

The Regional Transportation Plan — 2018

Appendix K

System Performance Report



May 2018

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APPENDIX K: System Performance Report

PSRC has an integrated and broad 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, performance measures are organized within a Regional Outcomes Framework consisting of eleven key outcomes that have been developed to assess the regional policies and objectives in VISION 2040.

The Regional Transportation Plan's Financial Strategy must be constrained – meaning the plan must identify sufficient funds (federal, state, local, and private) to maintain and operate the system and to implement proposed transportation system improvements. To balance among competing needs, it continues to be important to take a performance based approach to evaluation and identification of investments that provide the most benefit to the region and help achieve its vision.

Performance Based Planning Approach – Regional Outcomes

The plan implements VISION 2040, the region's long-range strategy for maintaining a healthy region and promoting the well-being of people and communities, economic vitality, and a healthy environment. VISION 2040 contains a variety of policies, actions and measures to guide long-term development across the region. PSRC, in close collaboration with state, regional, and local partners, has developed a framework to serve as a guide for planning, programming, and evaluation efforts, helping to ensure that the transportation planning process maintains a focus on the policies as defined in VISION 2040. This framework has evolved over time, maintaining a focus on consistency with VISION 2040, and is now known as the Regional Outcomes Framework.

PSRC implements a performance-based evaluation program based on the Regional Outcomes Framework, which has been expanded to further address health and equity. The Regional Outcomes Framework was used to evaluate the overall performance of the plan, and will help inform other stages of the transportation planning process, such as plan implementation and broader performance measurement programs currently being implemented, including those related to federal performance monitoring requirements.

Regional Outcomes Framework
Air Quality and Climate Change
Support for Centers
Choices
Freight
Health
Jobs
Maintenance and Preservation
Puget Sound Land and Water
Safety and System Security
Social Equity and Access to Opportunity
Travel

Some Regional Outcomes have measures with sufficient data for regional analysis, while others rely on more qualitative information. PSRC will continue to work with regional partners to identify new data sources and appropriate measures as time and resources permit.

This document is organized into two sections; the first section provides an overarching examination of how the Regional Transportation Plan performs at meeting the objectives of the Regional Outcomes Framework. Selected forecast results provide an overall picture of how the programs and investments in the plan help to meet these outcomes. The second section provides an overview of the regional planning process and how various performance-related requirements are integrated.

Regional Transportation Plan Performance

How is performance for the Regional Transportation Plan analyzed?

PSRC evaluates how the plan performs across all eleven Regional Outcomes. This evaluation takes into consideration regional growth to 4.9 million residents and 3 million total jobs by 2040. The Regional Transportation Plan makes progress across all eleven Regional Outcomes. However, some outcome categories are represented well through PSRC modeling and forecasting (such as mobility, congestion and accessibility), while others are more difficult to forecast. PSRC has been working with partners to identify sources of data and methods of analysis to incorporate health outcomes into the overall planning framework. Other outcomes such as maintenance and preservation, Puget Sound land and water, and safety and system security have outcomes that are beyond current capabilities to forecast, or that are represented elsewhere, such as in the plan's financial strategy.

Equity

Equity is considered in all regional outcomes where data is available. This means that where possible, results are presented at a regional level, and separately for people with low-income and for people of color. This approach provides context for understanding how overall trends affect vulnerable or historically marginalized communities over time, and how these impacts compare to effects to the region as a whole. Incorporating this analysis throughout the planning process is important to understanding how equity objectives are being met across many different metrics.

Each section below describes the measures and outcomes in greater detail. For more information on how the plan considers potential benefits and impacts to populations of color and people with low-incomes, please see Appendix B, Equity Analysis Report.

How does the Regional Transportation Plan perform?

The central Puget Sound region continues to grow at a fast pace. In 2016, 82,000 new residents were born or moved into the region, with one million additional people expected by 2040. The economy is one of the hottest in the country, with 328,000 new jobs created since 2010, and growth likely to continue. By 2040, the population of the region is expected to reach 5 million, and employment will reach nearly 3 million. That represents a 25 percent increase in population,

and 40 percent increase in jobs compared to 2016. This rate of growth has increased pressure on the region's housing market and transportation system, with housing costs, congestion, and the need for more travel options at the forefront of public concern.

The evaluation of the plan's performance was guided by the Regional Outcomes Framework. The plan continues to make progress towards our regional priorities of supporting centers, the environment, and mobility and accessibility for all users. Key measures show that the plan:

- supports the regional growth strategy
- provides transportation choices
- improves access to jobs, opportunity, destinations
- improves reliability of the system
- improves air quality, reduces greenhouse gases, and supports improved water quality
- provides a new financial strategy to deliver investments

Improved access to the regional high capacity transit network results in more than double the fixed route transit boardings by 2040 with the plan. As shown in Table 1, fixed route transit boardings are forecast to increase for all transit operators.

Table 1: Annual Fixed Route Transit Boardings by Operator

Agency	Today	2040 Plan
Community Transit	9,273,600	19,105,000
Everett Transit	1,994,900	3,883,100
King County Metro	124,155,100	193,178,200
Kitsap Transit	3,518,500	10,623,300
Pierce Transit	10,857,400	22,473,900
Sound Transit	34,874,800	164,009,600
Ferry (all operators)	24,100,700	43,303,400
Total Annual Transit Boardings	208,775,000	456,576,500

Several high-level performance measures are included in Table 2. With more than a million new people and jobs in the region, demand for transportation is forecast to increase by 2040 with increases in demand across all modes of travel.

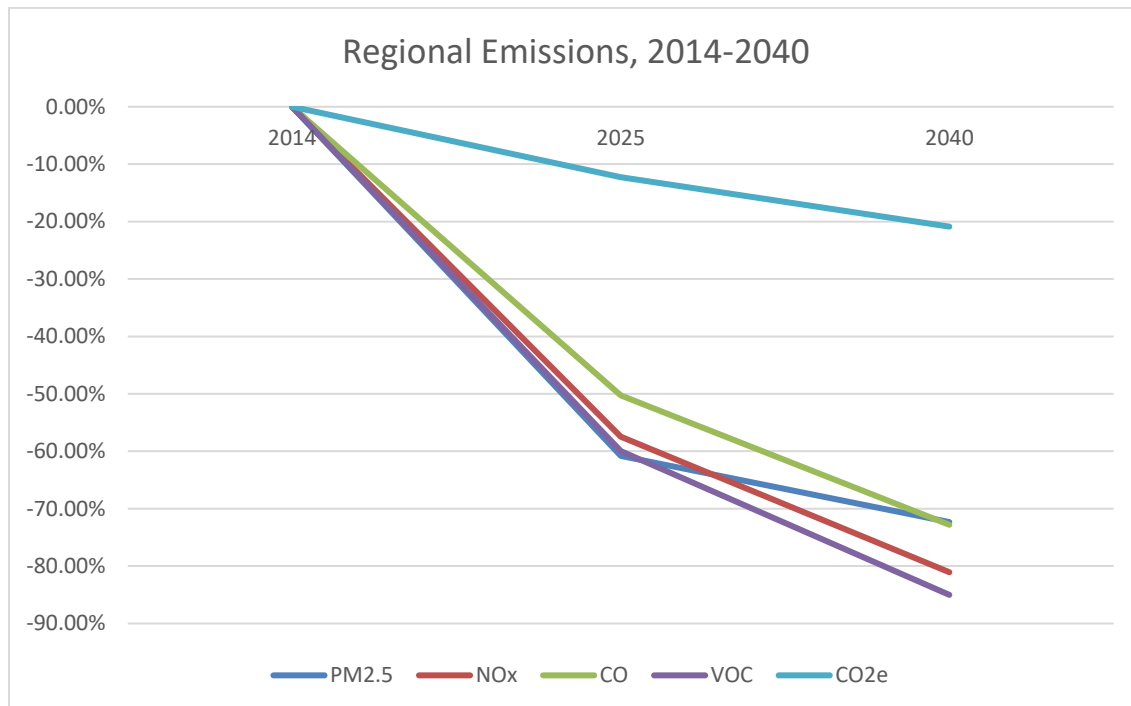
Table 2: Regional Travel Model Outputs

	Metric	King	Kitsap	Pierce	Snohomish	Region
2014 Model Base Year	Daily Vehicle Miles Traveled	42,985,000	4,494,000	16,991,000	15,819,000	80,289,000
	Daily Vehicle Hours Traveled	1,316,000	131,000	522,000	457,000	2,426,000
	Daily Vehicle Hours of Delay	282,000	14,000	89,000	72,000	457,000
	Daily Drive Alone Auto Trips	3,105,000	380,000	1,108,000	1,072,000	5,665,000
	Daily Shared Ride Auto Trips	2,895,000	351,000	1,198,000	1,096,000	5,540,000
	Daily Transit and School Bus Trips	522,000	30,000	109,000	92,000	753,000
	Daily Truck Trips	154,000	12,000	52,000	48,000	266,000
	Daily Walk Trips	1,233,000	138,000	429,000	397,000	2,197,000
	Daily Bike Trips	139,000	14,000	49,000	39,000	241,000
2040 Plan	Daily Vehicle Miles Traveled	49,491,000	6,025,000	21,360,000	20,074,000	96,950,000
	Daily Vehicle Hours Traveled	1,575,000	194,000	699,000	624,000	3,092,000
	Daily Vehicle Hours of Delay	379,000	33,000	152,000	126,000	690,000
	Daily Drive Alone Auto Trips	3,554,000	560,000	1,503,000	1,407,000	7,024,000
	Daily Shared Ride Auto Trips	3,300,000	490,000	1,437,000	1,523,000	6,750,000
	Daily Transit and School Bus Trips	842,000	48,000	161,000	161,000	1,212,000
	Daily Truck Trips	207,000	19,000	72,000	63,000	361,000
	Daily Walk Trips	1,871,000	233,000	696,000	655,000	3,455,000
	Daily Bike Trips	219,000	24,000	81,000	67,000	391,000

Maintain Air Quality and Reduce Climate Change Emissions

The region has been maintaining all federal and state air quality standards, and greenhouse gas emissions continue to decline out to 2040. Vehicles and fuels continue to get cleaner, and the Regional Transportation Plan contains extensive strategies that will continue to move the region in the right direction to maintain air quality. Figure 1 illustrates the declining emissions over time for a variety of air pollutants. Additional information is provided in Appendix D (Regional Air Quality Conformity Analysis) and Appendix E (Climate Change Analysis).

Figure 1: Regional Emissions compared to 2014 Levels



Support existing and new populations in Centers

The designated regional growth centers are locations characterized by compact, pedestrian-oriented development, with a mix of different office, commercial, civic, entertainment, and residential uses. Regional growth centers create improved accessibility and mobility for walking, biking, and transit, and as a result play a key transportation role in the region.

The Regional Transportation Plan calls for an increased investment in transit, bicycle, and pedestrian facilities, thereby providing the region with more travel choices. These include implementation of Sound Transit's long-range plan, increases in local bus service, and greater focus on bicycle and pedestrian improvements in regional growth centers and around transit stations. Investments in the plan result in 27 of the 29 designated regional growth centers being served directly by high capacity transit. This compares with 18 centers that are connected with high capacity transit today.

Figure 2: Regional Growth Centers with High Capacity Transit Stations

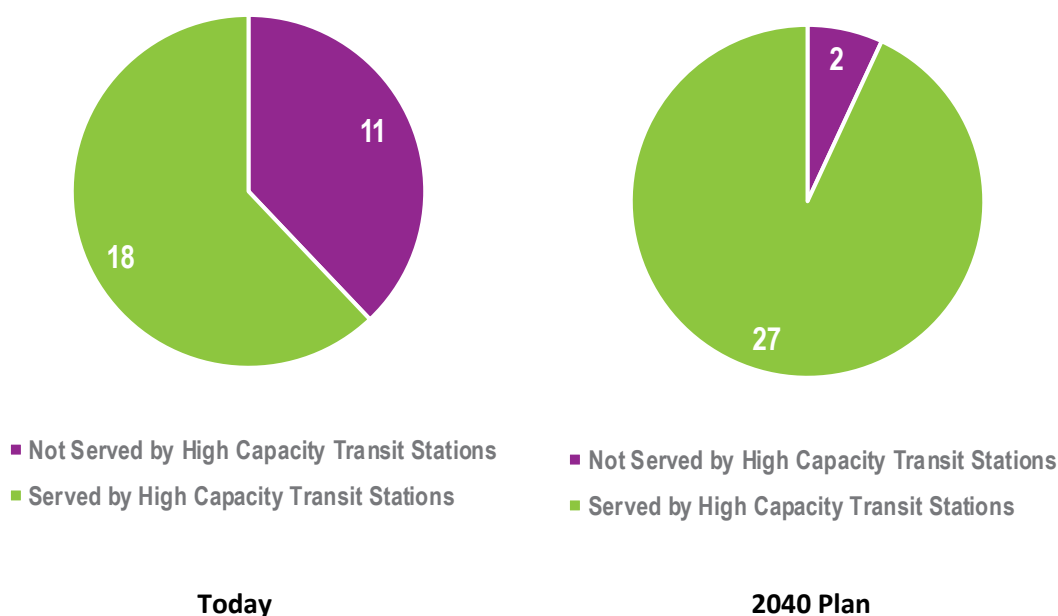


Table 3 demonstrates the differing rates for biking, walking, or transit use within the regional growth centers. Ten of the twenty-nine regional growth centers have more than half of all trips walking, biking or using transit by 2040 and twenty-seven centers exceed a rate of 25 percent. Together, the 29 designated regional growth centers have a rate of 53 percent for these modes, compared to 25 percent for the region as a whole

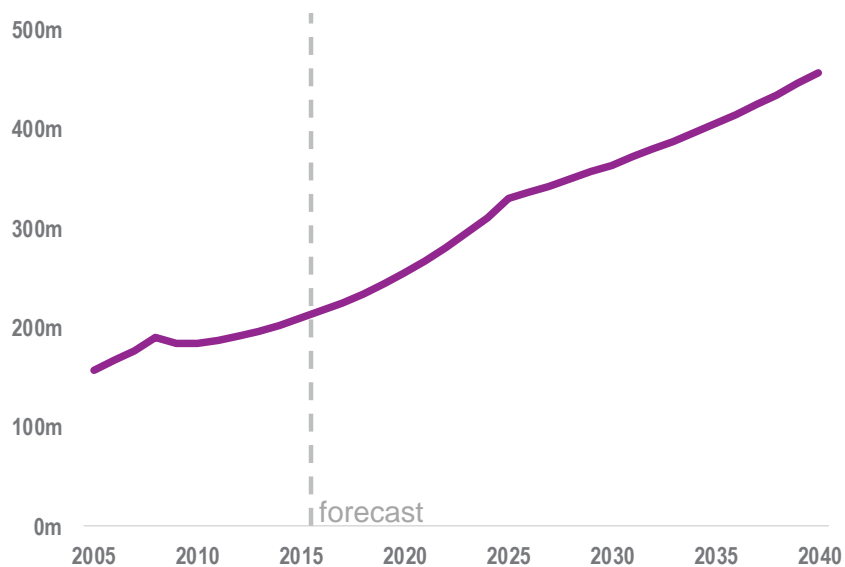
Table 3: Biking, Walking, and Transit Use by Regional Growth Center

Regional Growth Center	Today	2040 Plan
Auburn	29%	36%
Bellevue	47%	56%
Bothell Canyon Park	17%	20%
Bremerton	39%	49%
Burien	34%	38%
Everett	40%	52%
Federal Way	28%	40%
Issaquah	17%	25%
Kent	28%	35%
Kirkland Totem Lake	22%	30%
Lakewood	27%	32%
Lynnwood	28%	37%
Puyallup Downtown	31%	42%
Puyallup South Hill	22%	25%
Redmond Downtown	36%	46%
Redmond-Overlake	25%	45%
Renton	32%	43%
SeaTac	19%	31%
Seattle Downtown	65%	68%
Seattle First Hill/Capitol Hill	61%	66%
Seattle Northgate	38%	52%
Seattle South Lake Union	58%	62%
Seattle University Community	56%	60%
Seattle Uptown	53%	59%
Silverdale	37%	37%
Tacoma Downtown	45%	53%
Tacoma Mall	32%	43%
Tukwila	24%	29%
University Place	24%	32%
All Regional Growth Centers	48%	53%
Regional Average	21%	25%

Provide transportation choices

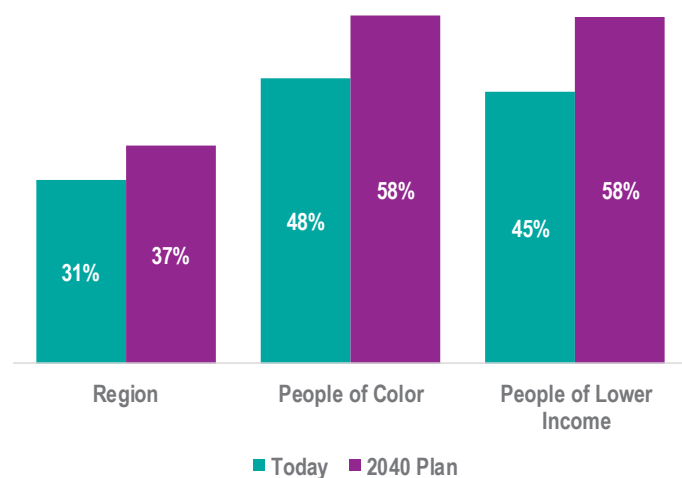
The Regional Transportation Plan includes significant investment in transit service. Regionally, the central Puget Sound region has experienced strong transit growth since 2005, growing at a rate of 2.8 percent, faster than any other metropolitan region in the United States. With the programs and investments in the plan, the annual average growth rate rises to 3.2 percent to 2040 with total annual fixed route transit boardings of almost 460 million forecasted in the region by 2040.

Figure 3: Annual Fixed Route Transit Boardings



In addition to increased transit service, a larger share of people of color and people of lower income live within a 10-minute walk to transit service that operates every fifteen minutes or less with the programs and investments in the plan. Regionally, the share of households with frequent transit access is 31percent today, compared with 37percent in 2040. Looking at households for people of color, 48percent have frequent access today and 58percent would by 2040. The shares of households for people of lower income with access to frequent transit is 45 percent today and is forecast to also grow to 58 percent in 2040 with the plan.

Figure 4: Access to Frequent Transit



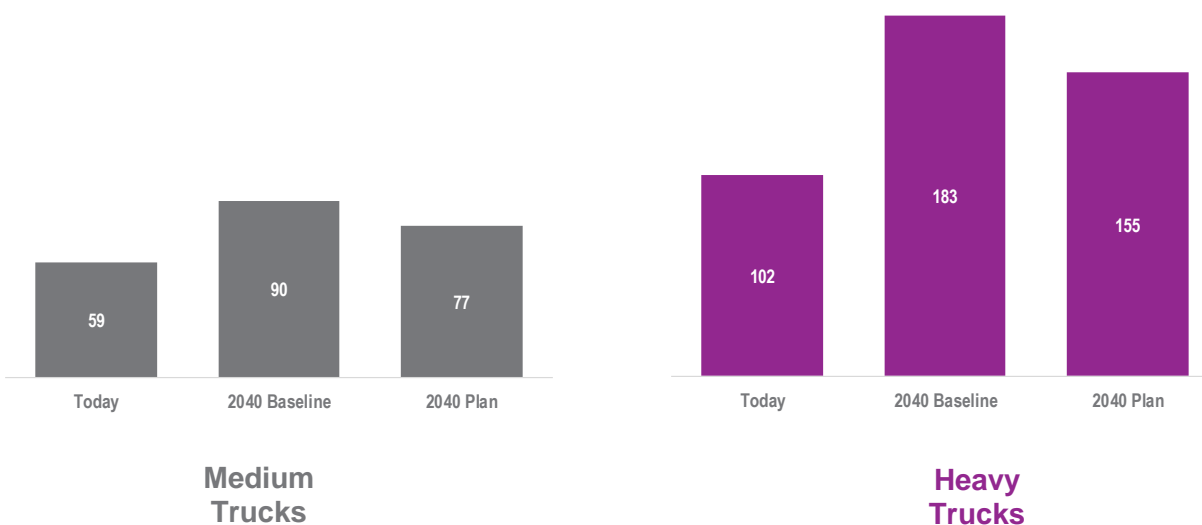
Support Freight mobility

While all freight modes play an important role in the regional freight and goods movement system, trucking continues to be dominant, representing approximately 68 percent of the total tonnage of freight moved throughout the region.¹ PSRC forecasts the performance for medium and heavy truck trips. Medium trucks are 16,000 to 52,000 pounds and are single unit with six or more tires and two to four axles. Heavy trucks are more than 52,000 pounds and are double unit combinations with five or more axles.

In 2040, trucks will experience more delay than today, with medium trucks experiencing 77 minutes, or approximately 31 percent more delay, and heavy trucks experiencing 155 minutes, or approximately 52 percent more delay than today. Without the programs and investments in the plan, delay for freight trucks would be even worse, with medium trucks experiencing 90 minutes, or approximately 53 percent increase in delay, and heavy trucks experiencing 183 minutes, or approximately 79 percent increase in delay from today.

To ensure that the regional freight and goods transportation system can continue to meet the region's needs, system performance for freight will need to be monitored. For more information on regional freight and goods movement, refer to Appendix J, Regional Freight and Goods Movement.

Figure 5: Medium and Heavy Truck Delay



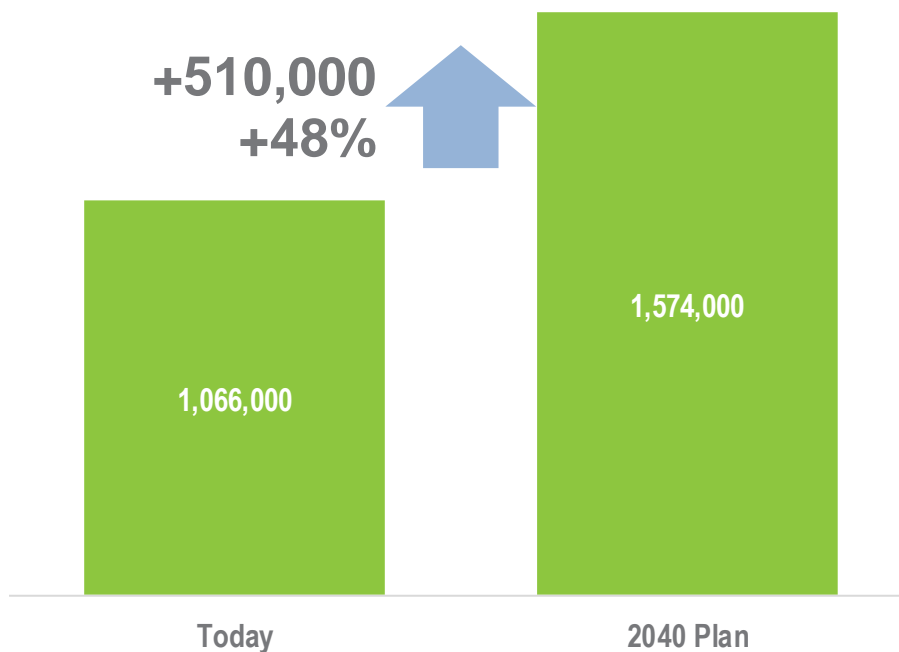
¹ FHWA, FAF4.0 Freight Analysis Framework

Improve Health

Increasingly, the connection between transportation and health outcomes is highlighted as a significant issue for consideration in land use and transportation planning. The number of people who walk or bike for transportation is one way to consider health improvements related to transportation investments. This metric evaluates the total increase in the number of people who walk and bike for transportation. This includes trips taken for transportation purposes such as going to work, school, to the grocery store or even the trip taken to get to a gym. It does not include reported trips for exercise such as going on a run, hike or for trips such as walking a dog (unless there is some other combined transportation purpose). The data comes from PSRC's household travel survey and is forecasted out to the year 2040. Today, the number of people who bike or walk for transportation is approximately 1 million. By 2040, this number grows to almost 1.6 million, for a total increase of approximately 48 percent. The growth in the number of active people is growing at almost twice the rate of the overall increase in population between today and 2040.

Considerations for health crosscut other Regional Outcomes, including air quality measurement and analysis. PSRC has also been working with regional stakeholders to discuss the importance of health outcomes in the context of land use and transportation planning as it fits within the VISION 2050 work program. PSRC will continue to work with regional partners to develop the ability to measure these outcomes in a way that makes a direct connection to the programs and investments in the plan.

Figure 6: People who walk or bike for transportation

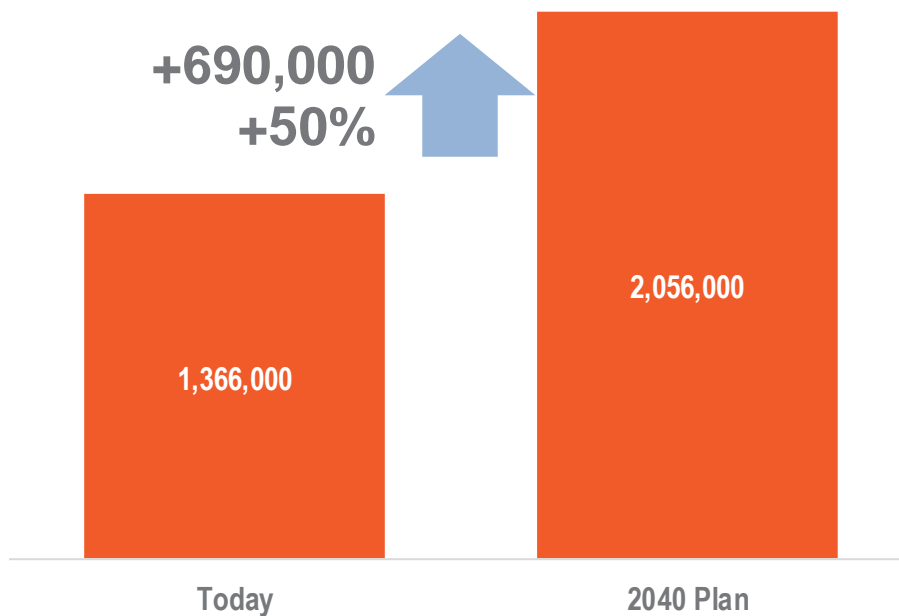


Improve access to Jobs

The Regional Transportation Plan supports the goal of providing greater accessibility to jobs in the region. The investments and programs in the plan improve connections to locations with higher concentrations of jobs. These investments allow the region to reduce the rate of growth in vehicle miles traveled while increasing the use of transit and other multimodal choices.

By 2040, the number of jobs that will be within a ¼ mile of transit, which is typically about a 10-minute walk or less, will increase by approximately 50 percent, a growth of 690,000. With these improvements, almost 70 percent of all jobs in the region will be within a 10 minute or less walk to a bus, train or ferry that operates every fifteen minutes or less throughout the day.

Figure 7: Employment within ¼ mile of frequent transit service

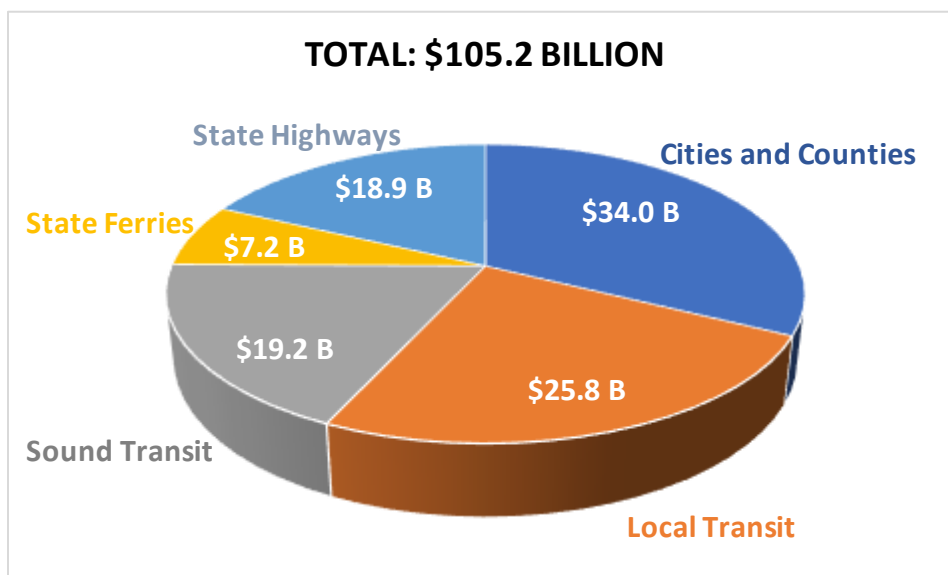


Maintain and Preserve the transportation system

The Regional Transportation Plan commits as a high priority to funding the maintenance, preservation and operation of the existing transportation infrastructure in a safe and usable state. The plan's financial strategy reflects a concerted effort to develop informed estimates of maintenance and preservation need through 2040. These estimates are a key component of the plan's financial strategy.

The plan identifies \$105.2 billion in estimated needs to maintain, preserve, and operate the existing transportation system, which represents over half of the total investment planned between 2018 and 2040. The plan uses new methods to estimate needs for several asset classes including pavement preservation, stormwater and local signal operations and Intelligent Transportation Systems (ITS) improvements. For example, the estimated cost for local pavement preservation is based on a desired outcome of an average pavement condition index score of 70, and stormwater costs reflect the strengthening of state requirements.

Figure 8: Maintenance and Preservation Expenditure Estimates (\$2018 Constant)



Preserve Puget Sound Land and Water

Maintaining and improving water quality is a regional priority. The transportation system is a significant source of pollutants that affect water quality. Stormwater runoff from the transportation system has been an issue of increasing importance in the central Puget Sound region for years. Additional impervious surfaces and an inadequate storm drainage and treatment system are causing significant concerns, particularly with regard to drainage into the Puget Sound.

VISION 2040 and the Regional Transportation Plan support a variety of efforts to improve regional water quality. These efforts include land use approaches to reduce the amount of runoff and improve quality of stormwater. The plan's strategy also supports protecting and restoring the region's watersheds by retrofitting existing transportation facilities to improve water quality, and by relying on cleaner modes of transportation.

In addition to supporting investments in stormwater management and innovation, the plan also supports investments in culverts that address fish passage barriers. Whether as an element of new construction or as a retrofit, investments at the state, county, and city level are supported in the plan. An example project that addresses fish passage issues is Covington's SR 516, from Jenkins Creek to 185th Place SE. This project widens the street and adds sidewalks, while also providing a new structure for the stream that will improve conditions for fish passage.

The plan also addresses the protection of critical areas and resources lands throughout the region. Over 93% of the new people, 98% of the new jobs and 95% of the regional capacity projects (including investments such as rural trails and truck climbing lanes on state highways) are planned to be within the urban growth area (UGA) by 2040.

Figure 9 Example of Culvert Project with Improved Conditions for Fish Passage



Provide a Safe and Secure transportation system

Safety on the region's transportation system is paramount. The Regional Transportation Plan and the VISION 2040 multicounty planning policies emphasize the importance of improving safety for *all users* of the system, including drivers, passengers, pedestrians, and bicyclists. These policies align directly with and support the state's Strategic Highway Safety Plan, Target Zero.

Based on the idea that no deaths or serious injuries should be considered acceptable, Target Zero sets forth a vision to reduce traffic fatalities and serious injuries to zero by the year 2030. Target Zero identifies needs and guides investments aimed at promoting safer roadways, safer walkways/pathways for pedestrians and bicyclists, improved response systems, and passenger and driver behavior improvement. The Washington State Department of Transportation (WSDOT) and PSRC are implementing new performance targets for safety based on new federal requirements (refer to section 2 of this appendix).

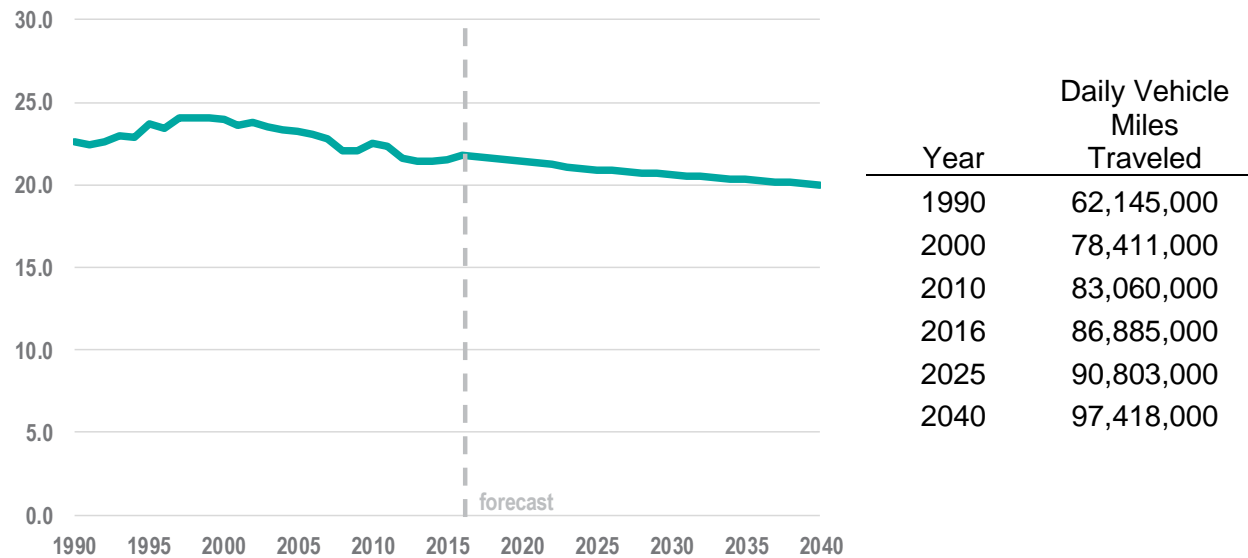
Federal guidance also emphasizes security of the transportation system, which relies on the region's *resilience* – its ability to mitigate, recover from, and adapt to adverse changes in conditions. A variety of programs and investments in the plan address resilience of the system, and Appendix O provides more detail on activities around the region and ongoing collaboration to improve resilience in the planning process.

PSRC considers both safety and security in the project screening process during plan development. An example project with benefits for safety includes the WSDOT investments on US Hwy 2 in Sultan, which will replace signalized intersections with roundabouts, and include bicycle and pedestrian improvements. Examples of security elements in projects include designing infrastructure to withstand more frequent storms and flood events, lighting at transit stations, maintenance of lifeline routes, and intelligent transportation systems such as variable message signs and traffic cameras.

Improve Travel Time and Reliability

Vehicle Miles Traveled (VMT) is the measure of the annual number of miles traveled by all motor vehicles in the region. The Regional Transportation Plan seeks to reduce VMT and improve regional air quality by supporting alternatives to driving alone. Increasing VMT is a significant contributing factor to increases in traffic congestion and other impacts. Although our large population growth will likely lead to an overall increase in regional VMT, the miles the average person drives per day is expected to decline. As indicated in the graph below, at the same time as regional VMT is increasing, VMT per capita actually decreases by approximately 3 percent from today and is over 17 percent lower than the peak travel observed in the late 1990s.

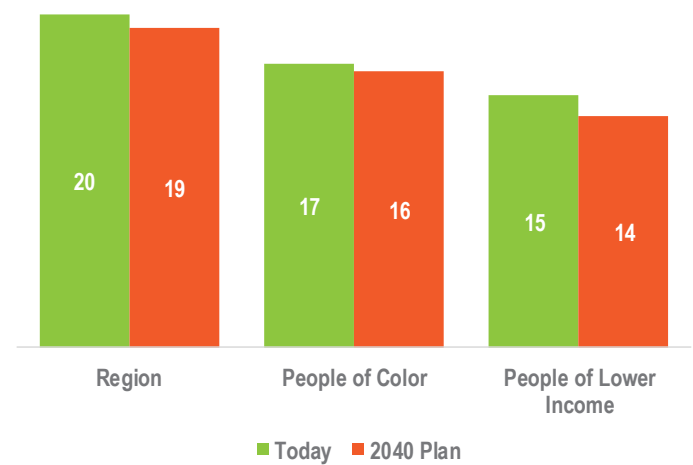
Figure 10: Per Capita Vehicle Miles Traveled



Source: Highway Performance Monitoring System (historic) and PSRC Travel Model (forecast)

The plan reduces the number of average miles driven in the region for all population categories, including for people of color and people of lower incomes. The plan provides significant investments in regional transit service that provide commuters with greater choices and flexibility.

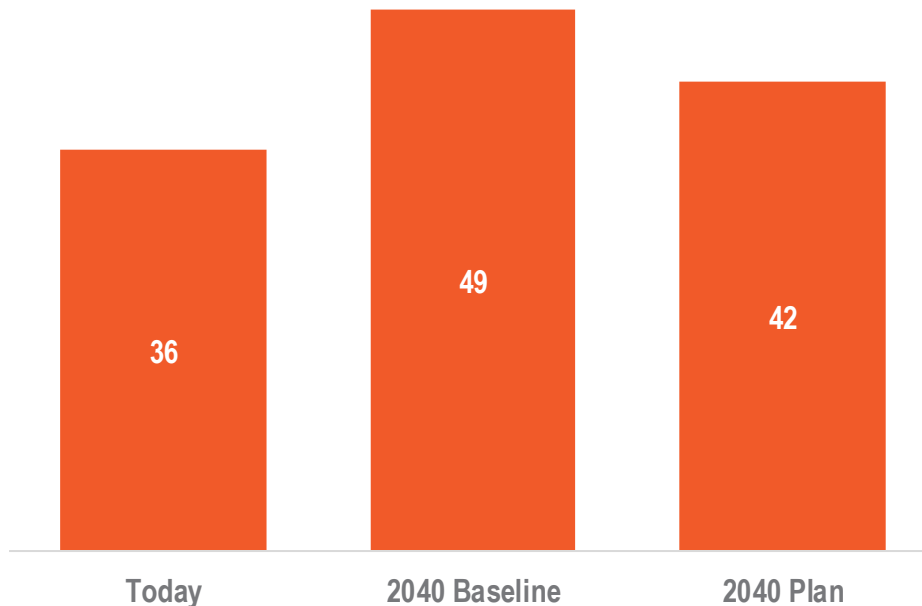
Figure 11: VMT per capita



RCW 47.01.440 established statewide goals to reduce annual per capita VMT by 2050. Using a statewide baseline of 75 billion VMT, exempting travel from trucks over 10,000 pounds gross vehicle weight, the benchmarks are to decrease annual statewide per capita VMT 18% by 2020, 30% by 2035 and 50% by 2050. Using current forecast and VMT data, these statewide numbers are approximately 25 miles per day by 2020, 21 by 2035 and 15 by 2050. As shown in Figures 10-11, the RTP is consistent with the downward trend as called for by these statewide benchmarks.

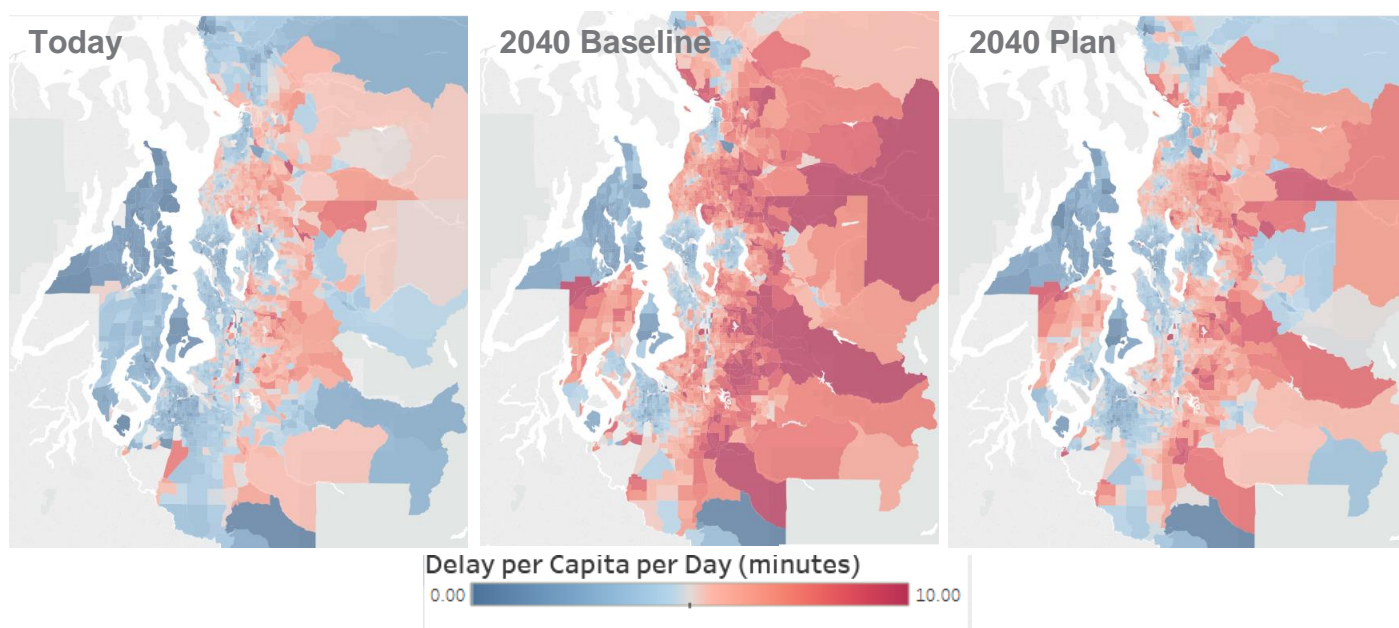
Even with increased travel options, traffic congestion will continue to be a challenge for many of the region's commuters as the region grows to 4.9 million people and 3 million jobs by 2040. While congestion and travel delay are forecast to increase by 2040, these outcomes would be greater without the full range of investments and strategies in the plan. Today, the average person sits in traffic for almost 36 hours per year. Without the plan, residents would spend about 49 hours every year sitting in traffic, a 35 percent increase from today. With the plan, the average person would spend approximately 42 hours per year in traffic, an 18 percent increase over today.

Figure 12: Annual Hours of Travel Delay Per Capita



Where people live can have a significant effect on the amount of travel delay experienced. Living in close proximity to employment centers helps to minimize per capita delay experienced, while living farther away and traveling longer distances will tend to increase travel delay. The series of maps below show the geographic distribution throughout the region of the greatest amount of travel delay per person today, in 2040 without the plan, and 2040 with the investments in the plan.

Figure 13: Travel Delay Per Capita Today



As shown in the Figure 13, delays are greatest for trips that occur the farthest from regional employment centers. Although delays in 2040 with the plan are greater than today, the distribution of travel time benefits occur all across the region when compared to the 2040 Baseline scenario.

In addition to evaluating how the plan performs at the regional level, an examination of how performance will be experienced for common commute corridors provides a more detailed understanding of how the programs and investments in the plan will perform for different parts of the region. For example, today's morning peak hour commute from Everett to Seattle on I-5 takes approximately 89 minutes. With the plan, in 2040 travel times increase to approximately 95 minutes. Without the programs and investments in the plan, travel times are forecast to be approximately 101 minutes.

Table 4: Corridor Travel Times

	Corridor	Today	2040 Baseline	2040 Plan
1	Bellevue to Seattle	41	43	41
2	Redmond to Seattle	49	50	49
3	Everett to Seattle	89	101	95
4	Tacoma to Seattle	85	106	96
5	Tukwila to Bellevue	56	57	55
6	Lynnwood to Bellevue	61	65	59
7	Silverdale to Bremerton	28	30	30
8	Auburn to Renton	34	41	38

The Regional Transportation Plan makes significant progress in improving air quality, supporting VISION 2040 and the regional growth strategy, enhancing accessibility and mobility choices, improving safety and security, and providing equitable benefits to the people of the region. However, challenges remain, particularly in congestion and delay on key highway corridors.

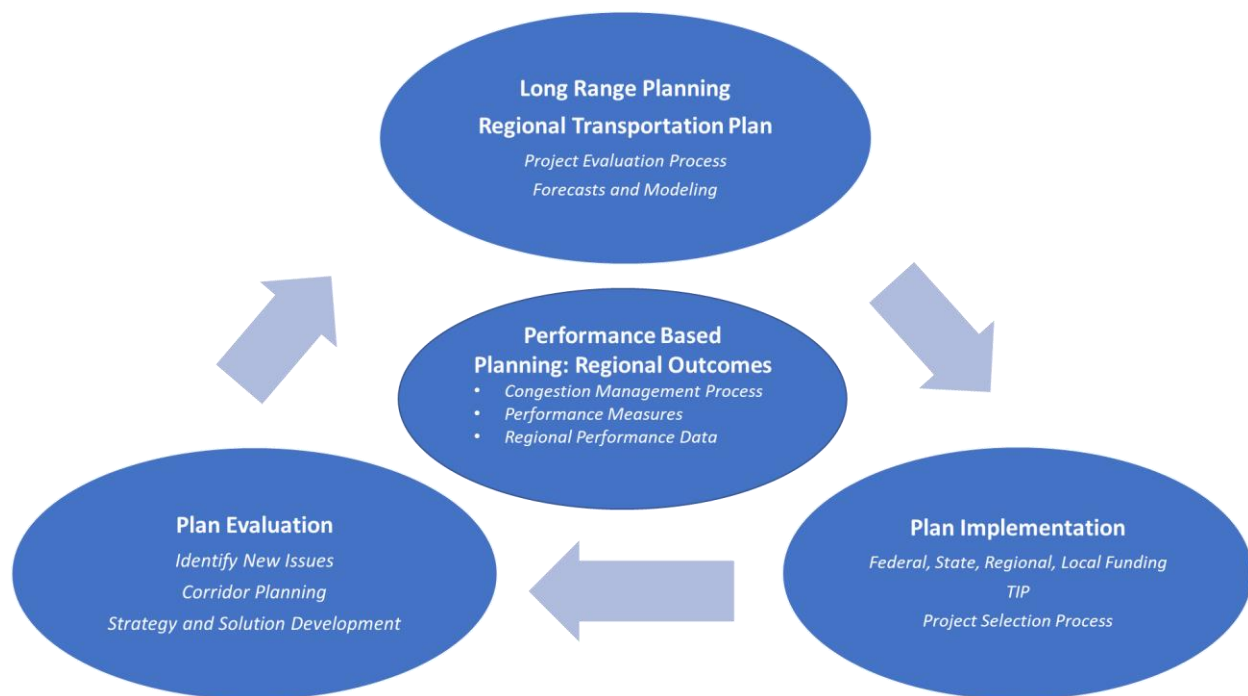
Regional Outcomes	
Outcome	Key Performance Measure
1. Maintain Air Quality and Reduce Climate Change Emissions	The region continues to meet all air quality standards & greenhouse gas emissions continue to decline
2. Support existing and new populations in Centers	27 of 29 regional growth centers are served directly by high capacity transit stations
3. Provide transportation Choices	54% more people in the region will be able to walk 10 minutes or less to get on a bus that runs at least every 15 minutes.
4. Support Freight mobility	Critical urban and rural freight corridors are identified, and heavy trucks see a 15% improvement in annual travel time each year with the plan, versus without.
5. Promote Health	Share of people walking and biking for transportation increases by approximately 48% to more than 1.6 million daily.
6. Improve access to Jobs	50% more jobs are within ¼ mile of frequent transit service
7. Maintain and Preserve the system	The plan prioritizes investments in maintenance and preservation and identifies new funding sources as part of the financial strategy
8. Preserve Puget Sound Land and Water	The plan supports investments in stormwater management and innovation, including fish passages and culvert replacements
9. Provide a Safe and Secure transportation system	The plan supports Washington State's Target Zero plan, which calls for zero fatalities and serious injuries by 2030
10. Advance Social Equity and Access to Opportunity	Populations of low income and people of color see an increase of between 10-15% in accessibility to frequent transit service
11. Improve travel time and reliability	Without the plan, time spent in traffic each year would be increased by 37% in 2040.

Performance Based Transportation Planning Process

PSRC Planning Stages

Regional Outcomes are integrated throughout the PSRC planning process, encompassing plan development, implementation, and evaluation. Taking a consistent, outcome based approach throughout the entire planning process provides the ability to track progress with regards to the policies and goals in VISION 2040.

Figure 14: Stages of the PSRC Transportation Planning Process



Long-Range Planning

PSRC uses the Regional Outcomes Framework at both the project level and the system level in the development of the plan.

At the project level, PSRC has developed a process to evaluate transportation investments based on policies in VISION 2040. The project evaluation process provides a level of context that helps inform decision-making using measures selected to assess how well projects implement regional objectives.

At the plan level, PSRC forecasts how projects and programs in the plan will perform as a system to implement the region's objectives. PSRC uses the latest land use and travel modeling results to examine the ways in which the plan will make progress in reaching desired outcomes.

Plan Implementation

The Regional Transportation Plan coordinates state, regional, and local planning efforts for transportation in the central Puget Sound region, directing resources efficiently in ways the implement regional goals and objectives.

The Regional Transportation Improvement Program (TIP) reflects regional policy direction for the implementation of projects and programs in the plan. These projects are funded with federal, state and local funds, including the federal grants that are awarded through PSRC. Regionally significant projects must be explicitly listed in the plan and are subject to further review before they can proceed to implementation. The Regional TIP is updated regularly, and all projects submitted are evaluated for consistency with VISION 2040 and the plan, and reviewed for financial constraint and air quality conformity requirements.

PSRC evaluates programming criteria that reflect adopted regional policy on an ongoing basis. The Policy Framework for PSRC's Federal Funds is updated prior to each project selection process, and is based on the policies contained in VISION 2040 that call for priority to be given to projects serving regional and local centers. Project evaluation criteria are designed to support these policies and priorities, and align well within the Regional Outcomes Framework.

Plan Evaluation

PSRC periodically provides information on environmental, growth management, transportation, and economic issues, through the reporting of Puget Sound Trends and other publications. Additionally, PSRC makes transportation performance data available using an online tool that permits scalable analysis. PSRC incorporates these sources of information while participating with other regional planning partners on efforts such as corridor studies, route development planning, and transit service plans. As currently planned projects and programs are evaluated, and potential new strategies and solutions are developed, PSRC is able to provide guidance towards consistency with VISION 2040 and the plan. These efforts allow the region's decision-makers to assess how the region, cities, counties, and agencies are implementing the region's goals and objectives.

Congestion Management Process

The Federal Highway Administration (FHWA) 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 (MPO) the size of PSRC is federally mandated to develop and implement a CMP consistent with the requirements established in 23 CFR 450.320.

As illustrated in Figure 14, a consistent approach of using transportation system performance information is used throughout all stages of the planning process.

The long-range planning process incorporates the CMP through the Regional Outcomes Framework, by evaluating the future performance of the plan by examining metrics directly related to congestion, in addition to performance of the transportation system as a whole. Additionally, regionally significant projects are evaluated using screening criteria that represent the broad set of Regional Outcomes, which include metrics for congestion and mobility.

For the short-range planning process, or plan implementation stage, the TIP and project selection process evaluates at the project level and includes metrics based on regional priorities including reducing congestion and improving mobility.

For the plan evaluation stage, PSRC collaborates with WSDOT and other regional partners to examine local and regional needs in the context of the plan, while reviewing performance data to assess system performance. These efforts, using the most recent data, help to identify the next sets of strategies and solutions the region may need to consider to improve performance across the broad range of Regional Outcomes, including those directly related to addressing congestion and mobility.

New Tool: Regional Performance Data

PSRC and regional partners are continually working to improve the resources and tools available for performance based planning at all stages of the planning process.

- Land use and transportation model improvements that provide a better understanding of future growth.
- Improving or identifying new sources of historical data for better understanding of regional trends.
- Increased collaboration and coordination among partner organizations in the evaluation of projects, programs, and planning efforts to identify and refine solutions and strategies for a growing region.

To better inform these efforts, PSRC has developed a new online tool called Regional Performance Data that provides scalable performance data for specific travel corridors, cities, counties, or in some cases custom geographies. PSRC staff, members, and stakeholders are now able to review the most recent performance data throughout all stages of the PSRC transportation planning process. This new interactive approach helps to monitor the performance of the region's transportation system and identify key issues and potential congestion mitigation strategies. To review the interactive data that informs the CMP, see the [Regional Performance Data](#) page on the PSRC website. An example of the Regional Performance Data page provided below.

Figure 15: Example Screenshot of Interactive Regional Performance Data

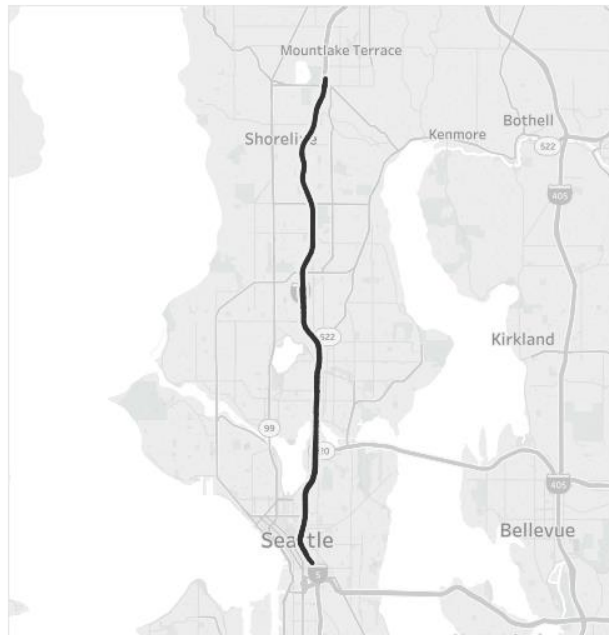
Corridor Travel Time

Direction
○ North/East
● South/West

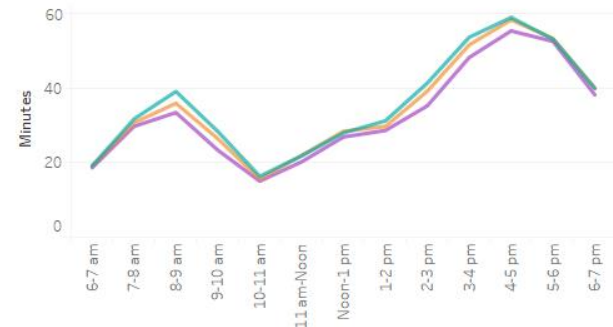
Year
2016
2015
2014

Corridor

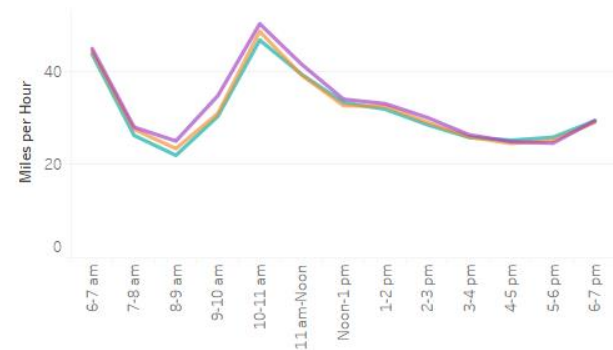
I-5: Seattle to Mountlake Terrace



Average Travel Time



Average Speed



Data from the National Performance Management Resource Dataset:
https://ops.fhwa.dot.gov/perf_measurement/

The new emphasis on performance-based planning introduced in MAP 21, and continued in the FAST Act provides an opportunity to develop a fresh approach to PSRC's performance measurement program. Key objectives of PSRC's Regional Performance Data tool include:

- Provide the most recent data with regular updates in an accessible and meaningful way to inform PSRC planning processes such as the TIP, long-range plan development, and project evaluation.
- Integrate new federal performance measures with existing measures as part of the Regional Outcomes Framework.
- Meet future system performance reporting requirements in subsequent updates to the long-range transportation plan as federal rules and state and regional targets are established,
- Leverage work with partner organizations that identify key strategies and solutions to issues identified through parallel performance evaluation efforts, such as WSDOT's Corridor Sketch Initiative.

PSRC's Regional Performance Data tool goes beyond evaluating congestion on the roadway system, to evaluating the performance of the entire regional transportation system. For roadway performance, the Regional Performance Data tool uses the National Performance Management Research Data Set (NPMRDS) that has been made available to states and MPOs to provide a resource for meeting new federal requirements under the FAST Act for measuring performance. In addition to measures related directly to roadway congestion, the Regional Performance Data tool includes measures for ferry ridership, park and ride utilization, vehicle miles traveled, transit boardings, and regional bridge condition.

Examples of information available at customizable levels through the new Regional Performance Data tool include:

- Regional Roadways – Corridor data are available for selection, indicating travel times, and other useful information.
- Bridge Condition – Percentage of bridges in fair or poor condition, and percentage considered structurally deficient. For example, over 50 percent of locally owned bridges are in fair or poor condition, compared to only 10 percent of state-owned bridges.
- Mode Share – Mode share information at subarea and corridor levels. For example, while regionwide about 70 percent of commuters drive alone, in recent years a growing share of people are taking transit, walking or biking. Mode share varies significantly by county and city, with denser urban areas showing more trips by transit, biking and walking.
- Vehicle Miles Traveled - Total vehicle miles are available at regional and subregional scales. While vehicle miles are increasing due to a strong economy and low fuel prices —miles per person remain down. Despite surging population and job growth since 2010, the region's total annual vehicle miles traveled has grown by only approximately 1 percent between 2010 and 2015.
- Park and Ride Utilization – Utilization rates for facilities and corridors. About two thirds of the region's park-and-rides are "very full" or more than 90 percent utilized.
- Transit Boardings - Transit boardings are available regionwide, by transit provider, and by subarea. Regionally, transit boardings grew to 187 million in 2016. Record-setting transit use has grown twice as fast as population since 2010. This represents approximately 27 million more annual boardings compared to 2010.

PSRC will continue to add new performance measures and update existing measures as new data sources are identified, and as performance outcomes may be refined in future planning processes.

Responding to New Requirements - Performance Measures and Targets

Originally established in MAP 21 and carried forward under the FAST Act is a new emphasis on a performance and outcome based planning approach. The objective of this approach is for states and MPOs to invest resources in projects that collectively will make progress toward achieving national goals. Collectively, the new emphasis on performance and outcome based planning focuses on six national goals that address challenges facing the transportation system.

- Improving Safety
- Maintaining Infrastructure Condition
- Reducing Traffic Congestion
- Improving Efficiency of The System and Freight Movement
- Protecting the Environment
- Reducing Delays in Project Delivery

To track progress on achieving these national goals, the FAST Act requires that a set of performance measures be established along with targets. The performance measures have been finalized by USDOT and the targets are currently being established by the respective states and MPOs and incorporated into their performance and outcome based planning programs.

PSRC and WSDOT are currently working together along with other Regional Transportation Planning Organizations (RTPOs) and MPOs in the state to set performance targets. For PSRC, new requirements on performance measures align well with the existing Regional Outcomes Framework. Performance targets for transit asset management and safety have already been established and will already be in place at time of adoption of the plan. Regional performance targets for pavement and bridge condition, system performance and congestion, emissions, and freight are being developed currently and will be completed by November 2018.

Transit Asset Management

Transit Asset Management is the systematic process by which transit agencies use condition of capital assets to guide optimal prioritization of funding available to the agency to keep the agency's transit network in a state of good repair. PSRC has a role of integrating the agencies' transit asset management planning into the regional planning process and coordinating with transit providers to assess progress toward achieving the region-wide attainment of transit state of good repair performance.

PSRC convened a group of transit asset management professionals from the region's public transit agencies during federal rule-making on the Transit Asset Management rule. This group has continued to meet and work together to implement the final rule that took effect on October 1, 2016. The final rule applies to all public transit operators, including ferry operators, within the region. The initial milestone required public transit agencies to set their agency-specific performance targets by January 1, 2017. PSRC gathered information from the agencies on their initial performance targets to develop the 2017 regional Transit Asset Management performance targets found in Table 5

Table 5: 2017 Adopted PSRC Regional Transit Asset Management Performance Targets

Asset Category	Asset Class	Performance Target for FFY 2017
Rolling Stock	Bus	No more than 2% of buses meet or exceed their Useful Life Benchmark ¹
	Other Passenger Vehicles	No more than 28% of other passenger vehicles meet or exceed their Useful Life Benchmark ¹
	Railcars	No more than 0% of railcars meet or exceed their Useful Life Benchmark ¹
	Ferries	No more than 5% of ferries meet or exceed their Useful Life Benchmark ¹
Infrastructure	Rail Fixed Guideway, Track, Signals, and Systems	No more than 2% of track segments have performance restrictions
Facilities	Support	No more than 11% of support facilities rated below Adequate on the five-point condition assessment scale ²
	Passenger	No more than 0% of passenger facilities rated below Adequate on the TERM scale ²
	Parking	No more than 7% of parking facilities rated below Adequate on the five-point condition assessment scale ²
Equipment	Non-revenue service vehicles	No more than 19% of equipment meets or exceeds its Useful Life Benchmark ¹
	Construction	No more than 0% of construction equipment rated below Adequate on the five-point condition assessment scale ²
	Maintenance	No more than 7% of maintenance equipment rated below Adequate on the five-point condition assessment scale ²

Table Notes:

Note 1: Useful Life Benchmark is expressed in a number of years. FTA provides guidance on default Useful Life Benchmark by vehicle type with age ranges from 8 years for a van or minivan to 42 years as a default for a ferry boat. Most bus types fall within the 10-14-year timeframe. Each agency may

set its own Useful Life Benchmark that varies from the FTA guidance based upon local conditions and vehicle operating environment.

Note 2: Condition assessment is defined as part of a 5-term point Transit Economic Requirements Model (TERM) scale. “Adequate” is defined as a condition “3” on the 5-point scale. A “5” on the TERM scale is considered Excellent; and a “1” on the TERM scale is considered Poor.

PSRC will continue working with the region’s public transit agencies and ferry operators as agency-specific Transit Asset Management Plans are adopted between late 2017 and October 1, 2018. The information from agency Transit Asset Management Plans and further guidance at the federal and state level will allow PSRC to assess progress towards achieving the region-wide transit state of good repair performance.

Safety

The final rule for Safety establishes five performance measures based on the five-year rolling averages on all public roads, including:

- Number of fatalities
- Rate of fatalities per 100 million Vehicle Miles Traveled
- Number of serious injuries
- Rate of serious injuries per 100 million Vehicle Miles Traveled
- Number of non-motorized fatalities and serious injuries

WSDOT developed targets for these measures based on Target Zero, using a straight-line projection beginning in 2016 that achieves zero fatalities and serious injuries by 2030. PSRC participated in WSDOT’s MAP-21 Target Setting Working Group, which included WSDOT and MPO staff from across the state.

Based on the inputs received via this process, the MAP-21 Target Setting Working Group recommends that all MPOs in Washington State apply a similar methodology and adopt regional targets that align with statewide targets. WSDOT will report on these safety targets through the Highway System Improvement Plan, and will develop new targets annually. PSRC is supporting the state targets and methodology, and targets will formally be in place no later than February 2018 (PSRC’s Executive Board is anticipated to take action in early 2018 to adopt safety targets and methodology). Methods for reporting between MPOs and WSDOT are being developed currently. State and regional targets for all five measures are provided in Figures 17-21 below.

Figure 16: Number of Fatalities – Target Zero Projection and 2018 Targets

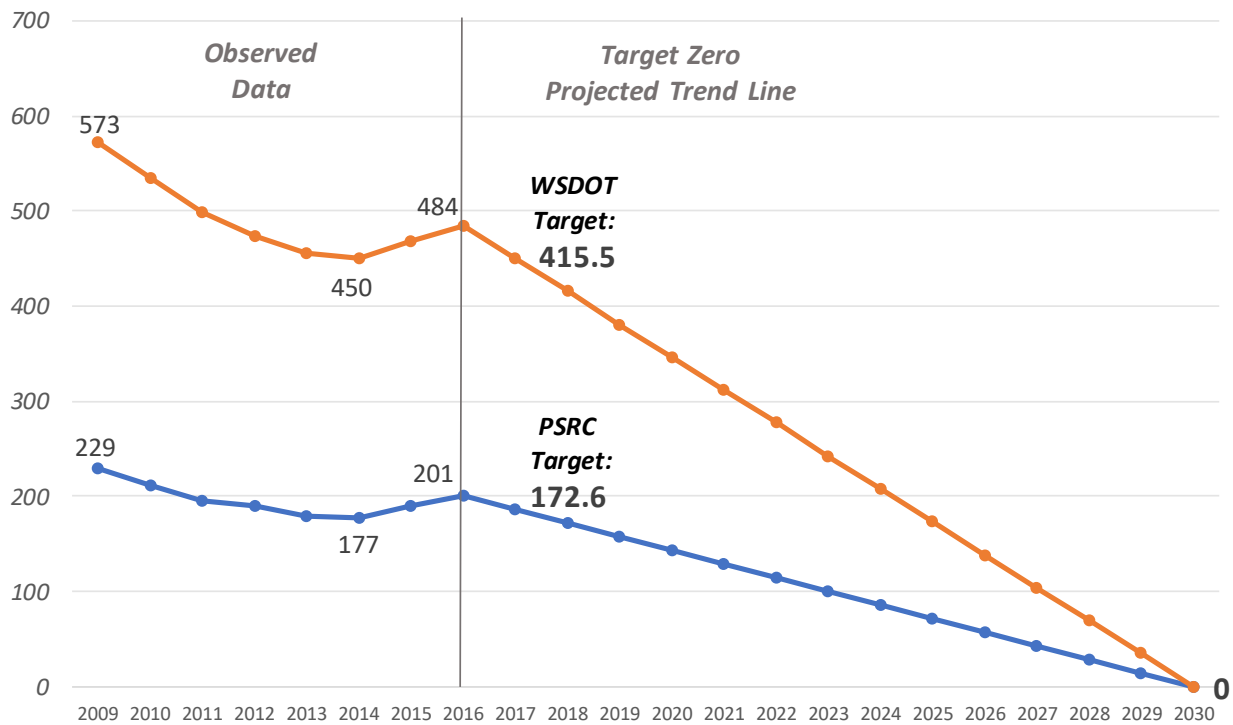


Figure 17: Rate of Fatalities per 100 million VMT – Target Zero Projection and 2018 Targets

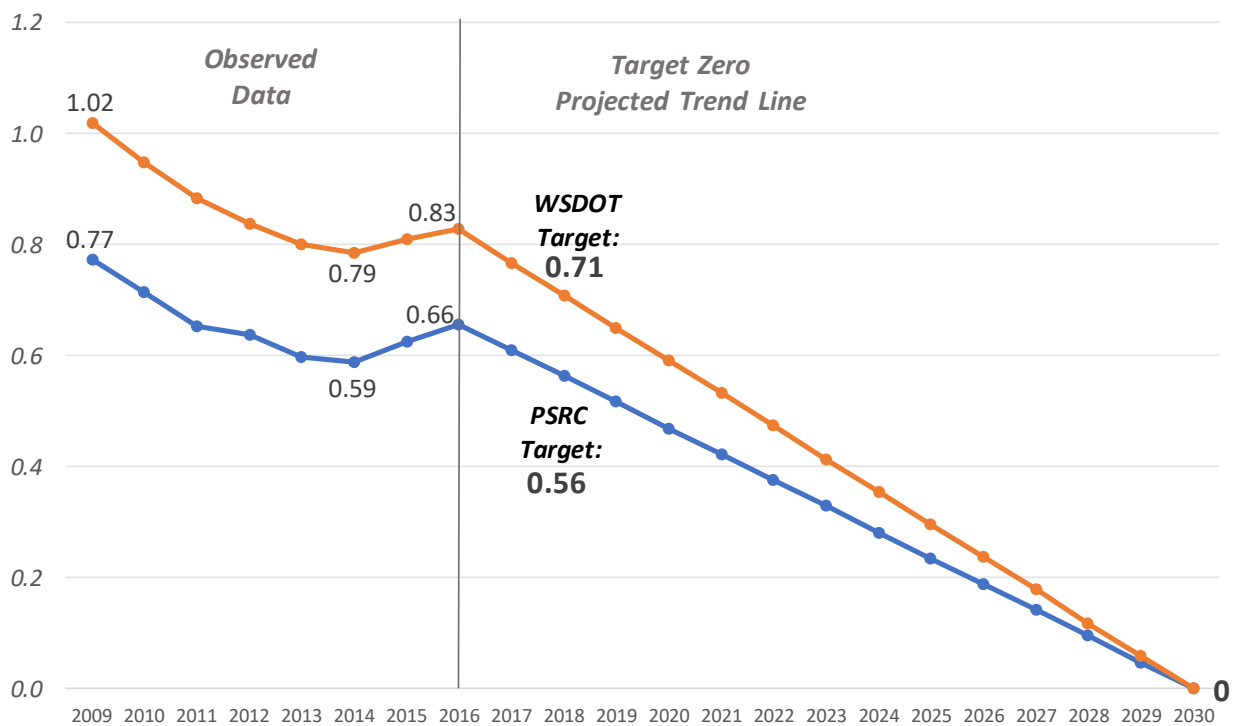


Figure 18: Number of Serious Injuries – Target Zero Projection and 2018 Targets

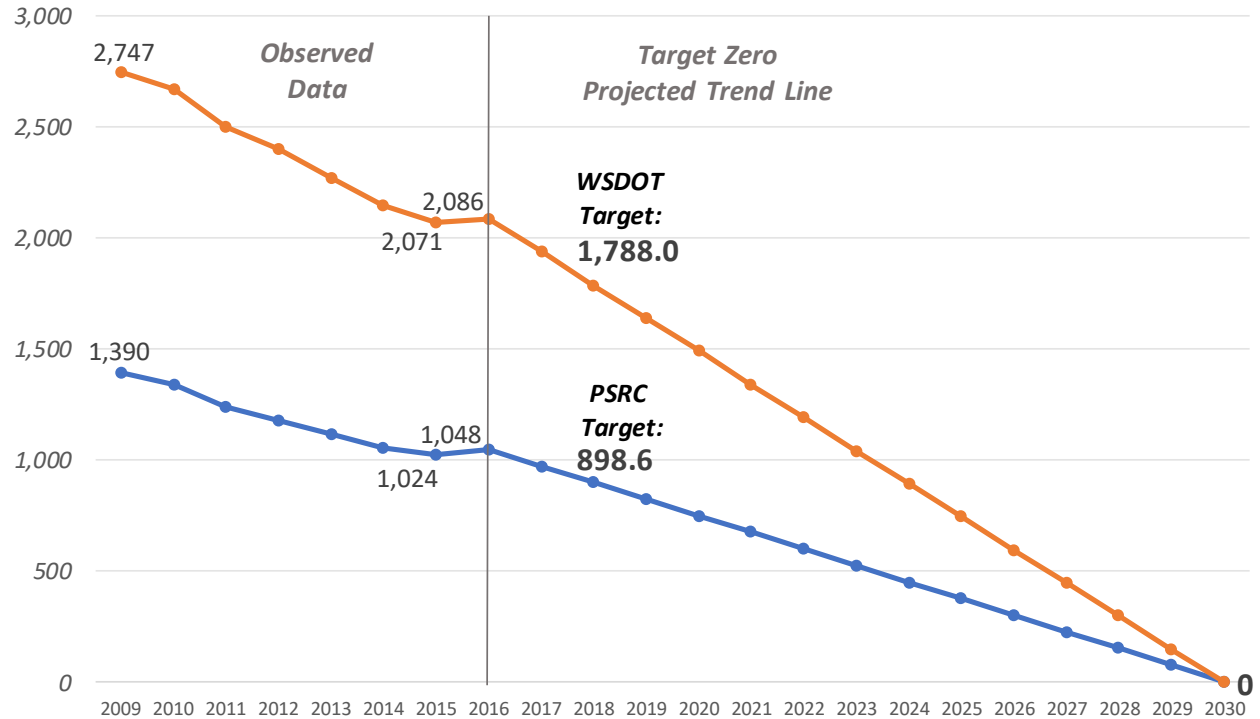


Figure 19: Rate of Serious Injuries per 100 million VMT – Target Zero Projection and 2018 Targets

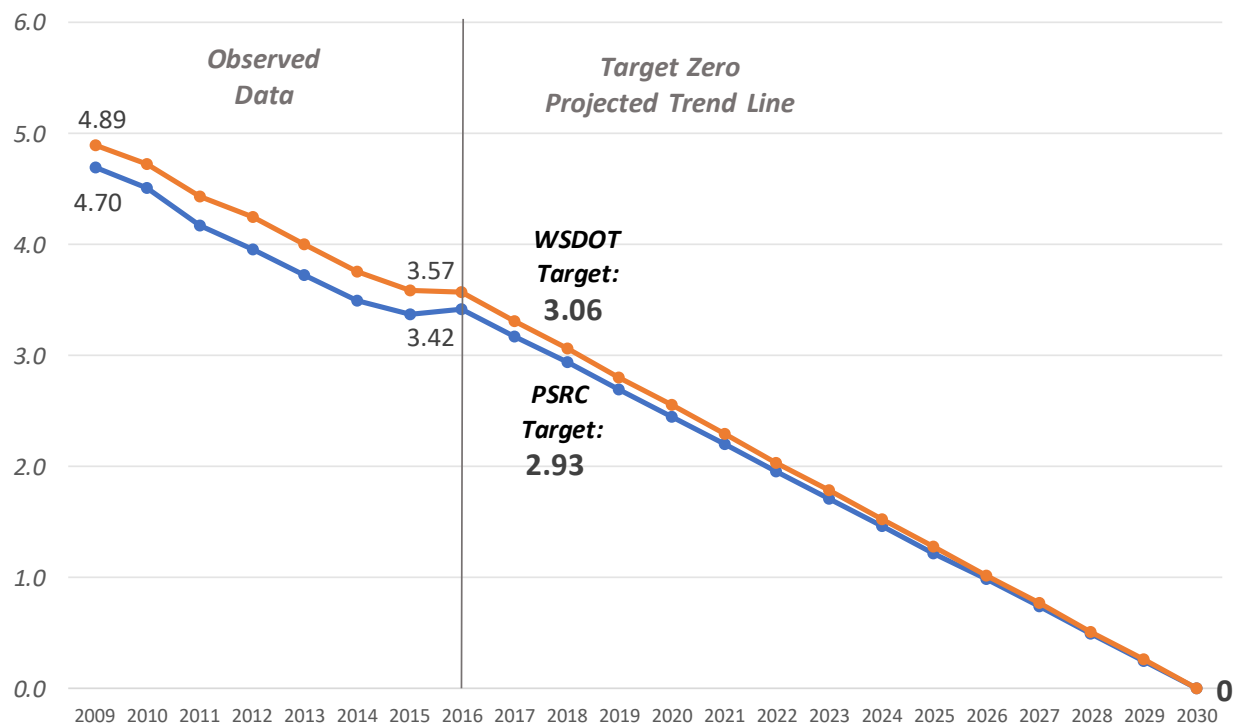
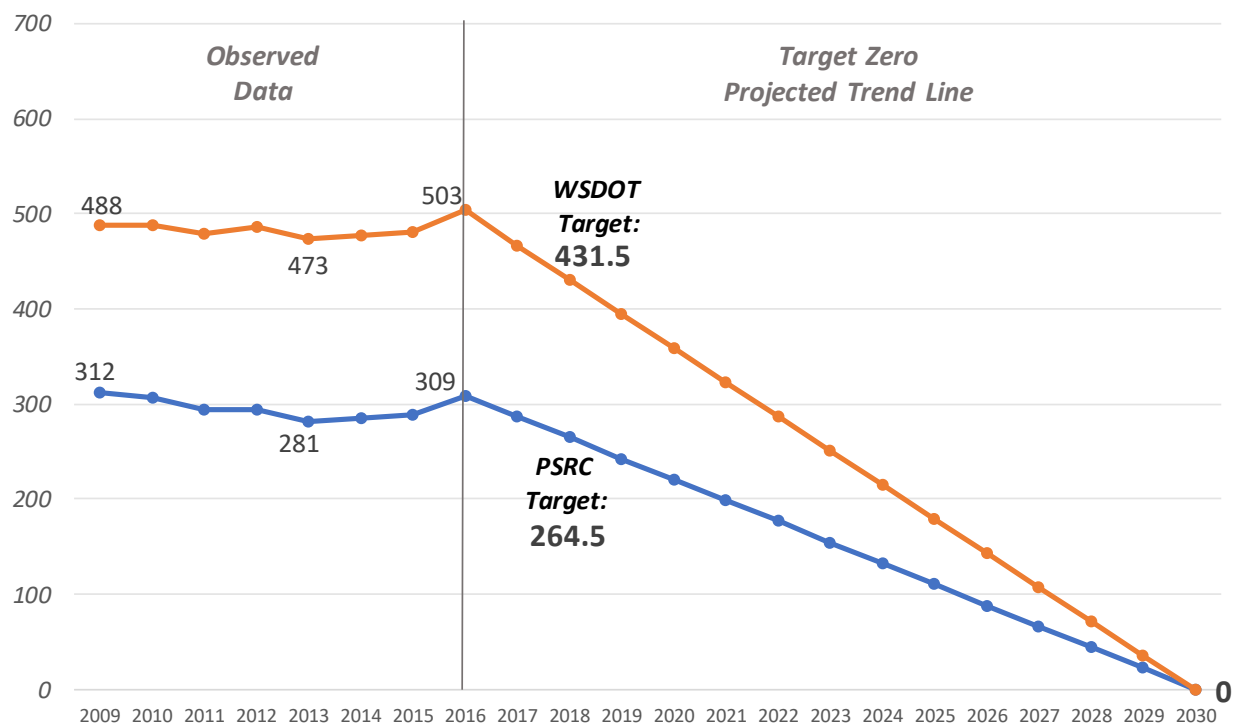


Figure 20: Bicycle and Pedestrian Fatalities and Serious Injuries – Target Zero Projection and 2018 Targets



Public Transportation Safety

As of fall of 2017, FTA has not issued final rules to implement the public transportation safety performance measures and targets called for in 49 U.S.C. 5329(d). PSRC will coordinate with public transportation operators in the region to establish public transportation safety performance targets based on performance measures established in the final FTA rule. PSRC will incorporate those performance targets into its performance-based planning framework and use data shared by the region's operators of public transportation to track progress toward attainment of these critical public transportation safety outcomes in the region.

Pavement and Bridge Condition

Measuring performance for managing pavement and bridge conditions on the National Highway System (NHS) is an area of emphasis in the federal performance-based planning program with new required performance measures.

States are required to measure the percentage of interstate and non-interstate NHS pavements for the following measures:

- Percentage of pavements on the Interstate system that are in Good and Poor conditions, respectively
- Percentage of pavements on the non-Interstate NHS that are in Good and Poor conditions, respectively

- Percentage of NHS bridges classified as in Good and Poor conditions, respectively

In 2017, the FHWA released the final rule for measures to assess the performance of bridges on the NHS and of pavements on the Interstate and non-Interstate NHS.

MPOs are required to adopt regional targets that agree with the state's target and methodology, or to develop a different approach independently. WSDOT, in consultation with MPOs, has begun working on targets for all NHS pavement and bridges, including on- and off-ramps that will be reported on a 2 year and 4-year basis in a Baseline Performance Period Report. PSRC will need to support the state-level 4 year target, or develop its own regional target and report initial performance for this measure no later than November 2018.

System Performance and Freight

Performance measures have been enacted related to system performance and freight. USDOT is in the process of preparing guidance for states and MPOs regarding implementation of these measures and for the establishment of related targets. For congestion and reliability measures, USDOT makes available the National Performance Management Research Data Set (NPMRDS) which provides national data with average travel times on the NHS for use in required performance measures and management activities. This data set is updated monthly and is available for WSDOT and PSRC to use for performance management activities. WSDOT will be responsible for developing measures and targets, and PSRC will determine whether to follow this approach, or to develop an alternative. Reporting will be done at a statewide basis, looking at an aggregate level of performance representing all regional targets. WSDOT has begun convening a technical team with the state's MPOs to look at methodology and the establishment of targets.

- **Peak Hour Excessive Delay** - Traffic congestion will be measured by the annual hours of peak hour excessive delay (PHED) per capita on the NHS. The threshold for excessive delay will be based on the travel time at 20 miles per hour or 60 percent of the posted speed limit travel time, whichever is greater, and will be measured in 15-minute intervals. Peak travel hours are defined as 6-10 a.m. local time on weekday mornings; the weekday afternoon period is 3-7 p.m. or 4-8 p.m. local time, providing flexibility to State DOTs and MPOs. The total excessive delay metric will be weighted by vehicle volumes and occupancy.
- **Non-Single Occupancy Vehicle (SOV) Travel Measure** - Measurement of non-SOV travel in specific urbanized areas. This may include travel via carpool, van, public transportation, commuter rail, walking, or bicycling as well as telecommuting.
- **NHS Travel Time Reliability Measures** - Measurement of travel time reliability on the Interstate and non-Interstate NHS. The measures are the percent of person-miles traveled on the relevant portion of the NHS that are reliable. Person-miles take into account the users of the NHS. Data to reflect the users can include bus, auto, and truck occupancy levels.
- **Freight** - Freight movement will be assessed by the truck travel time reliability index. Reporting is divided into five periods: morning peak (6-10 a.m.), midday (10 a.m.-4 p.m.)

and afternoon peak (4-8 p.m.) Mondays through Fridays; weekends (6 a.m.-8 p.m.); and overnights for all days (8 p.m.-6 a.m.)

Statewide targets for all of the system and freight performance measures will be finalized in May 2018, with PSRC adopting the regional target no later than November 2018.

On-Road Mobile Source Emissions

Performance of the Congestion Mitigation and Air Quality Improvement (CMAQ) Program is to be evaluated through measurement of total reduction of on-road mobile source emissions for projects programmed and obligated under the program. As a state whose geographic boundaries include any part of a nonattainment or maintenance area for ozone, carbon monoxide, or particulate matter, WSDOT will establish separate targets for each of these applicable criteria pollutants and precursors. Total emissions reduction will be calculated by summing 2-and 4-year totals of emissions reductions of applicable criteria and precursor pollutants, in kilograms per day, for all projects funded with CMAQ funds. As an MPO with more than 1 million population, PSRC will be required to either follow the state target and methodology, or develop its own quantifiable target no later than November 2018.

Reporting on progress

As part of the federal performance requirements, PSRC will be required to report on progress for these performance measures in subsequent long-range transportation plans. Reporting will provide analysis and information to evaluate the condition and performance of the transportation system with respect to the federally required performance targets for the central Puget Sound region. At the time of adoption of the Regional Transportation Plan in May 2018, only the safety and transit asset management measures will have targets established. WSDOT and MPOs throughout the state are currently working towards establishing the rest of the required targets at the state and regional levels. Subsequent plans will reflect the full set of required measures and targets after they have all been finalized, and after sufficient data has been acquired to assess initial performance.