

Puget Sound Regional Council

# Transportation 2040

## Final Environmental Impact Statement —Executive Summary—

March 19, 2010

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*Tacoma Narrows Bridge image courtesy of Washington State Department of Transportation.*

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## 1. What is Transportation 2040?

The Puget Sound Regional Council (PSRC) has prepared Transportation 2040, a new transportation plan to address critical issues such as congestion and mobility, the environment, and transportation finance in the central Puget Sound region. Transportation 2040 will be integrated with VISION 2040 and the Regional Economic Strategy to accommodate the addition of 1.5 million people and 1.2 million jobs in the region by 2040.<sup>1</sup> Ranked 15th among U.S. Metropolitan Areas in 2006 with a population of 3.5 million people, these increases continue several decades of dramatic growth.

This Executive Summary presents the findings of the Final Environmental Impact Statement (FEIS) for Transportation 2040, which analyzes six alternatives and a Preferred Alternative to address the travel demands forecast for the region.

The regional transportation plan covers a metropolitan area encompassing King, Kitsap, Pierce, and Snohomish counties. It addresses mobility needs across all modes of travel for the future, including:

- Aviation
- Ferries
- Nonmotorized
- Roadways
- Transit

The plan includes personal and commercial travel for all vehicle types (automobiles, trucks, and buses on the roadway and ferry systems, as well as trains and airplanes). Commercial travel includes vehicles that move people and goods in addition to providing essential services.

### **What is a regional transportation plan?**

A regional transportation plan is a comprehensive document that states the objectives and actions for the region to meet its mobility needs.

### **What is in the Executive Summary?**

- An overview of the purpose and need for Transportation 2040
- Background information on the central Puget Sound region
- A description of the alternatives evaluated including the Preferred Alternative
- A summary of the analysis in the FEIS and a listing of potential effects on the built and natural environment
- Next steps in the Transportation 2040 planning process

## 2. What is the purpose of and need for Transportation 2040?

The purpose of Transportation 2040, as identified in the State Environmental Policy Act (SEPA) scoping process in fall 2007, is to address the following question:

*How can the region best provide the mobility required to support a growing population to the year 2040, sustain the region's environment and economic vitality, improve system safety and efficiency, and enhance the region's overall quality of life?*

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<sup>1</sup> The period of analysis throughout Transportation 2040 is between 2006 and 2040.



To address this question, Transportation 2040 needs to accomplish the following:

- Extend the current regional transportation plan (Destination 2030) horizon to the year 2040
- Support VISION 2040 and the Regional Economic Strategy
- Meet federal and state requirements

### 3. What are the objectives of Transportation 2040?

#### **What is the difference between plan-level and project-level environmental review?**

*This is a plan-level or non-project (rather than a project-level) Final Environmental Impact Statement (FEIS) per WAC 197-11-442.*

*Accordingly, the alternatives are defined and the environmental effects are evaluated at a relatively broad level. More detailed project-specific environmental review will be developed as appropriate in the future for projects identified in the Transportation 2040 plan that are selected for implementation by their sponsors: Washington State Department of Transportation (WSDOT), transit agencies, counties, and cities.*

The SEPA scoping process identified the following objectives for the plan to accomplish:

- Prioritize projects and make strategic investments to produce the greatest net benefits to users of the system (both for personal and commercial travel) and to the environment, with a specific environmental focus on climate change factors and the health of Puget Sound waters.
  - Improve personal mobility and people-moving capacity in the central Puget Sound region.
  - Improve freight mobility to increase the health of the national, state, and regional economy.
  - Meet the region's present and anticipated travel needs.
  - Continue to preserve, maintain, and improve the existing urban and rural transportation system.
  - Ensure that the urban and rural transportation system is safe, efficient, integrated, reliable, sustainable, secure, and usable.
  - Focus investments on creating a highly efficient multimodal transportation network that will provide access to, mobility within, and connections between centers.
  - Use the latest innovation and technology to creatively and efficiently manage congestion and delay, improve safety and operational efficiency, manage demand, and enhance transportation choices that affect all types of freight movement.
  - Improve access to services, education and training, jobs, and recreation for special needs populations.
- Enhance the role that transportation plays in human health and community livability for all residents, including reducing deaths and injuries on the regional transportation system and providing more opportunities for walking and bicycling.
  - Define financially viable and sustainable funding sources for implementing the transportation plan.
  - Improve the region's water and air quality and find creative ways to address climate change.
  - Support the implementation of regional and local growth plans.

The purpose and need statement and plan objectives provide the framework for the seven evaluation criteria and four areas of policy analysis used in the Policy Analysis and Evaluation Criteria Report.

### 4. What is the Transportation 2040 FEIS?

This FEIS informs the public, agencies, and decision makers about the environmental consequences (both positive and negative) of the actions proposed in the Transportation 2040 plan. In November 2007, PSRC concluded that the development of a transportation system to accommodate projected population and employment growth would likely result in significant impacts on the environment. At that time, PSRC issued a Determination of Significance, pursuant

to SEPA — Revised Code of Washington (RCW) 43.21C.030 (2) (c) and Washington Administrative Code (WAC) 197-11-360.

The FEIS reviews environmental effects at a regional planning (non-project) level, concentrating on the long-term results of implementing the Transportation 2040 plan alternatives including the Preferred Alternative. The FEIS is also intended to provide guidance for further project-level SEPA and National Environmental Policy Act (NEPA) compliance for future individual transportation projects.

PSRC will adopt Transportation 2040 as the transportation plan for the Puget Sound region, but will not be responsible for implementing the projects and strategies that are included in the plan. Choosing to move forward with planning and implementation of individual projects is the responsibility of city, county, state, and federal agencies; ports; transit agencies; tribal nations; and non-governmental organizations. The region's efforts to maintain, improve, and manage the transportation system can be found within the combined plans, projects, and programs of these project sponsors. Sharing responsibility for the region's future are the transportation system's users — the general public, institutions, businesses, and industries — whose daily transportation choices affect the region's character, environmental quality, and economic health.

### What is a Determination of Significance?

A threshold determination is made to determine whether or not an EIS is required. If the lead agency's SEPA official makes a determination of significance (DS) it is because significant potential impacts on the environment are expected and an EIS is required.

If a determination of non-significance (DNS) is made, there are no significant potential environmental impacts expected.

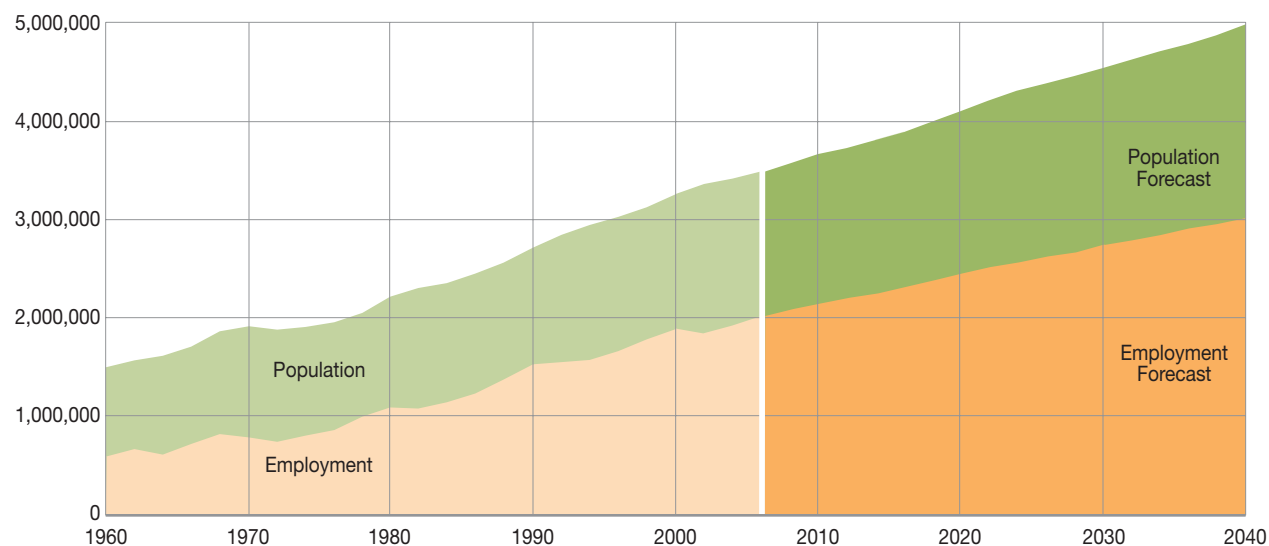
## 5. What are the projections for the region's population, employment, and housing?

The region was home to more than 3.5 million residents in 2006 and is forecast to grow by an additional 1.5 million persons between 2006 and 2040, an increase of 42%, with the region's population reaching nearly 5 million by 2040.

In 2006, the region's employment base was 1.94 million jobs, and is forecast to grow by an additional 1.2 million jobs by 2040. This is an increase of 60%, with the region's employment reaching over 3.1 million by 2040.

The region's housing stock comprised 1.48 million units in 2006, and is forecast to grow by an additional 800,000 net new housing units by 2040. This is an increase of 56%, with the region's housing stock reaching 2.3 million units by 2040 (refer to Exhibits 1-1 and 1-2).

**Exhibit 1-1. Population and Job Growth Trends and Forecasts**



Source: PSRC

## Exhibit 1-2. Housing Trends and Forecast

	1970	1980	ESTIMATED			FORECAST			
			1990	2000	2006	2010	2020	2030	2040
Housing Units	682,600	901,500	1,134,200	1,348,100	1,483,800	1,547,400	1,796,800	2,036,500	2,310,300
Percent Single Family	75%	77%	69%	69%	68%	68%	67%	65%	63%
Percent Multifamily	25%	23%	31%	31%	32%	32%	33%	35%	37%

Source: Census Bureau, Office of Financial Management (OFM), PSRC – 2005 Puget Sound Economic and Demographic Forecasts.

Notes: Forecast housing units estimated from the 2005 Puget Sound Economic Forecaster (PSEF) model forecasts of households by structure type.

## 6. What challenges are addressed by the Transportation 2040 plan alternatives?

The purpose and need statement identified a number of objectives that this plan will address. These objectives became the basis for the development of the key issues and for the evaluation framework used to evaluate the alternatives. Through the scoping process, three major challenges/issues emerged: congestion and mobility, the environment, and transportation finance. These issues were considered in the development of the alternatives by varying the amount of efficiency and strategic capacity programs and the level and type of financial investments in the action alternatives. In particular, each action alternative includes various levels of tolling to evaluate the implications of these strategies on congestion, the environment, and transportation finance.

### What is the Growth Management Act?

Washington's Growth Management Act provides the framework for planning at all levels in the state, including identifying and protecting critical environmental areas, developing multicounty and countywide planning policies, and crafting local comprehensive plans. Multicounty planning policies (and the related countywide planning policies) provide a common planning framework for local and regional planning in the central Puget Sound region.

### Tolling

All plan alternatives include some form of tolling or user fees to help fund improvements. Tolling options include:

- High Occupancy Toll (HOT) lanes
- Freeway and bridge tolls
- Ferry fares
- Arterial road tolls
- Vehicle miles traveled fees

### • Congestion and Mobility: Reduce congestion for all types of freight and person travel.

The first challenge is to address how the region can maintain and improve regional mobility with the forecast growth in population and employment.

### • Environmental Concerns: Reduce greenhouse gas emissions linked to climate change and the water quality impacts on Puget Sound.

The second major challenge is to learn how to reconcile the need for transportation facilities and their uses with growing concerns about how to protect and restore the quality of the built and natural environment. Transportation activities, if unmitigated, are a major source of water and air pollutants, including greenhouse gas emissions.

### • Transportation Finance: Support the development of sustainable transportation funding.

The third challenge, although not a component of this Environmental Impact Statement, is transportation finance, and is discussed only in the Executive Summary to provide background information. Sustainable funding is a critical implementation issue for any of the alternatives and is part of the region's federal requirement to produce a financially constrained plan.

Transportation 2040 provides additional information on travel trends, physical constraints, and the environmental concerns that need to be addressed to meet the region's commitment to environmental stewardship. It also supports the region's policy to develop an urban environment that promotes healthy, active lifestyles.

## 7. What alternatives have been analyzed in the Transportation 2040 FEIS?

This FEIS includes analysis of seven plan alternatives — a Baseline Alternative plus six action alternatives, including a Preferred Alternative. The Preferred Alternative includes elements of the previous six alternatives. Each alternative describes how transportation investments can improve efficiency and expand the system's ability to handle future demand, while at the same time support the region's goals for managing urban growth and protecting the environment. Exhibit 1-3 illustrates the relative level of investment for each element of the Transportation 2040 alternatives.

### Transportation 2040 Alternatives

For more details, please refer to Appendix A: Transportation 2040 Alternatives Report in the FEIS on the enclosed CD.

Improving efficiency means making better use of the existing system and managing growing demand more effectively, particularly during peak morning and evening travel hours. Efficiency can be improved through shifts in the chosen route, the time of travel, the mode of travel, and the patterns of trips taken to work and other activities.

Strategic expansion means increasing capacity by making investments in both capital facilities and operations. These investments include projects to relieve roadway bottlenecks; expanded and new transit lanes, transit services, and fleets; vanpools and carpool programs; high occupancy vehicle (HOV) lanes; bicycle and pedestrian trails, sidewalks, and paths; and ferry terminals and related service.

All plan alternatives have some consistent elements and others that vary. These are described below.

### Consistent Growth Assumptions

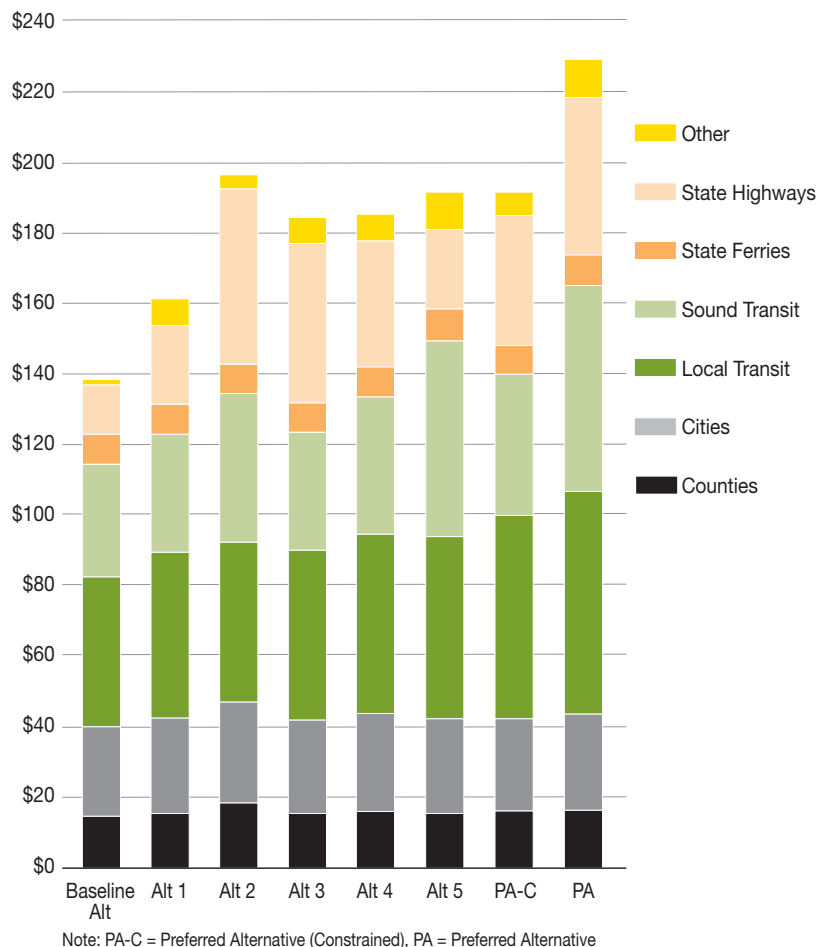
Each alternative was analyzed using the same future land use policy and strategy assumptions for growth management as established in VISION 2040. The existing year 2006 population base is also consistent. The analysis found minimal population and employment growth differences among the alternatives in the year 2040 at the regional level.

### Consistent Transportation Assumptions

The Baseline Alternative is the starting point for comparing the alternatives. The action alternatives start with the policies, plans, and funded projects included in the Baseline Alternative. Each alternative also includes the current base year (2006) transportation facilities in the region.

In addition, the action alternatives and the Preferred Alternative include an identical set of core investments to improve safety and security and to support transportation options for special needs populations. These core investments focus on improvements that extend beyond the assumed funding level and are therefore not contained in the Baseline Alternative.

**Exhibit 1-3. Elements and Investment Levels of the Transportation 2040 Alternatives (Millions of 2008 Dollars)**



Core investments would include improved roadway crossings, safety projects, improved signal coordination, completion of freeway system ramp metering and coordination with arterial signals, and Freight Action Strategy (FAST) freight mobility projects.

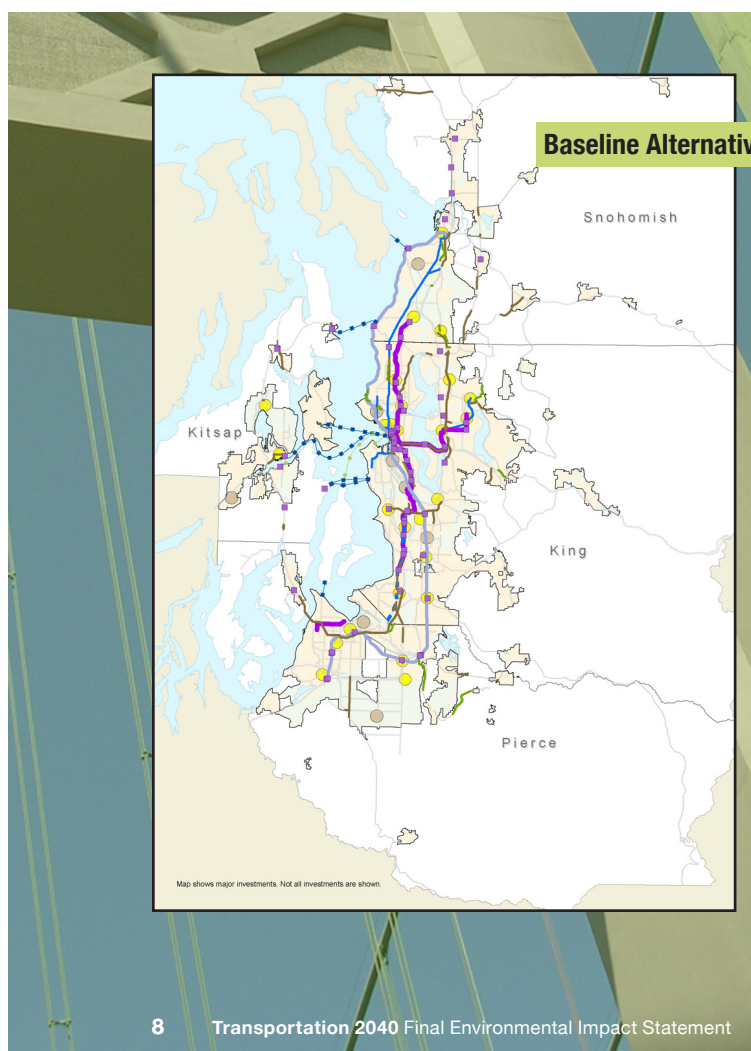
### Differing Transportation Assumptions

The action alternatives differ by the new projects, policies, and programs implemented in each, and by how new projects and programs (and to a lesser extent existing projects and programs) are financed. The different levels of investment in projects and programs are shown in Exhibit 1-3 and described in the subsequent sections.

All action alternatives contain components to expand and complete the walking and bicycling network and ways to connect this network to transit stations and ferry terminals, although at different levels of investment and emphasis. Each action alternative also includes programs to reduce vehicle miles traveled and to reduce greenhouse gas emissions, again at different levels.

The action alternatives differ in how the region would distribute investments in efficiency and expansion. The approaches range from modest improvements with limited funds to a dramatic shift in priorities resulting in a new type of transportation system.

Tolling also plays a role in each alternative. The alternatives explore how different approaches to tolling can help manage congestion and also pay for improvements.

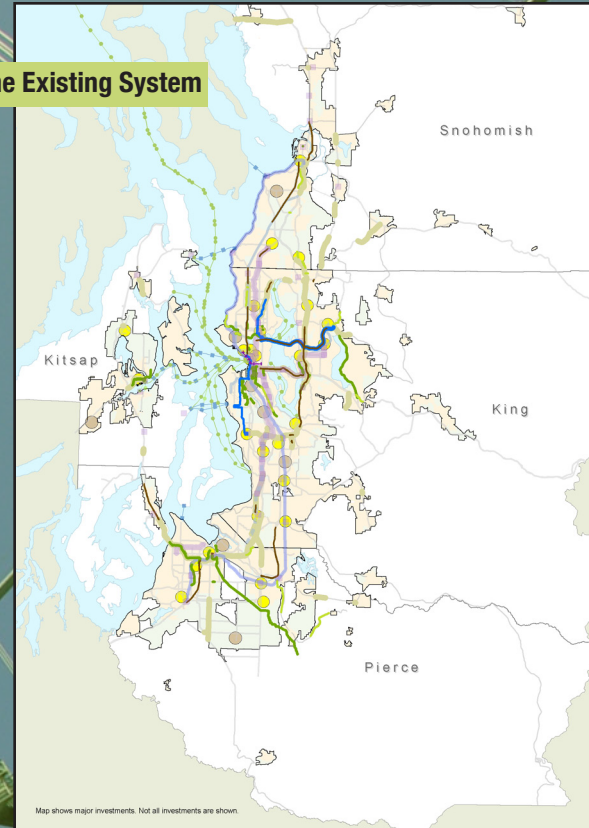


The Baseline Alternative is funded almost completely with “current law” traditional revenue sources — gas tax, sales tax, state and federal grants and loans, local general fund revenues, permit and licensing fees, and limited tolling (on the Tacoma Narrows Bridge and the auto ferry system). The Baseline Alternative would build state highway projects funded under the state’s “nickel” gas tax and Transportation Partnership Account (TPA) programs, plus Sound Transit’s Phase 2 plan (ST2), approved by voters in November 2008. It would sustain existing ferry service and demand management programs and make modest additions to transit service, including King County Metro’s Rapid Ride and Community Transit’s Swift bus rapid transit (BRT). Beyond “current law” funding, the Baseline Alternative assumes that the region would find sufficient additional revenue to fully maintain and preserve the existing transportation system.



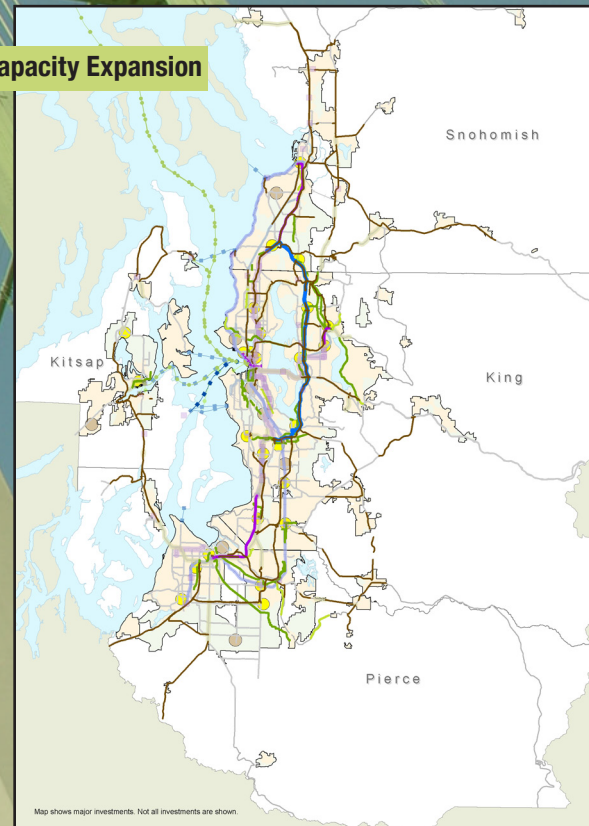
### Alternative 1: Emphasize the Efficiency of the Existing System

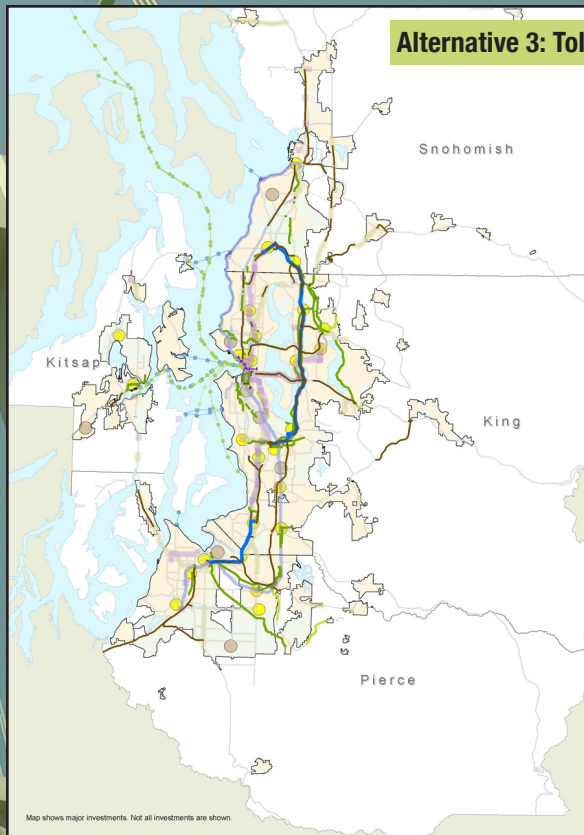
This alternative is designed to recognize that one possible future goal is to make the most of our existing transportation system. This scenario includes efficiency improvements through significant investments in programs to manage demand and in technology to manage roadways. This management strategy includes converting the existing HOV network to a one-lane high occupancy toll (HOT) system with limited capacity investments to provide a two-lane HOT system on much of I-405. In addition, Alternative 1 includes a substantial increase in bus service. Together, these strategies are designed to do a better job of moving people and goods on the existing system by providing options that would reduce both demand for peak hour travel and demand for drive-alone trips.



### Alternative 2: Emphasize Roadway and Transit Capacity Expansion

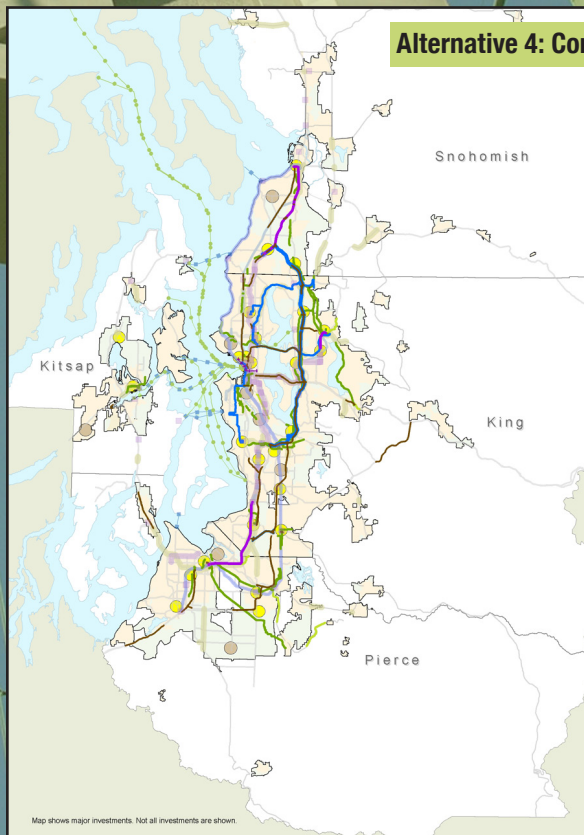
This alternative most resembles the current plan, Destination 2030. Alternative 2 adds the most roadway capacity through lane additions to existing highways, the creation of several new highways (SR 167 Extension, SR 509 Extension, and the Cross-Base Highway), and added lanes on the regional arterial network. It adds considerable light rail capacity and a new auto ferry route across Puget Sound. It adds pedestrian and bicycle infrastructure in key locations. Its demand management, bus service, and system management investments are similar to the Baseline Alternative. Its most significant management strategy is the establishment of a two-lane HOT system on much of the regional freeway network (with some one-lane HOT facilities) to manage congestion and provide revenue to supplement traditional funding sources. Traditional funding sources would provide the majority of the financing.





### Alternative 3: Toll Revenues Expand Capacity and Improve Efficiency

Alternative 3 would expand capacity and improve efficiency primarily in the central portion of the Puget Sound region. This alternative proposes a significant shift in the way our region collects and allocates transportation funds. Instead of collecting revenue through traditional funding sources, major freeways where improvements are planned would be tolled, and toll revenues would be spent on highway improvements in the tolled corridors. These revenues would be sufficient to fund significant portions of highway projects including lane additions on the central regional freeways, reconfiguration of ramps and interchanges for efficiency such as those on I-5, and new facilities such as the SR 167 Extension, SR 509 Extension, and the Cross-Base Highway. Traditional revenues would fund other efficiency and management programs including substantial bus service investments, strategic arterial roadway expansion, and new off-road trail infrastructure in the corridors connecting the regional centers to form a nonmotorized network. Alternative 3 includes the same light rail program as the Baseline Alternative (ST2). The highway tolling rates would be set to also serve a demand management function and minimize impacts on adjacent arterials.



### Alternative 4: Combine Traditional Revenues and Tolls to Maximize Efficiency

This alternative combines traditional revenue sources and highway tolling to create funding for a broad array of investments. In this alternative, nearly the entire highway network would be tolled, and toll rates would be set to maximize efficiency rather than to generate revenue. It includes strategic roadway expansion to alleviate congestion at bottlenecks and chokepoints, integrated system management and operational coordination across multiple modes, a light rail network beyond ST2, significant bus service increases, and strategic arterial roadway expansion. It would add new bicycle and pedestrian infrastructure in the regional centers and their connecting corridors.



### Alternative 5: Reduce Emissions with Limited Highway Investment and a Focus on Regional Tolling

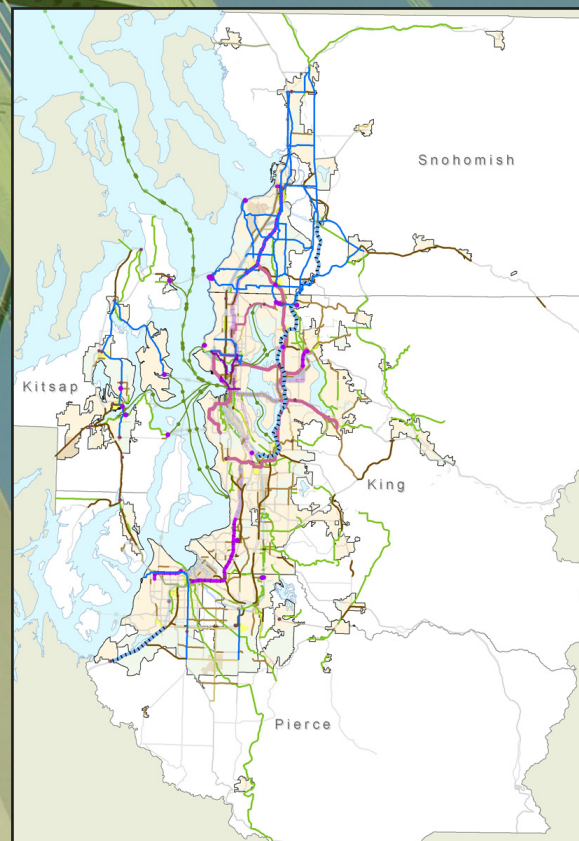
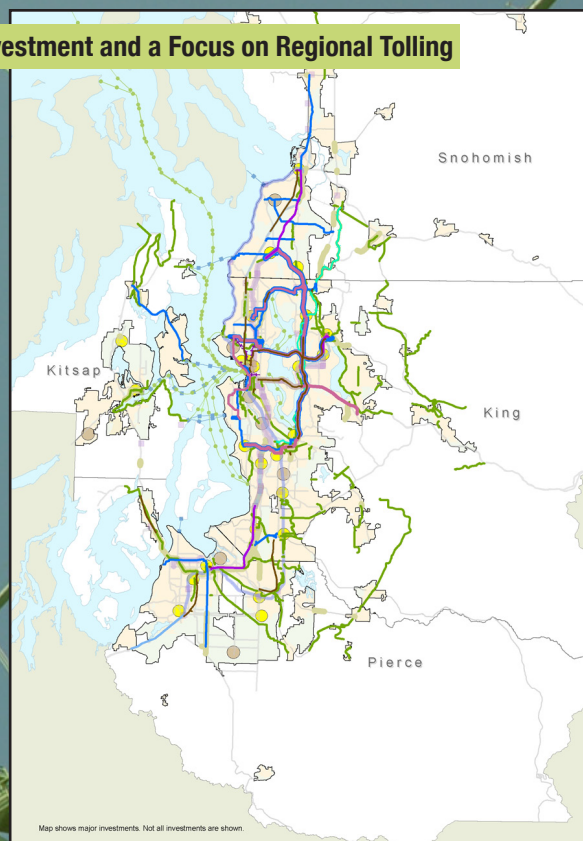
Alternative 5 would include limited highway investments and focus on transit and nonmotorized programs. This alternative proposes a shift from dependence on fuel-based revenues to creating a system with greatly enhanced travel choices. In Alternative 5 all freeway and arterial roadways would be subject to tolls (or similar user fees) designed to maximize system efficiency. Toll revenue would replace some traditional funding sources and be applicable to a wide variety of investments, including elimination of bottlenecks and chokepoints on freeway and arterial roadways, expansion of arterials and highways in strategic locations, and creation of sophisticated roadway and transit management systems. Other than the Preferred Alternative, Alternative 5 contains the largest expansion of light rail or other high capacity transit, the largest increase in bus service, and the largest expansion of dedicated nonmotorized infrastructure. Altogether, these policies and investments are designed to also reduce carbon dioxide emissions.

### Preferred Alternative

The Preferred Alternative includes elements of the other five action alternatives, as well as the projects and programs included in the Baseline Alternative and core investments, and some programs and projects that were not included in previous alternatives. As described below, the Preferred Alternative is designed to improve the region's transportation system through a combination of investments in system efficiency, strategic expansion, transit, ferry, bike and pedestrian improvements, as well as investments to preserve the existing transportation system. The Preferred Alternative financial strategy is based on a phased approach of transitioning away from current gas taxes toward the implementation of new user fees.

The Preferred Alternative includes:

- more transit service than all other alternatives
- more miles of biking and walking facilities focused on access to transit stations and centers and completing regional trail links than all other alternatives
- current levels of vehicle ferry service, and additional passenger ferries



- replacement of several vulnerable roadways including the Alaskan Way Viaduct and SR 520 Floating Bridge
- completion of missing links in the highway network such as SR 509, SR 167, and the Cross Base Highway
- expansion of local arterials and state highways in limited but strategic ways to service growth in urban growth centers

### ***Preferred Alternative Preservation***

Consistent with the other alternatives, preservation, operation and maintenance is prioritized and represents approximately 60% of the Preferred Alternative costs.

### ***Preferred Alternative System Efficiency***

The Preferred Alternative emphasizes greatly expanded employer and residential programs to reduce unnecessary travel and increase use of transit, vanpools, bicycling, and walking. The Preferred Alternative includes an aggressive program of advanced technology on arterials and freeways, including better signal coordination, active traffic management, new and expanded traveler information services, and transit-specific technologies to ensure on-time performance and provide customers with more complete, up-to-date travel information. Consistent with the other alternatives, the Preferred Alternative supports the state's Target Zero program (refer to Chapter 4: Transportation for more information) and continues progress on regional security programs.

### ***Preferred Alternative Strategic Expansion***

The Preferred Alternative includes investments in integrated strategies that support all forms of travel. The Preferred Alternative completes or replaces the network of roadway projects necessary to support development of the centers identified in VISION 2040 and keep freight moving to support a strong economy, such as SR 167, SR 509, SR 520 floating bridge, US 2 and SR 3. The Preferred Alternative contains approximately 950 new roadway lane miles, which represents the second highest level of roadway investment (Alternative 2 contains approximately 1,200 new roadway lane miles) and a 7% increase over 2006 levels.

Users of the new highway capacity would directly pay for improvements through tolling, which would also reduce congestion and emissions. Local roadways would be expanded to support transit and improve the efficiency of people and freight movement, especially to provide access to and within centers.

### ***Preferred Alternative Transit***

The Preferred Alternative would implement a comprehensive transit strategy, including completion of ST2 projects and additional Link light rail extensions to Everett, Tacoma, and Redmond. The Preferred Alternative includes more light rail miles than any other alternative, and the largest expansion of commuter rail of any alternative, equal to Alternative 5. The Preferred Alternative includes more local transit investment than any other alternative: over 100% more service than 2006 in peak periods and over 80% more service off-peak. All-day service with high frequencies (generally every 15 minutes) would be emphasized.

### ***Preferred Alternative Ferry***

The Preferred Alternative includes three new passenger ferry routes on Lake Washington and six new passenger ferry routes on Puget Sound. The Preferred Alternative includes the most new passenger ferry service, one route more than Alternative 5.

### ***Preferred Alternative Bicycle and Pedestrian***

The Preferred Alternative would prioritize pedestrian and bicycle facilities within regional growth centers and within ¾ mile of transit passenger facilities. Missing links in regional trails would be completed. The Preferred Alternative includes 553 miles of new off-road trails, more than any other alternative.



### **Preferred Alternative Financial Strategy**

The Preferred Alternative financial strategy is based on a phased approach of transitioning away from current gas taxes toward the implementation of new user fees, which could include tolls, VMT charges, and other pricing approaches to fund and manage the transportation system. There should be a relationship between the tax, fee, or toll and the use of the revenues. However, it is anticipated that the region would continue to rely on traditional funding sources and financial instruments as it makes a transition to a more sustainable financial strategy.

### **Preferred Alternative Project and Program Categories**

The Preferred Alternative includes two categories of programs and projects: (1) Constrained, and (2) Unprogrammed. These categories recognize the federally approved structure for regional plans and the range of uncertainty that is inherent in long-range transportation planning programs.

*Financially Constrained:* This category is a federally required component of the plan where project and program costs must be accounted for and balanced with reasonably expected revenues over the life of the plan.

*Unprogrammed:* This category represents projects and programs that are included in the Preferred Alternative but are not subject to the requirement of having a corresponding funding strategy and may be more illustrative or aspirational in nature.

The Preferred Alternative contains both the financially constrained and the unprogrammed programs and projects.

### **How does this FEIS analyze the constrained portion of the Preferred Alternative?**

The Preferred Alternative in this FEIS contains both the financially constrained and the unprogrammed programs and projects (sometimes referred to as the full Preferred Alternative). Accordingly, most of the environmental disciplines analyze the potential effects of the Preferred Alternative. However, for instances when the constrained portion of the Preferred Alternative would result in greater effects upon the environment, such as in certain analyses in Chapter 4: Transportation and Chapter 6: Air Quality and Climate Change, the effects of the constrained portion of the Preferred Alternative are analyzed.

## **8. How was the Preferred Alternative developed?**

The development of a Preferred Alternative was a three-year effort involving ongoing public involvement, agency consultation, and environmental analysis. The major elements of this effort included:

- *Background and Tool Development:* The program started with the development of background information on transportation issues, such as growth, the economy, congestion, funding, environment, and health. Tools were developed to better inform the public and decision makers on specific areas that benefit or are affected by transportation programs, including land use, travel times, reliability, and safety. The tools include the development of a new benefit-cost model.
- *Scoping:* Through scoping, a list of issues, strategies, programs, and projects were developed. A set of three critical issues were identified: Congestion and Mobility, Environment, and Transportation Funding.
- *Alternatives Development:* Based on the issues and programs identified in scoping, alternatives were constructed to represent different transportation policy choices. The levels and type of investment, management, and funding strategies varied among the alternatives.
- *Criteria:* Criteria were developed to evaluate key issues, particularly mobility, environment, economy, and equity. When possible, criteria were based on monetary values to provide quantitative information for the benefit-cost analysis.
- *Alternative Evaluation:* The alternatives included three types of evaluation:
  - *Policy Review:* All of the projects and programs in the alternatives were evaluated and found compliant with the VISION 2040 policies.
  - *Environmental Impact Statement (EIS):* A Draft Environmental Impact Statement (DEIS) was used to evaluate the impact of the alternatives on the environment. This FEIS responds to comments on the DEIS and also includes an analysis of the Preferred Alternative.

- *Criteria:* Criteria evaluation and reporting for each of the alternatives includes both qualitative and quantitative analysis.
- *Public Involvement:* The process included continuous public involvement and consultation with member agencies, including over 450 meetings, public notices, ongoing information posted on the Internet, and other materials. PSRC conducted a focused effort to provide outreach to seek input from low-income and minority populations and people with special transportation needs. Over 2000 comments on the DEIS were received and have been reviewed.
- *Recommendation:* The Preferred Alternative includes the programs and projects contained in the Draft Transportation 2040 Plan, which was designed through lengthy consultation with many stakeholders (refer to the Public Involvement and Consultation Appendix in the Transportation 2040 Plan). Those consulted included all of PSRC’s standing committees and boards, technical committees formed for the plan update process, and numerous nonprofit or private entities. The stakeholders considered many aspects of the proposals in the course of recommending inclusion in the plan, including proposal maturity, proposal support for regional policies and objectives as set forth in VISION 2040, and the analysis results from the DEIS. Ultimately, the Transportation Policy Board recommended the investments included in the draft plan to the Executive Board, endorsed the draft plan as the basis for the Preferred Alternative evaluated in this FEIS.

## 9. What areas of controversy and uncertainty were identified?

### **VMT reduction benchmarks**

*The State of Washington has enacted VMT reduction benchmarks. These benchmarks are not requirements, but were enacted to encourage measurement of VMT as part of an overall greenhouse gas reduction strategy. In early 2009, Governor Gregoire issued an Executive Order, which requires a collaborative process to review the VMT reduction benchmarks and report on whether they should be changed, especially related to alternative fuel vehicles, and the economic and other impacts of VMT reduction benchmarks. The report is due by the end of 2010. The analysis conducted for Transportation 2040 has demonstrated that VMT per capita in the region is already meeting the state’s 2020 benchmark, and additional reductions for all alternatives are estimated by 2040 (refer to Chapter 6 for more information). Given this state directive, PSRC is reporting progress on VMT reduction and has incorporated specific actions within the four-part greenhouse gas strategy to support VMT reduction.*

*PSRC continues to work with WSDOT, other metropolitan planning and regional transportation planning organizations around the state, and additional stakeholders on the requirements of Governor Gregoire’s Executive Order.*

PSRC’s General Assembly, Executive Board, and Transportation Policy Board had to balance many issues in developing the Preferred Alternative for Transportation 2040. Many of these issues were identified in DEIS comment letters. Responses to specific comments are included in Appendix N of this FEIS, and some of the more frequently raised comments are summarized in this section. Areas of potential controversy and uncertainty included future land uses; climate change and greenhouse gas emissions; qualitative versus quantitative analysis methods; and impacts to low income and minority populations (environmental justice). Each of these topics is discussed below.

### **Future Land Use Assumptions**

Land use assumptions for all alternatives, including the Preferred Alternative, are based on the VISION 2040 Regional Growth Strategy. This plan, adopted in 2008, provides guidance for where future population and employment growth should be located to achieve the goals of VISION 2040. The Regional Growth Strategy is based on regionwide growth forecasts organized around “regional geographies,” which are groups of cities that share similar characteristics, along with categories for unincorporated urban areas and rural areas. There are four types of regional geographies for cities: metropolitan cities, core cities, larger cities, and small cities. The Regional Growth Strategy plans for an increased role in accommodating growth for metropolitan cities and core cities, as well as larger cities. The Regional Growth Strategy anticipates a corresponding decreased role for smaller cities, unincorporated urban growth areas (UGAs), and rural areas.

Some comments on the DEIS stated that the actual population growth distribution is dramatically at variance with the Regional Growth Strategy. The comments state, in recent years, that more population growth has occurred in smaller cities, unincorporated UGAs, and rural areas than was recommended by the Regional Growth Strategy. The comments

recommended using future projections of these past growth patterns as the basis for Transportation 2040's land use assumptions instead of the patterns prescribed by the Regional Growth Strategy.

PSRC considered the approach recommended by the comments, but determined that the Regional Growth Strategy is appropriate to use as the basis for future land use projections because it is adopted regional policy. By adopting VISION 2040, the region's cities and counties have agreed to revise their existing land use plans with the intention of supporting the growth patterns in the Regional Growth Strategy. In the short time since the adoption of VISION 2040 in 2008, many cities and counties have not yet revised their land use plans. Once the revisions are complete, more years may pass before land use patterns begin to reflect the intent of the revised plans. This lag time between implementing new land use plans and achieving tangible results has created some uncertainty as reflected in the comments noted above. The regional population and employment growth trends will be monitored over time and compared to the Regional Growth Strategy. If necessary, adjustments will be considered in future regional land use and transportation plan updates.

## **Climate Change and Greenhouse Gas Emissions**

### ***Greenhouse Gas Reduction Goals***

The state of Washington has adopted greenhouse gas emission reduction goals to reduce emissions to 1990 levels by 2020, 25% below 1990 levels by 2035, and 50% below 1990 levels by 2050. These goals are statewide reduction goals, across all sectors and sources of emissions. While these goals are enacted in state law, the state has not yet assigned targets for the regions of the state, or for individual sectors (transportation, energy, housing, etc.). The federal government has also not yet set national greenhouse gas reduction goals, and current federal legislation being considered by Congress would require specific state goals and targets at least two years beyond the enactment of federal legislation.

### ***Greenhouse Gas Reduction Achievements in Transportation 2040***

Notwithstanding the absence of specific requirements and guidance, the PSRC Transportation Policy Board has taken a proactive stance to address the state's climate change goals in the Transportation 2040 Update process. Based on PSRC's analyses and research, as well as data and research conducted at the national level, the Transportation 2040 alternatives include a four-part greenhouse gas strategy. Recognizing that it will require a variety of strategies and tools to effectively reduce emissions from the transportation sector, the four-part strategy contains the following elements:

- *Land Use:* Building upon the VISION 2040 Regional Growth Strategy to further the goal of providing jobs vs. housing balance, and to pursue additional refinements through strategies such as transit-oriented development facilities.
- *User Fees:* Recognizing its critical role in reducing VMT and emissions, transition the region over time to a user fee/roadway pricing system.
- *Choices:* Continue to provide traveler alternatives to the single-occupant vehicle, and continue research into the costs and benefits of various strategies.
- *Technology:* Recognizing that improvements to vehicles and fuels will play a crucial role in reducing emissions, PSRC has undertaken research with the Washington State Department of Ecology (Ecology) on the potential technological advances that may be likely in our region by the year 2040.

Each EIS alternative was evaluated for greenhouse gas emissions, as well as total and per capita VMT (refer to Chapter 6: Air Quality). This evaluation included the land use patterns outlined in the Regional Growth Strategy in all alternatives, while the level of user fees and provision of transportation choices varied across alternatives. Alternative 5 included the most aggressive usage of user fees in an effort to identify the maximum potential reduction in greenhouse gas emissions. The evaluation did not assume technological improvements to fuels or the vehicle fleet. Alternative 5 would provide the greatest reduction of carbon dioxide emissions below the 2040 Baseline Alternative, and the Preferred Alternative would result in carbon dioxide emissions reductions from mobile sources similar to Alternative 5.

#### ***Greenhouse Gas Strategy***

*For more information about PSRC's Greenhouse Gas Strategy, refer to Appendix K: Greenhouse Gas 4-part Strategy.*

However, without assuming technological improvements in fuels and vehicle fleet in combination with appropriate land use, user fee, and transportation choice strategies, no alternative would reduce emissions below 2006 levels, which is the PSRC modeled base year.

### ***Additional Strategies to Reduce Greenhouse Gas Emissions beyond Transportation 2040***

As noted above, the alternatives in Transportation 2040 include land use, user fee, and transportation choice strategies designed to reduce greenhouse gas emissions. PSRC, through its long-range planning function, has a direct role in determining the region's future approach with these strategies. However, PSRC does not have a direct role in determining the region's future approach to vehicle and fuel technologies.

Nonetheless, in response to comments and in an effort to encourage greenhouse gas reduction efforts, PSRC tested additional strategies to reduce greenhouse gas emissions.

In collaboration with the Washington State Department of Ecology, PSRC developed two technology scenarios: a "likely" scenario, which is probable given current trends and conservative assumptions about fuel prices and other incentives to change technology, and an "aggressive" scenario, which assumes a higher degree of concerted effort to transition the vehicle fleet to a more energy efficient approach. These scenarios were based on national research and in consultation with the Environmental Protection Agency, the Washington State Department of Transportation and the Puget Sound Clean Air Agency.

Combining a technology scenario with the land use, user fee, and transportation choice strategies outlined above could enable any Transportation 2040 alternative to reduce carbon dioxide emissions below 2006.

### ***Uncertainty Regarding the Greenhouse Gas Reduction Goals***

As noted above, the alternatives in Transportation 2040 include land use, user fee, and transportation choice strategies designed to reduce greenhouse gas emissions. These strategies could reduce greenhouse gas emissions forecasts for most alternatives below the 2040 Baseline Alternative. It was further noted that, while the region's vehicle and fuel technological advancement is not subject to PSRC's long-range planning process, advancements in technology could reduce emissions for all alternatives below 2006 levels. However, it is difficult to determine whether any Transportation 2040 alternative would reach the 1990 statewide greenhouse gas reduction goals. This difficulty is due to the following factors.

#### *Comparison difficulties:*

- The statewide goal lists targets for 2035 and 2050, but not 2040, the future model year used in Transportation 2040.
- The statewide goal includes baseline emissions from 1990, but in order to compare PSRC's 2040 modeled emissions forecasts to a 1990 emissions level, the 1990 level would need to be configured within PSRC's model.

As noted above, PSRC's model includes a base year of 2006. The resources required to update a base year within the modeling framework are significant and are not useful to PSRC for other reasons. Therefore, it is not practicable to produce the 1990 baseline information.

#### *Share difficulties:*

- As noted above, goals are statewide reduction goals, across all sectors and sources of emissions. The goal does not specify what portion of the emission reduction should be borne by the transportation sector.
- Similarly, the goal does not specify what portion of the emissions reduction should be borne by the central Puget Sound region.

During the Transportation 2040 planning effort, PSRC has evaluated a broad range of potential strategies for greenhouse gas reduction. Based on the uncertainties and difficulties outlined above, this evaluation showed that, solely from within the context of long-range transportation planning, it is not possible to state with certainty whether the transportation sector in the central Puget Sound region would be able to reach the 1990 greenhouse gas reduction goals set by the state of Washington.



## **Conclusion**

PSRC has taken a proactive stance at addressing the reduction of greenhouse gas emissions, beginning with the multicounty planning policies and the Regional Growth Strategy contained in VISION 2040 and continuing with the analysis work and investment strategies contained in Transportation 2040. This is an emerging area, with research and legislation continuing to evolve at both the state and national levels. PSRC's boards have directed that Transportation 2040 should be flexible and adaptable in order to respond to new guidance and directions on a variety of issues, including climate change.

## **Qualitative Versus Quantitative Analysis Methods**

Impacts of the Transportation 2040 alternatives are analyzed in either qualitative or quantitative terms. Much of the quantitative analysis was done using techniques that are common in transportation analyses, including land use and transportation demand modeling, air quality modeling, and financial analysis. Other areas of policy and potential impacts are difficult to quantify given uncertainty in the current state of science. This does not imply that these benefits and costs are not important, but merely that they are best stated in qualitative terms.

The advantages of a quantitative approach are that both benefits and costs can be combined to assess the potential economic consequences of a particular transportation alternative. The disadvantage is that measures not based on monetary values, such as growth management or economic prosperity, cannot be directly included. The full set of evaluation criteria recognizes the advantages of a quantitative approach but includes qualitative measures to provide a more comprehensive assessment of each alternative.

## **Human Health**

Given the current available literature, quantitative estimates of human health costs have been included as appropriate. Assessing the active living human health impacts of transportation is an emerging area of research, but one that does not appear to have resulted in consensus on methods of analysis and magnitudes of costs. Human health impacts of transportation associated with air pollutants and accidents have been quantified in Appendix D.

## **Benefits of Walking and Bicycling Trips**

Because of constraints on how bicycling and walking trips are represented in the current modeling framework, measuring user benefits has proven to be challenging. Existing model platforms do not effectively measure user benefits resulting from walking and bicycling trips. This challenge can only be overcome through the development of new modeling practices and new data elements that sufficiently represent the possibilities for walking and bicycling trips at a much higher level of detail.

PSRC recognizes the importance of these issues and has provided a qualitative assessment of potential costs and benefits as appropriate. These qualitative assessments were an integral part of the decision-making process.

As science advances and new quantification approaches come into use, PSRC will strive to keep its analysis methods at the forefront of good planning practice.

## **Impacts to Low Income and Minority Populations**

Comments on the DEIS expressed concern about potential impacts to low-income and minority populations, particularly regarding the effects of tolling. Specific concerns included:

- *Regressivity of tolls:* Tolls could represent a disproportionate burden on low-income drivers.
- *Method of toll payment:* Paying for a toll transponder could be difficult for low-income populations. Populations with limited-English proficiency might experience difficulties acquiring and using transponders.
- *Use of toll revenues:* Comments advocated for reinvestment of toll revenues to provide alternatives to single-occupant vehicle travel within the tolled corridors.

- *Cost-benefit analysis methodology:* The cost-benefit analysis in the DEIS showed lower positive user benefits for low-income populations than for high-income populations.

The effect of tolling on low-income and minority populations is an area of emerging research, so the relative regressivity of paying for transportation improvements through tolling versus taxes on gas or sales is not well understood. Specific toll rates, facility locations, methods of toll payment, and use of toll revenues are topics likely to be discussed in detail in the years ahead and future tolling plans would require approval by the Washington State Legislature. PSRC recognizes that the equity effects of tolling are an area of controversy and uncertainty, and will continue to address this issue as planning efforts continue in the future. For more information, refer to Chapter 17: Environmental Justice.

## 10. What criteria were used to evaluate the alternatives?

VISION 2040 is the organizing framework for evaluating the alternatives. The Regional Growth Strategy and the goals, objectives, and policies in VISION 2040 guided the development of the evaluation criteria and the organization of the policy analysis. The evaluation criteria provide the methodology to measure progress toward achieving VISION 2040. The evaluation criteria were developed to address the overarching goals of the transportation planning process. Individual metrics were developed to quantify different aspects of the evaluation criteria. The criteria measures are grouped into seven categories:

- Mobility
- Finance
- Growth Management
- Economic Prosperity
- Environmental Stewardship
- Quality of Life
- Equity

These criteria include metrics that are a different means to measure transportation benefits (or impacts) than used historically. For example, VMT is a commonly used proxy for measuring congestion or air quality impacts. These criteria metrics directly measure congestion as a function of travel-time savings and directly measure the cost of emissions as a function of vehicle speeds and distance.

Many of the measures in the criteria are estimated in monetary values so they can be included in an estimate of a benefit-cost result. The advantages of the benefit-cost result are that both benefits and costs can be combined to assess the potential economic benefit (or cost) of a particular transportation alternative. The disadvantage is that some measures cannot be converted to monetary terms. The full set of evaluation criteria recognizes the advantages of this method and combines this with other quantitative and qualitative measures to provide a more comprehensive assessment of each alternative. Exhibit 1-4 summarizes the criteria results.

**Exhibit 1-4. Evaluation Criteria**

EVALUATION CRITERIA	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
<b>MOBILITY</b>							
M1. Travel Time Savings	\$1,850	\$2,510	\$3,440	\$2,890	\$3,560	\$5,020	\$6,390
M2. Improved Reliability Benefits	\$290	\$410	\$1,000	\$1,140	\$1,290	\$1,070	\$1,180
M3. Vehicle Operating & Ownership Benefits	-\$93	-\$189	-\$125	\$200	\$13	\$73	\$213
M4. Other User Benefits	\$17	\$38.	\$77	-\$15	-\$457	\$89	\$34
<b>FINANCE</b>							
F1. Facility Operating Cost	-\$360	-\$160	-\$300	-\$510	-\$1,030	-\$1,570	-\$2,600
F2. Capital Cost	-\$640	-\$2,310	-\$1,670	-\$1,650	-\$1,700	-\$1,560	-\$2,770
F3. Operating Revenues	\$180	\$257	\$2,940	\$3,660	\$7,100	\$3,500	\$5,360
F4. Influence of Finance on the Economy	-\$134	-\$363	-\$46	\$44	\$138	\$224	\$103
<b>GROWTH MANAGEMENT</b>							
GM1. Population	nc	nc	nc	nc	nc	nc	nc
GM2. Employment	nc	nc	nc	nc	nc	nc	nc
GM3. Jobs to Housing Balance	nc	nc	nc	nc	nc	nc	nc
GM4. Population & Jobs in Centers	nc	nc	nc	nc	nc	nc	nc
<b>ECONOMIC PROSPERITY</b>							
EP1. Benefits to Low & High-wage Employment	\$382	\$441	\$555	\$431	\$370	\$1,060	\$1,380
EP2. Benefits to Cluster Employment	\$56	\$116	\$179	\$142	\$49	\$297	\$373
EP3. Benefits to Freight-Related Employment	\$55	\$86	\$97	\$81	\$52	\$171	\$226
<b>ENVIRONMENTAL STEWARDSHIP</b>							
ES1. Vehicle & Stationary Emission Benefits	-\$14	-\$35	\$19	\$31	\$94	\$38	\$72
ES2. Impervious Surfaces	nc	-	-	nc	nc	-	-
ES3. Agriculture & Natural Resource Lands	nc	-	nc	nc	nc	nc	nc
ES4. Energy Usage from Vehicle & Building Use	nc	nc	+	+	+	+	+
<b>QUALITY OF LIFE</b>							
QL1. Accident Cost Savings	-\$94	-\$177	-\$52	\$1	\$168	-\$26	\$32
QL2. Non-motorized Travel	nc	-	nc	+	+	+	+
QL3. Redundancy (Roads & Transit)	nc	nc	nc	nc	nc	nc	nc
<b>EQUITY</b>							
E1. Geographic Distribution of Benefits	+	nc	+	-	nc	nc	nc
E2. Income Distribution of Benefits	nc	nc	nc	-	-	nc	nc
E3. Benefits to Personal & Commercial Users	nc	nc	nc	-	-	nc	nc
E4. Benefits to Environmental Justice Populations	+	+	+	+	+	+	+

All comparisons to the 2040 Baseline Alternative: \$\$ in millions in the year 2040; positive values are benefits, negative values are costs; all monetary values are additive except for the Economic Prosperity benefits which are benefits to a subset of the region. nc is no significant change, - is negative change, + is positive change, PA-C is Preferred Alternative-Constrained, PA is Preferred Alternative.

## 11. What potential impacts could result from each of the alternatives?

### TRANSPORTATION

#### Impacts Common to All Alternatives

- All alternatives estimate an increase in person and vehicle trips, as well as total VMT resulting from growth in population and employment. Each action alternative includes all the investments made under the Baseline Alternative. All plan alternatives would invest in numerous major transportation projects, and would share both the environmental impacts and ongoing operational benefits.

#### **How does this FEIS analyze the constrained portion of the Preferred Alternative?**

*The Preferred Alternative in this FEIS contains both the financially constrained and the unprogrammed programs and projects (sometimes referred to as the full Preferred Alternative). Accordingly, most of the environmental disciplines analyze the potential effects of the Preferred Alternative. However, for instances when the constrained portion of the Preferred Alternative would result in greater effects upon the environment, such as in certain analyses in Chapter 4: Transportation and Chapter 6: Air Quality and Climate Change, the effects of the constrained portion of the Preferred Alternative are analyzed.*

- From 2006 to 2040, the estimated number of vehicles owned within the region would increase with every alternative, and the differences among alternatives are insignificant. Total vehicles owned in 2040 would range from 3,759,000 to 3,847,000 vehicles, a difference of about 2%.
- Daily vehicle hours traveled (VHT) would grow with all alternatives. Each of the alternatives would result in different levels of VHT.
- In 2006, the region experienced 281,000 hours of daily freeway delay and 560,000 hours of delay on the arterials, for a total of 841,000 hours per day. By 2040, total delay on freeways and arterials is forecast to increase for all alternatives.
- Average vehicle occupancy would remain fairly stable or increase slightly for each alternative. Compared to the 2006 average of 1.6 persons per vehicle, in 2040 vehicle occupancy would range from 1.5 to 1.6 persons per vehicle for the different alternatives.
- From 2006 to 2040, the average work trip length (in miles) would remain relatively steady at between 12 and 13 miles per work trip, compared to the base year average of 13 miles per work trip in 2006. Non-work trip lengths would decrease for all alternatives, to between 4 and 5 miles per non-work trip, compared to the base year's average of 6 miles per trip in 2006. Non-work trip length for the Preferred Alternative (Constrained) and the full Preferred Alternative would be about 5 miles.
- Average work trip times (in minutes) would increase for all alternatives, compared to the base year 2006 trip times. The full Preferred Alternative would maintain the same trip times experienced in 2006, at 36 minutes.
- Average travel time for all trips would remain steady, at between 20 and 22 minutes for all the alternatives, compared with 21 minutes in 2006.
- Average vehicle travel speeds on the region's arterial streets are forecast to decline from 2006 to 2040. Differences in arterial travel speeds among the alternatives are not significant. In 2040, all alternatives would yield average daily speeds of about 20 miles per hour (mph) on arterial streets during peak hours and 26 mph during off-peak hours.
- The number of ferry passengers would increase between 2006 and 2040 in all alternatives, and each alternative would add several new passenger-only ferry routes.
- Walking and bicycling trips would increase for each alternative.
- All action alternatives would produce time saving benefits to single-occupancy vehicles, high-occupancy vehicles, transit, and commercial users compared to the Baseline Alternative.



- Each action alternative would provide net positive benefits to environmental justice populations compared to the Baseline Alternative.
- Amtrak does not have any current plans for additional passenger routes in the region; therefore, none of the plan alternatives include specific investments in new intercity passenger rail.
- The FEIS discusses the potential impacts of a range of airport system strategies being considered within a state-wide Long-term Air Transportation Study (LATS). Airport system demand management strategies, stewardship strategies, and land use strategies would likely have positive impacts on the region. Major capacity strategies include redistributing activity to airports that have excess capacity, expanding capacity at airports with capacity constraints, and building new airports. All of these strategies could result in new traffic, airport noise, and other impacts at airports where growth is encouraged, but have the potential to reduce future impacts at capacity-constrained airports, such as Sea-Tac International.
- All of the alternatives include projects that improve nonmotorized travel to provide accessible public transportation system connections. The varying increases in targeted special needs services and facilities could provide expanded and better transportation options for those who do not drive a vehicle.
- Freight mobility is considered as an important element in all major projects. Investments specific to truck freight include the projects that are a part of the FAST Corridor Partnership — a combination of strategically selected grade separations, capacity expansion, and Intelligent Transportation System (ITS) projects to benefit freight. These investments appear across all the action alternatives.

### *Impacts Specific to Individual Alternatives*

Unique transportation system impacts are shown by the following categories: roadway system, vehicle trips, trip times and lengths, auto travel (vehicle miles traveled, vehicle hours traveled, and delay), vehicle speeds, travel mode share, transit travel, ferry travel, nonmotorized trips, freight and goods, and accident cost savings. Additional discussions of impacts on land use, air quality, etc. follow.

### **Roadway System Improvements**

Exhibit 1-5 shows the additional roadways (measured in lane miles) for both freeways and arterials. Compared to the base year 2006 roadway system:

- In total roadway system improvements, the Baseline Alternative would expand the system by 3%, Alternative 2 would expand it by 9%, and the Preferred Alternative would expand it by 7%.

#### **Exhibit 1-5. New Roadways (Lane Miles)**

LANE MILES	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
Freeway	2,616	2,741	2,856	3,138	3,001	2,957	2,824	2,964	3,011
Arterial	10,189	10,412	10,495	10,875	10,540	10,532	10,505	10,588	10,752
Total	12,805	13,153	13,352	14,013	13,540	13,489	13,329	13,551	13,764
<b>CHANGE FROM 2006</b>									
Freeway	–	124	240	522	384	341	208	347	395
Arterial	–	223	306	686	350	342	315	398	563
Total	–	348	546	1,208	735	683	523	746	958
<b>PERCENT CHANGE FROM 2006</b>									
Freeway	–	5%	9%	20%	15%	13%	8%	13%	15%
Arterial		2%	3%	7%	3%	3%	3%	4%	6%
Total		3%	4%	9%	6%	5%	4%	6%	7%

## Vehicle Trips by Time of Day

Exhibit 1-6 shows the average daily vehicle trips by time of day for each alternative.

### What is peak spreading?

Peak spreading is an increase in the duration of a peak period, or “rush hour.” It results from individual travelers deliberately changing their travel behavior to avoid congestion or to avoid higher tolls associated with peak periods or to comply with incentives that encourage people to avoid traveling during peak periods.

- Compared to the base year 2006, Alternative 2 would have the greatest increase in total daily trips (42%) while the Preferred Alternative would have the smallest increase (36%).
- Alternative 2 is the only alternative with more total daily trips than the Baseline Alternative.
- The largest relative increase in daily vehicle trips for all alternatives ranges from 48% for the Constrained Preferred Alternative to 70% for Alternative 5 occurring at night due to peak spreading.
- All action alternatives would accommodate more PM peak period trips than the Baseline Alternative.

**Exhibit 1-6. Average Daily Vehicle Trips (Trips by Time Period and Change from Baseline)**

SCENARIO	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
AM Peak Period	1,469,000	1,984,000	1,985,000	2,014,000	1,997,000	1,974,000	1,882,000	1,976,000	1,932,000
Midday	3,277,000	4,742,000	4,609,000	4,653,000	4,604,000	4,596,000	4,424,000	4,514,000	4,442,000
PM Peak Period	1,910,000	2,512,000	2,632,000	2,636,000	2,631,000	2,591,000	2,545,000	2,617,000	2,579,000
Evening	1,441,000	2,015,000	2,020,000	2,072,000	2,025,000	2,007,000	2,004,000	2,002,000	1,990,000
Night	594,000	916,000	904,000	931,000	897,000	921,000	1,010,000	878,000	893,000
Total	8,691,000	12,169,000	12,151,000	12,306,000	12,153,000	12,089,000	11,864,000	11,986,000	11,835,000
<b>PERCENT CHANGE FROM 2006</b>									
AM Peak Period		35%	35%	37%	36%	34%	28%	35%	32%
Midday		45%	41%	42%	40%	40%	35%	38%	36%
PM Peak Period		32%	38%	38%	38%	36%	33%	37%	35%
Evening		40%	40%	44%	41%	39%	39%	39%	38%
Night		54%	52%	57%	51%	55%	70%	48%	50%
Total		40%	40%	42%	40%	39%	37%	38%	36%

Source: PSRC travel demand model.

Note: Figures above for freeway and arterial lane miles are from PSRC's travel demand model and differ from other lane mile data derived from PSRC's Geographic Information System or other sources.

## Trip Times and Lengths

Exhibit 1-7 shows the average trip times and lengths.

- When work trips and non-work trips are combined, the Baseline Alternative would have the longest average trip time (22 minutes) and Alternative 5 and the Preferred Alternative would have the shortest average trip time (20 minutes).
- All action alternatives have shorter work trip times than the Baseline Alternative. Compared to the Baseline Alternative (42 minutes), the full Preferred Alternative would result in average work trips of 36 minutes (14% less).

**Exhibit 1-7. Average Daily Trip Times and Lengths (Times in Minutes, Lengths in Miles)**

TRIP TYPE	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
<b>TRIP TIMES (MINUTES)</b>									
Work	36	42	38	38	39	41	42	37	36
Non-work	18	18	18	18	18	18	16	17	17
Total	21	22	21	21	21	21	20	21	20
<b>TRIP LENGTHS (MILES)</b>									
Work	13	13	13	13	13	12	13	13	13
Non-work	6	5	5	5	5	5	4	5	5
Total	7	6	7	7	6	6	6	6	6
<b>PERCENT CHANGE FROM 2006 IN TRIP TIMES</b>									
Work		16%	7%	5%	10%	14%	16%	4%	1%
Non-work		1%	-1%	0%	-2%	-4%	-10%	-5%	-9%
Total		6%	2%	2%	2%	2%	-3%	-2%	-5%
<b>PERCENT CHANGE FROM 2006 IN TRIP LENGTHS</b>									
Work		-2%	-1%	0%	-2%	-6%	-5%	-4%	-3%
Non-work		-11%	-7%	-3%	-10%	-14%	-22%	-11%	-14%
Total		-8%	-4%	-1%	-7%	-10%	-16%	-8%	-10%

## Auto Travel — Vehicle Miles Traveled, Vehicle Hours Traveled, and Delay

Total VMT, vehicle hours traveled, and system delay are shown in Exhibit 1-8.

Total daily VMT is projected to grow through 2040 for each alternative. Compared to the base year 2006, total daily VMT would increase from 79 million miles to between 94 million and 111 million miles. Total regional VMT growth would be the least (18%) in Alternative 5 and the most (39%) in Alternative 2.

From 1990 to 2006, the region's per capita VMT remained fairly stable, at about 22.5 miles per day. Results of the travel demand model for the action alternatives indicate this trend will continue and will actually decrease over the coming 30 years. Daily VMT per capita is projected to decrease from 22.5 miles in the base year for all alternatives. Contributing factors to this decrease include increases in transit use, ridesharing, walking and bicycling trips, and shorter average trip lengths.

- Alternative 5 would result in the greatest per capita VMT (18.9%) decrease from the current 22.5 miles to 18.9 miles.
- Alternative 2 would have only a very slight reduction in per capita VMT (1%) from 22.5 to 22.2 miles.
- All other alternatives would reduce per capita VMT from 5% to 10% by 2040.

**Exhibit 1-8. Auto Travel (Average Daily Vehicle Miles Traveled, Vehicle Hours Traveled, Delay Hours)**

SCENARIO	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
<b>VEHICLE MILES AND HOURS TRAVELED</b>									
VMT	79,457,000	102,519,000	106,628,000	110,801,000	104,058,000	101,642,000	94,063,000	102,539,000	99,511,000
VMT per Capita	22.5	20.6	21.4	22.2	20.9	20.4	18.9	20.6	19.9
VHT	2,962,000	4,241,000	4,220,000	4,274,000	4,007,000	4,037,000	3,685,000	3,843,000	3,607,000
<b>VEHICLE DAILY HOURS</b>									
Freeway	281,000	513,000	469,000	458,000	224,000	215,000	136,000	190,000	141,000
Arterial	560,000	932,000	884,000	884,000	943,000	1,011,000	897,000	866,000	749,000
Total Delay	841,000	1,445,000	1,353,000	1,341,000	1,167,000	1,226,000	1,034,000	1,055,000	890,000
Delay per Capita (min.)	14.3	17.4	16.3	16.1	14.0	14.7	12.4	12.7	10.7
<b>CHANGE FROM 2006 IN VEHICLE MILES AND HOURS TRAVELED</b>									
VMT		29%	34%	39%	31%	28%	18%	29%	25%
VMT per Capita		-9%	-5%	-1%	-7%	-10%	-16%	-9%	-12%
VHT		43%	42%	44%	35%	36%	24%	30%	22%
<b>CHANGE FROM 2006 IN VEHICLE DELAY HOURS</b>									
Freeway		83%	67%	63%	-20%	-24%	-52%	-32%	-50%
Arterial		66%	58%	58%	68%	81%	60%	55%	34%
Total		72%	61%	60%	39%	46%	23%	25%	6%
Delay per Capita		21%	14%	13%	-2%	3%	-13%	-11%	-25%

Total vehicle hours traveled (VHT) are a product of total VMT and average travel speed.

- All alternatives would increase daily VHT from 3 million hours per day in the base year 2006 to between 3.6 million and 4.3 million in 2040.
- Alternative 2 would experience the highest level of VHT (4.3 million, an increase of 44%), while the Preferred Alternative would have the lowest (3.6 million, an increase of 22%).
- Increases in total delay would range from 6% in the Preferred Alternative to 72% in the Baseline Alternative, while delay on arterials would grow by between 34% and 81%.
- Freeway delay differs substantially among the alternatives. The Baseline Alternative and Alternatives 1 and 2 increase delay over 2006 levels, while Alternatives 3, 4, 5, and the Preferred Alternative reduce freeway delay. The freeway delay differences are a result of several factors, including increased vehicle trips and use of tolling and/or travel demand management.

## Vehicle Speeds

Average daily vehicle speeds by facility type and time period are shown in Exhibit 1-9.

- Arterial speeds are predicted to decrease from 22 mph in 2006 to a range from 20 to 22 mph for all alternatives in 2040.
- Differences among the alternatives are not significant, with all peak hour speeds ranging from 22 to 25 mph and non-peak speeds ranging from 25 to 29 mph

In contrast, freeway travel speeds are projected to vary considerably across the alternatives. From 2006, some alternatives show a decrease in speed and others show an increase.



- Alternatives 3, 4, 5, and the Preferred Alternative show freeway speed increases, ranging from 45 to 49 mph in 2040 compared to 41 mph for the base year 2006. The freeway speed increases are a result of several factors including transit system improvements, tolling, and other travel demand management strategies.

Alternatives 1 and 2 have freeway speed decreases ranging from 38 to 39 mph compared to 41 mph for 2006.

#### Exhibit 1-9. Auto Performance (Average Daily Speeds by Facility Type and Time Period)

SCENARIO	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
<b>AUTO SPEEDS</b>									
Daily: Freeway	41	35	38	39	45	45	48	47	49
Daily: Arterial	22	20	20	20	20	20	21	21	22
Peak: Freeways & Arterials	24	22	22	23	23	23	23	24	25
Off-peak: Freeways & Arterials	29	25	27	28	28	26	26	28	29
<b>PERCENT CHANGE FROM 2006 IN SPEEDS</b>									
Daily: Freeway		-14%	-8%	-4%	11%	10%	17%	15%	21%
Daily: Arterial		-8%	-6%	-7%	-8%	-9%	-5%	-6%	-1%
Peak: Freeways & Arterials		-10%	-8%	-5%	-4%	-5%	-4%	0%	4%
Off-peak: Freeways & Arterials		-11%	-5%	-3%	-3%	-9%	-8%	-1%	1%

#### Travel Mode Share

Average daily person trips by travel mode for all alternatives are shown in Exhibit 1-10.

- Work trips by transit are much higher (10% in 2006) than for non-work trips and this share is projected to increase with all alternatives, ranging from 15% in Alternative 2 to 19% in Alternative 5 and the Preferred Alternative.
- For non-work trips, transit's share is approximately 2% for all alternatives. For the base year, the 2006 transit share of non-work trips was 1%.
- When work and non-work trips are combined, transit's share varies from a low of 4% for the Baseline Alternative and Alternative 2, to a high of 5% for Alternative 5 and the Preferred Alternative. Transit share of all trips in the base year 2006 was 3%.
- Work trips by carpool, HOV, and walking and bicycling are also projected to increase their shares in the action alternatives compared to the Baseline Alternative.
- The single-occupant vehicle share is projected to decrease from 65 to 70% compared to 75% for the base year 2006.

**Exhibit 1-10. Mode Share for Work, Non-Work, and All Trips**

MODE SHARE	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
<b>WORK TRIPS</b>									
Single-occupant Vehicle (SOV)	75.3%	69.5%	68.2%	70.3%	68.5%	67.5%	65.2%	67.1%	65.1%
Carpool – HOV	8.9%	8.6%	8.3%	8.3%	9.1%	9.4%	9.0%	9.1%	9.4%
Transit	10.4%	16.0%	16.7%	15.4%	16.2%	16.9%	19.0%	17.4%	19.0%
Walk/Bike	5.5%	5.9%	6.8%	6.0%	6.2%	6.3%	6.8%	6.5%	6.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>NON-WORK TRIPS</b>									
SOV	37.2%	38.6%	38.4%	38.9%	38.3%	38.0%	37.4%	37.9%	37.4%
Carpool – HOV	49.9%	46.3%	46.5%	46.6%	46.6%	46.6%	45.6%	46.6%	46.6%
Transit	1.4%	1.8%	2.4%	2.0%	2.0%	2.1%	2.4%	2.4%	2.5%
Walk/Bike	11.4%	13.3%	12.7%	12.6%	13.0%	13.3%	14.6%	13.1%	13.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>ALL TRIPS</b>									
SOV	43.4%	43.7%	43.4%	44.2%	43.4%	43.0%	42.0%	42.8%	42.0%
Carpool – HOV	43.3%	40.0%	40.1%	40.1%	40.3%	40.4%	39.5%	40.3%	40.4%
Transit	2.9%	4.2%	4.8%	4.2%	4.4%	4.5%	5.2%	4.9%	5.3%
Bike/walk	10.4%	12.0%	11.7%	11.5%	11.9%	12.1%	13.3%	12.0%	12.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**Transit Travel**

Transit ridership for each alternative is summarized in Exhibit 1-11. Compared to the Baseline Alternative, the action alternatives have higher transit boardings in nearly every category and higher total transit boardings.

Alternative 5 and the Preferred Alternative result in substantially higher transit ridership than the 2006 base year: ferry ridership is up by 351%, commuter and light rail ridership by over 3,000%, and bus ridership by 94%. The full Preferred Alternative was projected to have increases of 241%, 3,155%, and 106% in ferry, rail, and bus ridership, respectively.

**Exhibit 1-11. Transit Travel (Average Daily Boardings by Mode)**

TRANSIT TYPE	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
<b>TRANSIT BOARDINGS</b>									
Ferry	11,800	37,600	38,900	37,700	45,100	46,500	53,200	36,700	40,200
Rail	5,800	151,300	155,500	159,200	135,800	147,200	208,500	164,400	188,800
Bus	367,500	599,900	703,600	592,500	646,900	662,900	712,400	717,100	756,400
Total	385,100	788,800	898,100	789,400	827,800	856,600	974,100	918,300	985,400
<b>PERCENT CHANGE FROM 2006 IN TRANSIT BOARDINGS</b>									
Ferry		219%	230%	219%	282%	294%	351%	211%	241%
Rail		2,509%	2,581%	2,645%	2,241%	2,438%	3,495%	2,734%	3,155%
Bus		63%	91%	61%	76%	80%	94%	95%	106%
Total		105%	133%	105%	115%	122%	153%	138%	156%

## Ferry Travel

Ferry ridership for each alternative is summarized in Exhibit 1-12. The number of passengers and autos using the ferry system for each alternative would have implications for other transportation modes, mainly the roadway and transit systems, but also for the walking and bicycling system. Auto ferry impacts would result from increased vehicular traffic on the roadways serving ferry terminals. Passenger ferry activity would increase the need for connecting transit service at passenger ferry terminals, as well as investments in walking and bicycling facilities to serve passengers.

- Total daily boardings on the ferry system would range from almost 68,000 in the Baseline Alternative to 88,000 in Alternative 5, a 30% increase over the Baseline Alternative and a 146% increase over 2006.
- Walk-on trips are projected to increase sharply in response to new passenger ferry service, increasing between 219% in the Baseline Alternative and Alternative 2 to over 350% in Alternative 5.
- Drive-on traffic would increase the most (58%) with Alternative 2 and the least (5%) with Alternative 3.

**Exhibit 1-12. Ferry Travel (Average Daily Person Trips by Boarding Mode)**

SCENARIO	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
<b>AUTO AND TRANSIT FERRY PERSON TRIPS</b>									
Ferry Walk-ons	11,800	37,600	38,900	37,700	45,100	46,500	53,200	36,700	40,200
Ferry SOV	17,400	22,300	19,500	21,700	22,900	24,000	24,200	21,200	21,400
Ferry Carpool	4,600	4,900	8,100	5,800	5,900	4,800	8,200	7,200	7,200
Ferry Trucks	1,900	2,900	2,300	3,000	2,000	2,200	2,400	2,200	2,300
Total	35,700	67,700	68,800	68,200	75,900	77,500	88,000	67,300	71,100
<b>PERCENT CHANGE FROM 2006 IN FERRY BOARDINGS</b>									
Ferry Walk-ons		219%	230%	219%	282%	294%	351%	211%	241%
Ferry Drive-ons		53%	21%	58%	5%	16%	26%	28%	29%
Total		90%	93%	91%	113%	117%	146%	89%	99%

## Nonmotorized Trips

Total nonmotorized trips (bicycling and walking) are shown in Exhibit 1-13.

- Compared to the Baseline Alternative, all action alternatives would have more nonmotorized trips, other than Alternative 2.
- Daily work trips via walking and bicycling in the year 2040 would range from 508,000 for Alternative 2 (92% more than 2006) to 627,000 for Alternative 5 (137% more than 2006). Walking and bicycling trips to work are projected to increase from 103% to 130% in the other alternatives.
- Most daily walking and bicycling trips are non-work related (about 80% of all trips). In 2006, non-work walking and bicycling trips totaled 1,447,000. The alternatives would all result in increased non-work walking and bicycling trips, ranging from a 58% increase in Alternative 2 to an 85% increase in Alternative 5.

**Exhibit 1-13. Nonmotorized Trips (Average Daily Walking and Bicycling Trips)**

TRIP TYPE	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
<b>WALK, BICYCLE, AND "WALK TO TRANSIT" TRIPS</b>									
Work	265,100	538,200	572,000	508,200	540,700	557,200	627,200	571,100	609,700
Non-work	1,447,000	2,381,400	2,383,500	2,293,100	2,373,200	2,428,900	2,679,000	2,440,300	2,515,500
Total	1,712,200	2,919,600	2,955,500	2,801,300	2,913,800	2,986,100	3,306,200	3,011,400	3,125,100
<b>PERCENT CHANGE FROM 2006</b>									
Work		103%	116%	92%	104%	110%	137%	115%	130%
Non-work		65%	65%	58%	64%	68%	85%	69%	74%
Total		71%	73%	64%	70%	74%	93%	76%	83%

The number of new off-road walking and bicycling facilities vary significantly among the alternatives (refer to Exhibit 1-14).

- The Baseline Alternative would add 30 miles of new facilities to the 570 miles of off-road facilities existing in the base year 2006.
- Alternatives 1 to 4 would each increase the system by just over 30%. The Preferred Alternative would add a significantly larger number of new facilities (553 miles), nearly doubling the off-road facilities between 2006 and 2040.

These quantities do not include existing or potential future sidewalks and bicycle lanes adjoining the region's roadways.

**Exhibit 1-14. Investment in Off-road Walking and Off-road Bicycling Facilities (Miles)**

	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
New miles of facilities		30	177	175	170	175	488	348	553
Total miles of facilities (2040)	570	600	747	745	740	745	1,058	918	1,123

**Accident Cost Savings**

Accident cost savings result from improved safety (reduced numbers and severity of traffic accidents) on the transportation system. Benefits are measured in reduced property damage, reduced injury accidents, and reduced accidents with fatalities. Annual accident cost savings for all alternatives are shown in Exhibit 1-15.

Alternatives 1 through 3 and the Preferred Alternative (Constrained) show lower accident savings (higher accident costs) than the Baseline Alternative. Alternative 4 shows no measurable difference in accident cost (or savings) compared to the Baseline Alternative, while the full Preferred Alternative shows modest accident reduction savings benefits.

This analysis does consider accident reductions that can be achieved with targeted safety programs such as Washington State's Strategic Highway Safety Plan, Target Zero.

**Exhibit 1-15. Annual Accident Reduction Benefits Compared to the 2040 Baseline Costs (Millions of 2008 Dollars)**

	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
Property Damage Only	-\$5	-\$10	-\$3	\$1	\$9	-\$1	\$2
Injury Accidents	-\$71	-\$134	-\$39	\$0	\$127	-\$20	\$24
Accidents with Fatalities	-\$17	-\$33	-\$10	\$0	\$31	-\$5	\$6
Total	-\$94	-\$177	-\$52	\$1	\$168	-\$26	\$32

## FREIGHT AND GOODS

Alternatives 2 and 3 would provide significant added capacity along heavy freight corridors (SR 509 and SR 167), providing freight mobility benefits. Alternatives 3, 4, 5, and the Preferred Alternative would toll all, or portions of, the highway system and reduce average freeway delay, providing benefits to freight users.

Other freight benefits are reflected throughout aggregate performance of the road network through the measurement of user benefits. Truck freight-related user benefits increase as a share of total user travel benefits with Alternatives 3, 4, 5, and the Preferred Alternative. On a per trip basis, medium and heavy trucks would receive the greatest benefits. While the full Preferred Alternative generates the greatest total benefit to all four user categories, Alternative 5 would produce the greatest per trip benefit for heavy trucks.

Freight benefits would account for less than 50% of total benefits with Alternatives 1 and 2, compared to 52% for Alternative 3, 64% for Alternative 4, and 68% for Alternative 5. Alternative 3 would have the greatest overall user benefit and Alternatives 4 and 5 would have the greatest benefit to freight users.

### What are user benefits?

Benefits to users include travel time savings, travel reliability benefits, changes to vehicle ownership, and operating costs and other changes to consumer surplus that result from tolling and pricing policies.

For more information about the methodology used to calculate user benefits, refer to Appendix D: Policy Analysis and Criteria Evaluation Report.

**Exhibit 1-16. Commercial Travel Benefits by Vehicle Type (Millions of 2008 Dollars)**

VEHICLE TYPE	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
Light Commercial	\$122	\$160	\$263	\$270	\$314	\$318	\$375
Medium Truck	\$358	\$430	\$867	\$1,012	\$1,138	\$987	\$1,154
Heavy Truck	\$499	\$602	\$1,182	\$1,322	\$1,478	\$1,177	\$1,399
Total Commercial	\$979	\$1,192	\$2,312	\$2,604	\$2,930	\$2,482	\$2,928
Share of Commercial	46%	42%	52%	64%	68%	40%	37%
Passenger	\$1,130	\$1,673	\$2,100	\$1,459	\$1,388	\$3,747	\$4,886
Total Users	\$2,109	\$2,865	\$4,412	\$4,063	\$4,318	\$6,229	\$7,814

## LAND USE, POPULATION, EMPLOYMENT, AND HOUSING

### Impacts Common to All Alternatives

The amount of population and employment growth does not vary among alternatives. From 2006 to 2040, all assume an additional 1.5 million persons, an additional 1.2 million jobs, and approximately 800,000 additional housing units. In addition, all seven of the alternatives are consistent with VISION 2040. Therefore, none of the alternatives would result in impacts to land use, employment, population, or housing beyond those described in the VISION 2040 Final Environmental Impact Statement.

### Impacts Specific to Individual Alternatives

PSRC has performed an analysis of the development pattern changes that could result from the transportation alternatives and concluded that none of the action alternatives would substantively alter future land use and development patterns from the Baseline Alternative.



## AIR QUALITY AND CLIMATE CHANGE

### What does

### *maintenance status mean?*

Areas that have violated any of the National Ambient Air Quality Standards are designated “nonattainment.” Once these areas have subsequently met and maintained the standard for a period of time, they are redesignated as “maintenance” areas.

### *Impacts Common to All Alternatives*

All of the alternatives remain below the motor vehicle emissions budgets for carbon monoxide and particulate matter less than 10 microns in diameter (PM<sub>10</sub>), which are the two pollutants for which the region is in maintenance status and to which conformity must be demonstrated. The region is currently in attainment of the new 8-hour ground-level ozone standard, but a portion of the region was recently designated nonattainment to the fine particulate standard (PM<sub>2.5</sub>). PSRC is working with the region’s air quality consultation partners to prepare analyses and a plan to bring the region back into attainment to this pollutant. As shown in Exhibit 1-17, emission trends compared to the base year 2006 show a decrease for the criteria pollutants but an increase for carbon dioxide. As described in Chapter 6: Air Quality

and Climate Change, regulatory and technological improvements have played a significant role in the declining trend in these emissions. Because carbon dioxide emissions from mobile sources are more directly related to the amount of carbon in the fuel and the amount of fuel burned, the trend for these emissions is different than that of the other pollutants. The criteria pollutants are more affected by vehicle emission control technologies and improvements in fuel combustion. Carbon is the main component of petroleum fuels; therefore, carbon dioxide emissions are less affected by these technologies and more so by improving the fuel economy of vehicles and lowering the carbon content of fuels.

### *Impacts Specific to Individual Alternatives*

Compared to the Baseline Alternative, Alternative 2 results in the largest increase in emissions for all pollutants, primarily due to the increase in vehicle miles traveled for this alternative. Alternative 1 also results in an increase of emissions for all pollutants compared to the Baseline Alternative. Alternatives 3 and 4 result in a mix of increases and decreases, depending on the pollutant. Alternative 5 results in the least emissions for all pollutants, again primarily due to the decrease in VMT from the Baseline Alternative. The Preferred Alternative reduces emissions of all pollutants compared to the Baseline Alternative. The Preferred Alternative has lower emissions of all pollutants than Alternatives 1 through 4, while emissions are higher than in Alternative 5. The results from the Preferred Alternative are closest to the results of Alternative 5 than any of the other alternatives. The financially constrained portion of the Preferred Alternative has higher emissions than the full Preferred Alternative, and demonstrates a mix of increases and decreases compared to the other alternatives, depending on the pollutant.

**Exhibit 1-17. Emissions (Annual Tons)**

	2006 BASE YEAR	BASELINE ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA-C	PA
CO <sub>2</sub> Mobile	17,158,000	23,648,000	23,708,000	24,020,000	22,789,000	22,568,000	21,257,000	22,308,000	21,526,000
CO <sub>2</sub> Buildings	8,893,000	13,176,000	13,154,000	13,086,000	13,105,000	13,136,000	13,169,000	13,245,000	13,141,000
Total CO <sub>2</sub>	26,051,000	36,824,000	36,862,000	37,106,000	35,894,000	35,704,000	34,426,000	35,553,000	34,667,000
CO	497,400	387,800	402,200	418,200	394,600	386,300	354,600	387,600	374,900
NO <sub>x</sub>	57,900	13,700	14,200	14,700	14,100	13,900	13,000	13,900	13,500
VOC	34,500	17,800	18,100	18,600	17,500	17,300	15,900	17,000	16,300
PM <sub>2.5</sub>	1,770	520	540	550	530	520	490	530	510

## NOISE

### *Impacts Common to All Alternatives*

All alternatives contain new transportation facilities that would generate noise. Noise during construction could be bothersome to nearby residents and businesses. Construction noise would vary widely both in range and hours over

the course of implementation of the program. Individual projects would generate disturbances in their general vicinity during construction.

### *Impacts Specific to Individual Alternatives*

The alternatives contain varying levels of new transportation infrastructure and it is likely that those with the most new infrastructure would result in the greatest noise effects. Alternative 2 contains the highest number of new miles of road and rail, while the Baseline Alternative contains the lowest, followed by Alternative 1. Therefore, Alternative 2 would likely result in the most noise effects and the Baseline Alternative would likely result in the fewest.

Of the action alternatives, Alternative 1 would likely result in the lowest number of noise effects. The number of effects resulting from Alternatives 3, 4, and 5 would likely fall between the overall number of effects expected for Alternatives 1 and 2.

All alternatives also increase total VMT compared to the 2006 base year. At a regional scale, the VMT increase would increase the relative amount of noise generated by the transportation system.

The Preferred Alternative includes the second-greatest number of new miles of roads and rail. Therefore, the Preferred Alternative would likely result in the second-greatest number of noise effects. However, most of the new miles of roads and rail would be built along existing transportation corridors. New transportation facilities constructed in existing transportation corridors are less likely to result in negative noise effects than those built in new corridors. Conversely, the Preferred Alternative adds the most miles of new freeway and arterial lane miles in new corridors. Therefore, noise effects from the Preferred Alternative in new corridors would likely be higher than other alternatives.

The Preferred Alternative includes the greatest number of miles of nonmotorized facilities, which include bicycle and recreation trails. Projects that expand and enhance nonmotorized travel often result in positive noise effects by providing quieter alternatives to vehicular travel.

## VISUAL AND AESTHETIC RESOURCES

### *Impacts Common to All Alternatives*

All of the alternatives affect the built and natural environment through new infrastructure, at least to the level found in the Baseline Alternative. However, specific effects on visual resources would depend on the nature of the existing landscape and the proximity of proposed transportation improvements to sensitive resources and viewpoints. Individual projects can also incorporate measures to avoid and/or minimize potential impacts to visual resources, and add features that improve the existing visual character of an area.

Particulate matter is the primary cause of reduced visibility or haze affecting specific national park and wilderness areas. Ground-level ozone (also known as smog) can also cause reduced visibility. This decrease would result in a positive effect on visibility and views to important landmarks such as Mount Rainier for all alternatives. All alternatives decrease particulate matter and the precursor pollutants for ozone (nitrogen oxides and volatile organic compounds) compared to the 2006 base year.

### *Impacts Specific to Individual Alternatives*

The alternatives contain varying levels of new transportation infrastructure and it is likely that those with the most new infrastructure would result in the greatest effect on visual and aesthetic resources. Alternative 2 contains the greatest number of new miles of road and rail, while the Baseline Alternative contains the fewest. Of the action alternatives, Alternative 1 contains the fewest number of new miles of roads and rail. Therefore, Alternative 2 would likely result in the highest number of effects on visual and aesthetic resources and the Baseline Alternative would likely result in the lowest number. Among the action alternatives, Alternative 1 would likely result in the lowest number of effects on visual and aesthetic resources. The number of effects resulting from Alternatives 3, 4, and 5 would likely fall between the overall number of effects expected for Alternatives 1 and 2.

The Preferred Alternative includes the second-greatest number of new miles of roads and rail. Therefore, the Preferred Alternative would likely result in the second-greatest number of effects on visual resources. However, most of the new miles of roads and rail would be built along existing transportation corridors. New transportation facilities constructed in existing transportation corridors are less likely to negatively affect visual resources than those built in new corridors. Conversely, the Preferred Alternative adds the most miles of new freeway and arterial lane miles in new corridors. Therefore, visual effects from the Preferred Alternative in new corridors would likely be higher than other alternatives.

The Preferred Alternative includes the greatest number of miles of nonmotorized facilities, which include bicycle and recreation trails. Projects that expand and enhance nonmotorized travel often result in positive visual effects by providing more viewpoints for visual resources without diminishing the nearby visual environment.

## WATER QUALITY AND HYDROLOGY

### *Impacts Common to All Alternatives*

In terms of hydrology and water quality, all alternatives would result in new or replaced impervious surfaces, including impervious surfaces that generate pollutants. It should be noted that new infrastructure projects are often built on existing impervious surface, so the new projects offer an opportunity to improve existing stormwater treatment methods, resulting in improved water quality. These opportunities would be discussed in detail in future project-level environmental review. For the purposes of this analysis, however, new impervious surface is used to provide a rough comparison among the plan alternatives. New impervious surfaces can increase the frequency of peak flow rates and the volume of stormwater runoff. Both of these could result in increases in impacts to stream beds, stream banks, and altered wetlands. Eroded sediment can be deposited as the stream slope decreases, which could lead to drainage problems and local flooding. In addition, large areas of new impervious surface could reduce groundwater recharge and summer low flow rate, and increase summer water temperatures.

The construction-related impacts would be temporary and could be minimized or prevented through the proper implementation of best management practices. Construction impacts could include erosion and sedimentation, compaction, and soil disturbance during staging, in-water construction for culverts or bridges, and dewatering.

### *Impacts Specific to Individual Alternatives*

#### **What are the limitations of the proximity analysis?**

*The purpose of the proximity analysis was to identify relative potential for impacts among alternatives, not to identify absolute numbers of potential impacts. As these projects are implemented, the actual number of impacts would be far fewer than shown, since the projects would be designed to avoid these impacts.*

Total acres of impervious surface due to new lane miles and park-and-ride stalls were assumed to be a surrogate for impacts caused by new impervious surfaces. Alternative 2 contains the greatest number of new acres of impervious surface and the Preferred Alternative has the second-greatest number. The Baseline Alternative contains the fewest number of new acres of impervious surface. Of the action alternatives, Alternative 1 contains the fewest number of new acres of impervious surface. Therefore, Alternative 2 would likely result in the highest number of effects on water quality and hydrology and the Baseline Alternative would likely result in the lowest number. Among the action alternatives, Alternative 1 would likely result in the lowest number of effects on water quality and hydrology. The number of effects resulting from Alternatives 3, 4, 5 and the Preferred Alternative would likely fall between the overall number of effects expected for Alternatives 1 and 2.

A proximity analysis (refer to Exhibit 1-18) of the projects included in each alternative found that the Preferred Alternative would have the most projects located within Federal Emergency Management Agency (FEMA) flood areas, while the Baseline Alternative would have the fewest. Of the action alternatives, Alternative 1 would have the fewest projects located within FEMA flood areas.

## Exhibit 1-18. Projects in the Vicinity of Flood Zones

PROJECT TYPE	BASELINE						PA
	ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	
Transit, Roadway, & Ferry Related Projects	50	82	205	113	117	106	232
Nonmotorized Projects	7	19	41	39	41	108	105*

\* Alternative 5 included many small bike concepts in urban centers throughout the region. During review of the DEIS alternatives, it was discovered that many of these concepts were already built, others were unable to find a sponsor, and others were deleted for other reasons. Concurrently, a smaller number of long nonmotorized projects were added to the Preferred Alternative that weren't in Alternative 5. This explains why the total nonmotorized mileage increased for the Preferred Alternative relative to Alternative 5, but the number of project proximity impacts decreased.

## ECOSYSTEMS AND ENDANGERED SPECIES ACT ISSUES

### Impacts Common to All Alternatives

Habitat loss/fragmentation, pollution, and alterations of ecological processes would be similar for all alternatives. Much of the region's transportation system is already in place, and the most common type of improvements for all alternatives involve the replacement or expansion of existing facilities within the urban area.

Construction impacts could include vegetation removal, soil disturbance, potential soil erosion, increased impervious surface, and increased sedimentation in surface waters.

### Impacts Specific to Individual Alternatives

A proximity analysis of the projects included in each alternative found that the Preferred Alternative would have the most projects located within existing significant habitat areas, while the Baseline Alternative would have the fewest. Of the action alternatives, Alternative 1 would have the fewest projects located within existing habitat areas (refer to Exhibit 1-19).

## Exhibit 1-19. Potential Project Impacts to Significant Habitat Areas

PROJECT TYPE	BASELINE						PA
	ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	
Transit, Roadway, & Ferry Related Projects	51	98	210	126	131	128	243
Nonmotorized Projects	10	28	42	40	42	111	109*

\* Alternative 5 included many small bike concepts in urban centers throughout the region. During review of the DEIS alternatives, it was discovered that many of these concepts were already built, others were unable to find a sponsor, and others were deleted for other reasons. Concurrently, a smaller number of long nonmotorized projects were added to the Preferred Alternative that weren't in Alternative 5. This explains why the total nonmotorized mileage increased for the Preferred Alternative relative to Alternative 5, but the number of project proximity impacts decreased.

## ENERGY

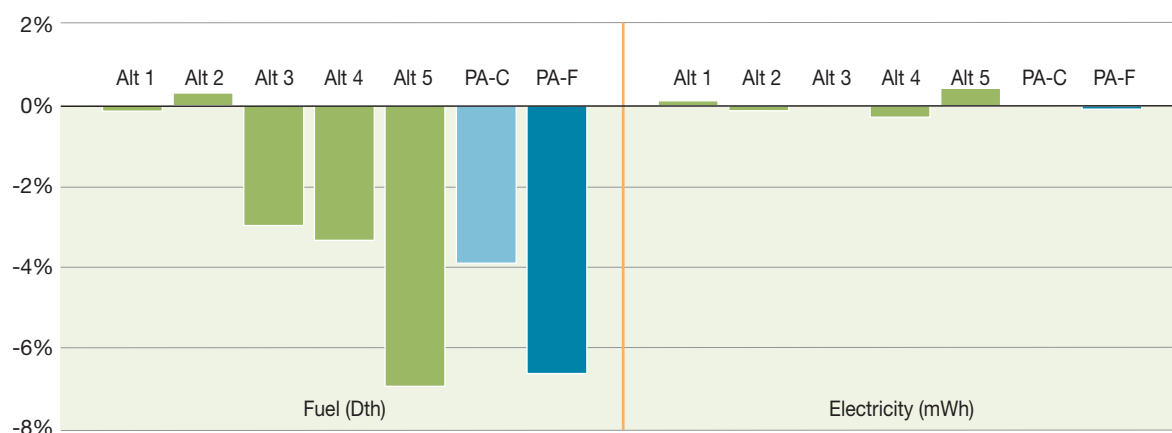
### Impacts Common to All Alternatives

All of the alternatives would provide additional transportation infrastructure, including roadway, transit, and other investments that would have an impact on energy consumption, both in terms of construction and operations. Many of these investments would provide more alternatives to driving alone, which could result in more efficient energy consumption. As shown in Exhibit 1-20, the difference among all the alternatives for electricity use for vehicles and buildings is minimal.

### Impacts Specific to Individual Alternatives

As shown in Exhibit 1-20, the Baseline Alternative and Alternatives 1 and 2 have similar fuel use for vehicles and buildings, while Alternatives 3 and 4 have lower fuel use than the Baseline Alternative, but not as low as Alternative 5. Alternative 5 has the lowest fuel consumption. The Preferred Alternative (Constrained) and full Preferred Alternative have slightly more fuel consumption than Alternative 5.

**Exhibit 1-20. Fuel and Electricity Use for Vehicles and Buildings, Change from the 2040 Baseline**



## EARTH

### *Impacts Common to All Alternatives*

The entire central Puget Sound region may be subjected to earthquakes and is considered to have a moderate to high seismic risk. Facilities associated with the ferry system, as well as road and transit facilities located near the coast, could be subject to potential tsunami hazards following earthquakes. Much of the region's infrastructure already occurs in areas subject to geologic hazards. Because all alternatives build on the existing system, they would be subject to impacts from geologic hazards that could potentially occur at any location in the region. Potential impacts that could occur during construction include landslides, vibration, dewatering, and erosion, and water quality impacts from construction over or near water.

### *Impacts Specific to Individual Alternatives*

All of the alternatives contain similar amounts of new infrastructure, measured as a percentage of the total system (3 to 9%). Alternative 2 contains the greatest number of new miles of road and rail, and the Preferred Alternative contains the second-greatest number of new miles. The Baseline Alternative contains the fewest number of new miles. Of the action alternatives, Alternative 1 contains the fewest new miles of roads and rail. Therefore, Alternative 2 would likely result in the highest number of seismic hazards, with the Preferred Alternative slightly lower, and the Baseline Alternative would likely result in the lowest number. Among the action alternatives, Alternative 1 would likely result in the lowest number of seismic hazards. The number of effects resulting from Alternatives 3, 4, 5, and the Preferred Alternative would likely fall between the overall number of effects expected for Alternatives 1 and 2.

All alternatives also increase total vehicle trips compared to the 2006 base year, although Alternative 2 is the only action alternative with a higher number of vehicle trips than the Baseline Alternative. The higher number of trips would increase the impact from an earthquake or other geologic hazard because more vehicles would be exposed to the hazard.

## ENVIRONMENTAL HEALTH

### *Impacts Common to All Alternatives*

The development of new or improved transportation facilities included in all the alternatives has the potential for encountering contaminated materials. Operation and maintenance of the region's transportation system could involve the use of materials that can affect environmental functions and human health.



### Impacts Specific to Individual Alternatives

New project locations were compared to the locations of identified hazardous waste sites. The presence of a hazardous materials site in proximity of a planned transportation project does not necessarily increase the risk for negative environmental health effects. In many cases, the construction of new transportation projects includes remediation of nearby hazardous material sites. However, based solely on the proximity between projects and waste sites, the data indicate that the Preferred Alternative would likely result in the highest number of effects on environmental health and the Baseline Alternative would likely result in the lowest number. Based on this location comparison, Alternative 1 was found to have the fewest number of hazardous waste sites within 100 feet of a project. Therefore, among the action alternatives, Alternative 1 would likely result in the lowest number of effects on environmental health (refer to Exhibit 1-21).

**Exhibit 1-21. Projects Within 100 Feet of a Hazardous Materials Site**

PROJECT TYPE	BASELINE						
	ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	PA
Transit, Roadway, & Ferry Related Projects	24	38	56	41	48	48	80
Nonmotorized Projects	1	13	8	8	9	21	15*

\* Alternative 5 included many small bike concepts in urban centers throughout the region. During review of the DEIS alternatives, it was discovered that many of these concepts were already built, others were unable to find a sponsor, and others were deleted for other reasons. Concurrently, a smaller number of long nonmotorized projects were added to the Preferred Alternative that weren't in Alternative 5. This explains why the total nonmotorized mileage increased for the Preferred Alternative relative to Alternative 5, but the number of project proximity impacts decreased.

## PUBLIC SERVICES AND UTILITIES

### Impacts Common to All Alternatives

Given the minor land use differences among the alternatives, few land-use related effects are expected on public services and utilities from the alternatives. These effects could include solid waste generation, sanitary sewer generation, water supply usage, and increased emergency service responses. There could be differences among the alternatives in terms of safety, access, and mobility for fire, police, and health services, as well as safety, access, and mobility to schools. Most public service providers would experience relatively few long-term adverse effects from the alternatives. In most cases, public services would benefit from improved transportation services and facilities, although at different levels among the transportation alternatives. Effects on public services and utilities during construction may be unavoidable, but would be temporary. General public service vehicles such as school buses, mail delivery vehicles, and solid waste collection trucks would experience delays due to traffic congestion. Emergency service vehicles could also experience increased delays, and response calls could potentially increase as congestion contributes to additional accidents.

#### **What are the limitations of the proximity analysis?**

*The purpose of the proximity analysis was to identify relative potential for impacts among alternatives, not to identify absolute numbers of potential impacts. As these projects are implemented, the actual number of impacts would be far less than shown, since the projects would be designed to avoid these impacts.*

### Impacts Specific to Individual Alternatives

All of the action alternatives are estimated to have less delay than the Baseline Alternative. Among the action alternatives, Alternative 1 is estimated to result in the most delay and Alternative 5 is estimated to result in the least delay. Therefore, Alternative 1 would likely result in the most negative effect to the provision of public services. Alternative 5, which is estimated to reduce delay below the 2006 base year in addition to the 2040 Baseline Alternative, would likely result in the most positive effects to the provision of public services.

The Preferred Alternative (Constrained) is estimated to have the second-least delay of the action alternatives. Therefore, the Preferred Alternative (Constrained) would likely result in the second most positive effects to the provision of public services. While the full Preferred Alternative is estimated to have less delay, the constrained portion of the Preferred Alternative is noted here because, as explained in Chapter 3: Plan Alternatives, chapters in this FEIS will address either the full or constrained plan, whichever would have the greater effect upon the environment.

## PARKS AND RECREATION RESOURCES

### Impacts Common to All Alternatives

Some significant unavoidable adverse effects on parks and recreational resources could occur under the alternatives. If acquisition of parkland is required for specific transportation projects, the amount of available parkland may be reduced. Although parks and recreational facilities would typically be avoided, use of parklands or other direct impacts may occur, particularly when other physical constraints limit the location of infrastructure. New transportation facilities on parcels adjacent to designated agricultural and forested lands could induce pressure to convert natural resource lands to urban uses incompatible with their function as open space.

### Impacts Specific to Individual Alternatives

New project locations were compared to the locations of identified parks and recreation resources. Based on the proximity between projects and resources, the data indicate that the Preferred Alternative would likely result in the most effects on parks and recreation resources and the Baseline Alternative would likely result in the fewest. Among the action alternatives, Alternative 1 would likely result in the fewest effects on parks and recreation resources (refer to Exhibit 1-22).

**Exhibit 1-22. Projects in the Vicinity of Parks and Open Spaces**

PROJECT TYPE	BASELINE						PA
	ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	
Transit, Roadway, & Ferry Related Projects	8	14	37	21	19	24	42
Nonmotorized Projects	7	29	36	35	36	91	83*

\* Alternative 5 included many small bike concepts in urban centers throughout the region. During review of the DEIS alternatives, it was discovered that many of these concepts were already built, others were unable to find a sponsor, and others were deleted for other reasons. Concurrently, a smaller number of long nonmotorized projects were added to the Preferred Alternative that weren't in Alternative 5. This explains why the total nonmotorized mileage increased for the Preferred Alternative relative to Alternative 5, but the number of project proximity impacts decreased.

## HISTORIC AND CULTURAL RESOURCES

### Impacts Common to All Alternatives

Effects to historic, cultural, and archaeological resources are possible with any of the alternatives. Impacts to historic resources are most likely when land is disturbed as part of constructing new or expanded transportation facilities. Construction activities have the potential to disturb archaeological sites and alter, damage, or remove historic properties.

### Impacts Specific to Individual Alternatives

New project locations were compared to the locations of identified historic and cultural resource sites. Based on the proximity between projects and resources, the data indicate that the Preferred Alternative would likely result in the most effects on historic and cultural resources and the Baseline Alternative would likely result in the fewest. Among the action alternatives, Alternative 1 would likely result in the fewest effects on historic and cultural resources (refer to Exhibit 1-23).

**Exhibit 1-23. Historic, Archeological, or Cultural Resources Within 100 Feet of a Project**

PROJECT TYPE	BASELINE						PA
	ALT	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5	
Transit, Roadway, & Ferry Related Projects	23	32	51	30	45	48	75
Nonmotorized Projects	0	13	7	7	7	29	17*

\* Alternative 5 included many small bike concepts in urban centers throughout the region. During review of the DEIS alternatives, it was discovered that many of these concepts were already built, others were unable to find a sponsor, and others were deleted for other reasons. Concurrently, a smaller number of long nonmotorized projects were added to the Preferred Alternative that weren't in Alternative 5. This explains why the total nonmotorized mileage increased for the Preferred Alternative relative to Alternative 5, but the number of project proximity impacts decreased.

## ENVIRONMENTAL JUSTICE

Environmental Justice analysis is optional under SEPA, however, Metropolitan Planning Organizations follow federal guidance to assess impacts on minority and/or low-income populations in the region.

### *Effects Common to All Alternatives*

All action alternatives include continued expansion of transit and rideshare services, as well as projects that provide improvements for nonmotorized travel. These services, systems, and facilities provide improved mobility at a lower cost than travel by private automobile.

### *Effects Specific to Individual Alternatives*

The equity analysis in Chapter 4 found that due to improved travel times and reliability, all action alternatives would be more beneficial than the Baseline Alternative, for environmental justice populations and the population as a whole.

Tolling could have adverse impacts but could also bring benefits to low-income populations. It is more difficult to determine whether the effect on low-income or minority populations would be considerably more severe or greater in magnitude than the effect suffered by the general population. This difficulty is due to the following factors:

- It is clear that toll payment represents a burden for low-income users. What is not clear, and presents an opportunity for future research, is whether paying for transportation improvements through tolling is more or less equitable than through gas taxes or other traditional funding sources.
- Often, tolling projects are coupled with transportation infrastructure or transit service improvements within the tolled corridor. It is unclear at the plan level whether the benefits of these improvements would outweigh the burden of the tolls.
- Tolling improves mobility, which results in travel time benefits for all populations.

Specific toll rates, facility locations, methods of toll payment, and use of toll revenues are topics likely to be discussed in detail in future project-level environmental review. In some instances, there may be significant unavoidable adverse impacts to specific groups of minority and low-income populations. If so, mitigation would be developed to partially offset these impacts.

## HUMAN HEALTH

This topic was requested for study through public comments received during scoping. Topics that address human health include:

- Safety (incidence of accidents) and avoidance of inactivity (promotion of walking and bicycling trips)
- Air quality
- Environmental health and proximity
- Noise, including potential noise increases from transportation, industry, and other sources in the urban environment
- Water quality
- Proximity and degree of risk of exposure to hazardous materials

These topics are discussed in specific chapters of the FEIS.

## 12. How would these impacts be mitigated?

Mitigation measures are identified for all of elements of the environment in Chapters 4 through 18 of the FEIS.

This FEIS is a plan-level or non-project (rather than a project-level) EIS, per WAC 197-11-442. Accordingly, alternatives are defined and environmental effects are evaluated at a broad level. Similarly, potential measures to mitigate these environmental effects are discussed broadly. More detailed project-specific impacts and mitigation measures will be identified in future project-level review for projects identified in the Transportation 2040 plan that are selected for implementation by their sponsors: WSDOT, transit agencies, counties, and cities.

All of the Transportation 2040 alternatives contain similar project types, so the mitigation measures identified would be similar for all alternatives. However, each alternative contains different quantities of new projects and programs, so the amount of mitigation required could differ by alternative, and would likely correspond to the magnitude of impacts discussed in the response to Question 11.

## 13. What are the next steps?

After the release of the FEIS, PSRC will take the following steps:

- PSRC will continue to collect and review comments on the Draft Transportation 2040 Plan and will present these comments for consideration at the meeting of the General Assembly in spring 2010 (currently scheduled for May 2010).
- Based on a recommendation from PSRC's Transportation Policy Board and the Executive Board, the General Assembly will adopt Transportation 2040.
- Following the adoption of Transportation 2040, a project and program prioritization process will be developed (approximately two years, starting in summer 2010).



## Overview of Contents in the FEIS

The Transportation 2040 FEIS is a plan-level environmental impact assessment consistent with SEPA requirements. Because of the scope of a regionwide proposal that spans a 30-year period, the document is complex, but is presented to highlight the vital information concerning potential impacts. The content is also consistent with the requirements of SEPA non-project actions. The contents are as follows:

### Fact Sheet

1. Executive Summary
2. Introduction and Background
3. Plan Alternatives
4. Transportation
5. Land Use, Population, Employment, and Housing
6. Air Quality and Climate Change
7. Noise
8. Visual Quality and Aesthetic Resources
9. Water Quality and Hydrology
10. Ecosystems and Endangered Species Act Issues
11. Energy
12. Earth
13. Environmental Health
14. Public Services and Utilities
15. Parks and Recreation
16. Historic and Cultural Resources
17. Environmental Justice
18. Human Health

### Appendices:

- A. Transportation 2040 Alternatives Report
- B. Regional Trends and Forecasts
- C. VISION 2040's Multicounty Planning Policies
- D. Policy Analysis and Evaluation Criteria Report
- E. Technical Description of the Modeling Framework
- F. Public Scoping Process
- G. List of Endangered, Threatened, and Sensitive Wildlife Species and Their Habitats
- H. List of Rare Plants
- I. Transportation 2040 Alternatives Analysis Congestion Management Process Report
- J. Environmental Resource Agency Consultation
- K. Data Analysis and Forecasting at the PSRC, New Tools Within an Integrated Modeling Framework
- L. Greenhouse Gas 4-part Strategy
- M. Environmental Justice Public Outreach Summary Report
- N. Public Outreach, Comment, and Response



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