDOT and other partners work to maintain preserve and potentially replace aging infrastructure, PSRC should provide information about innovative national and international projects as models for the conversation.

Aviation

- Through its seat on the State of Washington's Commercial Aviation Coordination Commission, PSRC will continue to represent the region's priorities and interests.
- PSRC should act as a forum for its members to coordinate on regional aviation issues, including the need for any future studies or analyses, as appropriate to its role.

Administrative Actions

Amending the Regional Transportation Plan

- PSRC will maintain and update a Regional Transportation Plan, fully compliant with applicable federal and state regulations.
- PSRC will provide opportunities for members to amend the Regional Capacity Projects List between plan updates, as determined necessary on a case-by-case basis.
- PSRC will work with its members to update the RTP Prioritization Measures and how projects are evaluated at point of submission into the RTP. This will include consideration of all ages and abilities and a Safe Systems Approach.

Regional Transportation Improvement Program

- PSRC will maintain a regional Transportation Improvement Program fully compliant with federal and state regulations.

Policy Framework for PSRC Federal Funds

- PSRC will maintain a competitive selection process for PSRC-managed federal funds reflecting policy direction from VISION 2050 and in support of the Regional Transportation Plan.
- PSRC will update the Policy Framework for PSRC Federal Funds prior to each funding competition, usually on a two-year cycle. The Policy Framework will reflect any funding or implementation priorities identified by PSRC's governing board.

Policy and Plan Review

- PSRC will review and certify local plans for consistency with VISION 2050 and the Regional Transportation Plan.
- PSRC will review and certify Countywide Planning Policies for consistency with multicounty planning policies and the Regional Transportation Plan.
- PSRC will work with local transit agencies as they develop reports evaluating how their long-range strategic plans conform with state planning requirements, consistency with the Regional Transportation Plan and applicable multicounty planning policies. The reports should be

considered and approved by the governing authority of the transit agency, and then transmitted to PSRC boards for review and comment.

- Washington state law requires PSRC to formally certify that the regional transit system plan prepared by the Central Puget Sound Regional Transit Authority — known as Sound Transit — conforms with the Regional Transportation Plan (RCW 81.104).


communitytransit
410 413
415 435
Express
511 Seattle
512 Seattle
513 Seattle
511 SEATTLE 5th AVE
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RIDE THE WAVE
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A sustainable strategy for mobility and choice

The Regional Transportation Plan provides the framework for the development of an equitable, safe, sustainable transportation system that improves travel for all people and businesses throughout the four-county central Puget Sound region. The plan includes projects, programs, and other actions to reduce congestion and improve mobility to support the nearly 6 million people who will call this region home by 2050. The plan contains a forward-looking environmental strategy to reduce transportation's impacts on the water quality of Puget Sound, protect air quality, and meet the region's climate goals.

The plan embraces a new direction for transportation funding, intended to provide stable and sustainable revenues over the long term. The plan's finance strategy recognizes the long-term limitations of traditional transportation funding approaches and moves the region to a new user-based funding system that not only provides necessary revenues, but also helps reduce congestion and improve environmental quality.

The Regional Transportation Plan was developed in a time of international uncertainty and evolving direction from the state and federal levels to reduce greenhouse gases, adapt to changing technology, and sustain regional economic recovery.

The COVID-19 pandemic changed overnight how residents live, work, and travel in the central Puget Sound region. The recovery has been slow and uneven. Questions remain about the future of commuting – and even the future of transportation. Will the region's central business districts recover? How many people will continue to work from home? Will people return to transit? Still in the middle of the pandemic, it is too early to answer these and other questions. But as a long-range plan developed during an unprecedented global health crisis, the Regional Transportation Plan was shaped by asking questions like these throughout plan development. Outreach for the plan connected with over 4,000 of the region's residents through surveys, focus groups, and interviews to understand present-day transportation challenges and the most pressing concerns. As a result, strategies in the plan reflect what we heard from the region's residents – both their current needs, and their hopes for the future of transportation. We heard that people want greener transportation that reduces greenhouse gas emissions and better access to transit. We heard that maintaining and preserving the region's existing system in good repair should be one of the highest priorities, and that safety of all users should be paramount. We also heard that the pandemic has amplified inequities within the region's communities, and that the transportation system must be part of a solution to help fix these inequities.

As a long-range planning agency, PSRC will continue to collect data on emerging trends, and learn from PSRC's members and others. The plan will be updated every four years to reflect what we have learned, respond to new mandates and requirements, and meet the changing needs of the people and businesses of the central Puget Sound region.

Acknowledgements

Transportation Policy Board

(at time of action to release draft Regional Transportation Plan for public comment, December 9, 2021)

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