This chapter describes the region’s existing and planned transportation services and infrastructure. It then analyzes how the growth distribution alternatives are served by, and impact, the planned system based on a wide range of transportation performance indicators.

5.3.1 Affected Environment

Expanding and maintaining a safe, efficient and reliable transportation system is critical to the regional and state economy. It is also an important factor in maintaining the quality of life for the people who live in the Puget Sound area and throughout the state. State, local, and regional governments and organizations face the challenge of maintaining, operating, and improving the existing transportation system to accommodate continued economic and population growth and the associated demands on the transportation system.

The initial transportation component of the 1995 VISION 2020 identified the region’s strategies for meeting this challenge and provided a basis for the more detailed planning and investment strategies identified in the region’s Metropolitan Transportation Plan, called Destination 2030. The 1995 VISION was the first major regional attempt to address growth and traffic congestion, and many communities in the region have begun to implement the VISION’s transportation objectives.

Population projections indicate that by 2040, over 5 million people could be living within the four-county region. This potentially translates into millions of additional trips and potentially many more hours of delay on a transportation network that is already crowded. While it is possible to expand transportation capacity (both roadways and transit), it is doubtful that the region has the financial capacity, land supply, or public support to add enough capacity to return the region to service levels of 20 years ago. Congestion, especially during the peak periods, could likely be a part of our future regardless of the growth alternative chosen. However, we can make improvements.

The current regional transportation plan, Destination 2030, has identified needed investments of over $100 billion to preserve, maintain, operate and expand the region’s transportation system. The region has begun implementing that plan, with the first phase of Sound Transit either operating or under construction, the Washington State Legislature investing several billion dollars in highway expansion, and a regional investment package for both a Sound Transit Phase 2 and a roadway proposal from the Regional Transportation Investment District under development for a 2007 public vote. These investments could improve traffic flow at key chokepoints and provide travel options for our growing population. Still, the current plan calls for tens of billions of dollars of additional investments in system expansion to address growth expected up to 2030.

How does this transportation plan perform under the growth alternatives, which account for an additional 10 years of population and job growth? This section evaluates how the different growth alternatives, described in further detail in Chapter 4 – Definition of Alternatives, affect the performance of the planned transportation system.
A. EXISTING AND PLANNED TRANSPORTATION SERVICES AND INFRASTRUCTURE

This section describes the different components of the region’s existing transportation system and the planned improvements to the system as defined in Destination 2030.

The regional facilities and services that make up the existing Metropolitan Transportation System were identified in the 1995 Metropolitan Transportation Plan and updated in 2001 with the adoption of Destination 2030. Metropolitan Transportation System facilities and services are defined both functionally and geographically. A facility or service is part of the Metropolitan Transportation System if it provides access to any activities crucial to the social and economic health of the central Puget Sound region. Facilities that weave parts of the region together by crossing county or city boundaries are critical to the Metropolitan Transportation System. Any link that accesses major regional activity centers, such as an airport, is also an element of the Metropolitan Transportation System.

Facilities in the Metropolitan Transportation System include those from the following transportation systems and programs: (1) roadway system, (2) ferry system, (3) transit systems, (4) nonmotorized system, (5) freight and goods system, (6) intercity passenger rail, (7) regional aviation system, (8) transportation system management programs, and (9) transportation demand management programs. These are illustrated in Figure 5-3-1.

For more detailed maps of these Metropolitan Transportation System components, see Destination 2030’s Technical Appendices (maps 4-1 through 4-6), which can be viewed on PSRC’s Web site at www.psrc.org.

Figure 5-3-2 illustrates the nature and extent of the transportation improvements proposed in Destination 2030 and as described on the subsequent pages.

1. Roadway System

Existing system. The region includes 16,800 miles of roadways ranging from Interstate highways to residential streets, with the interstate system originally created to support national commerce and defense needs. Roadways serve two primary functions: (1) they provide mobility to move goods and people from one location to another and (2) they provide access to land (residences and businesses). The degree to which one of these functions predominates over the other determines a roadway’s functional classification. These functional classifications are hierarchical and comprise the following categories: freeways or expressways, principal arterials, minor arterials, collectors, and local streets.

At one end of the scale, interstate highways primarily move goods and people from one population or economic center to another and have high traffic volumes and speeds. At the other end of the scale, local streets primarily provide direct access to residences and businesses and have lower traffic volumes and speeds. Arterials and collector roadways complete the system and connect the interstate highway network to the local street system.

Destination 2030 planned investments. The plan includes additional capacity and system management enhancements to improve mobility on the region’s highway and arterial roadways. The region’s highest roadway priorities are safety, maintenance and preservation projects, and projects that optimize the use of the existing system (transportation systems management). Roadway capacity expansion projects include the following:

- Over 2,000 miles of new highway and regional arterial lanes to address the region’s worst choke points, to finish projects that have already started and anticipate future problems. This represents an 18 percent increase in regional arterial and state freeway system lane miles.
- 1,000 lane miles of these projects are targeted to be open to traffic within the next 10 years.
- Over 27 new interchanges, 15 new overpasses and 185 upgrades to intersections.

†† The regional roadway component of the Metropolitan Transportation System includes any highway or roadway facility that is part of one of the following three categories: roadways included in the National Highway System (includes all Interstate and U.S. highways), state highways, and principal arterials, either locally identified or officially identified according to the Federal Functional Classification System.
FIGURE 5.3-1: EXISTING METROPOLITAN TRANSPORTATION SYSTEM, 2003

Source: Puget Sound Regional Council
The plan also provides for the adequate maintenance of roadways and the retrofit of critical bridges to meet earthquake standards. The following improvements are planned for these major transportation corridors:

- **Interstate 90: Interstate 5 to Interstate 405** — Major widening to add HOV and general purpose capacity.
- **Interstate 405: Tukwila to Lynnwood** — Major widening to add general purpose capacity.
- **State Route 3: Belfair to Silverdale and Poulsbo to Hood Canal** — Widening to add HOV and general purpose capacity.
- **State Route 9: Woodinville to Arlington** — Widening to add general purpose capacity.
- **State Route 16: Interstate 5 in Tacoma to State Route 3 in Kitsap County** — Widening to add HOV and general purpose capacity, interchange improvements and a freeway monitoring and management system.
- **State Route 18: Interstate 5 to Interstate 90 (Covington to Snoqualmie)** — Interchange construction, widening to add HOV and general purpose capacity and a freeway monitoring and management system.
- **State Route 99: Federal Way to Lynnwood** — New viaduct, widening to add HOV and general purpose capacity, intersection and traffic signal improvements.
- **State Route 167: Puyallup to Port of Tacoma** — Interchange construction and major widening to add HOV and general purpose capacity. Includes a freeway monitoring and management system. Construction of new facility from I-5 to Port of Tacoma.
- **State Route 509: Completion of the corridor from Burien to Interstate 5** — Construction of new roadway.
- **State Route 512: Interstate 5 to State Route 167** — Widening to provide HOV capacity. Includes a freeway monitoring and management system.
- **State Route 520: Seattle to Redmond** — New bridge with HOV capacity, widening to add general purpose capacity, interchange reconstruction.
- **State Route 522: Woodinville to Monroe** — Widening to add HOV capacity, complete interchange and add park and ride lot capacity.
- **US 2: Everett to Skykomish** — Widening to add general purpose capacity.
FIGURE 5-3-2: DESTINATION 2030 MAP, 2003

Source: Puget Sound Regional Council
Within the roadway system is the high-occupancy vehicle system, which includes high-occupancy vehicle lanes on freeways and arterial roadways, limited access ramps to highway high-occupancy vehicle lanes, and high-occupancy vehicle by-pass lanes on metered highway ramps. This system provides a dedicated right-of-way for transit. Depending upon vehicle volumes and the operational characteristics of the roadway, other high occupancy vehicles share the system with transit. These include vanpools and carpools that have two or more passengers (on State Route 520, high-occupancy vehicle lanes are limited to three or more passengers).

The Washington State Department of Transportation (WSDOT) is responsible for the planning and construction of high-occupancy vehicle lanes but coordinates with PSRC, transit agencies, and local jurisdictions for high-occupancy vehicle operations and management. Washington State Department of Transportation has prioritized the freeway system with the identification of the “core” high-occupancy vehicle lanes that serve the central Puget Sound region. The core system represents a subset of Washington State Department of Transportation high-occupancy vehicle lanes that are identified in Destination 2030 and includes high-occupancy vehicle lanes on interstate and limited-access state routes.

When complete in approximately 10 years, the planned high-occupancy vehicle network will consist of 310 lane miles of continuous freeway high-occupancy vehicle lanes, key arterial high-occupancy vehicle lane segments, and access ramps and interconnections. While the existing high-occupancy vehicle system already offers time-savings and more reliable travel times for those commuters using buses and carpools, additional time-savings and reliability could be realized when the high-occupancy vehicle system is complete. It is likely that changes in occupancy requirements and/or some other management strategy, like the implementation of High Occupancy Toll (HOT) lanes, could be required to keep these lanes operating reliably for transit. (HOT lanes allow single-occupant vehicles to access the HOV lane system by paying a toll. The amount of the toll is varied to keep traffic volume at a level that maintains reliable traffic flow.)

2. Ferry System

Existing system. Puget Sound’s ferry transportation system is both a marine highway and high-capacity transit system. It functions as a vehicle-carrying marine highway that moves people and goods across Puget Sound and as a high-capacity transit system moving thousands of passengers in a single vehicle. Washington State Ferries operates 10 ferry routes within the four-county region. Nine of these routes provide service to a mixture of automobiles and walk-on passengers, and the remaining route is reserved exclusively for walk-on passengers. In addition to Washington State Ferries-operated ferries, the following ferry service is provided:

- Kitsap Transit Foot Ferry — Bremerton to Port Orchard (passenger only)
- Pierce County — Steilacoom to Anderson and Ketron Islands (autos and walk-ons)
- Kitsap Ferry Company — Bremerton to Seattle (passenger only)

Ferry terminals can provide an important link between the ferry route and the landside transportation system on both sides of Puget Sound. Terminals are being improved to strengthen the connections between ferries and other forms of transportation, such as bus, rail, automobile, pedestrian, and bicycle. Other terminal facilities supporting these system connections include high-occupancy vehicle lanes for preferential loading, park-and-ride lots, bicycle lockers, and ferry maintenance facilities.

Destination 2030 planned investments. The plan includes capital investments, terminal expansions and upgrades, park-and-ride facilities as well as vessel replacement and expansions. The plan calls for the following enhancements to the ferry system:

- Nine replacement passenger-only vessels and six new passenger-only vessels (while the importance of passenger-only service is recognized, there is currently no resolution regarding the proper entity to provide the service).
- Ten replacement auto-ferries and two new auto-ferries.
- New terminals at Edmonds and Mukilteo.

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2 The ferry component of the Metropolitan Transportation System includes: auto ferries, passenger-only ferries, and all the Washington State Department of Transportation ferry terminals and support facilities.
• Major improvements at Colman Dock in Seattle.
• Service improvements resulting in a 13 percent increase in vehicle capacity and a 24 percent increase in passenger capacity.

3. Transit Systems

*Existing system.* The region is served by both local and regional public transit service. Local transit service is provided by five transit operators serving five transit districts: Community Transit (Snohomish County), Everett Transit, King County Metro Transit, Kitsap Transit, and Pierce Transit. These operators provide fixed-route and demand responsive transit services, as well as vanpool and other alternative transportation services. Together, the five transit operators and the private sector providers offer the following services:

- 416 local fixed transit routes.
- Transit fleet of nearly 2,700 vehicles.
- One waterfront vintage streetcar route (the streetcar is temporarily out of service and service on the route is being provided by buses).
- One private monorail route.
- A park-and-ride inventory with roughly 35,000 parking spaces.
- Almost 5,000,000 annual fixed-route transit service hours.
- Over 1,000,000 annual demand responsive or paratransit service hours.

*Destination 2030 planned investments.* The plan depends heavily on providing more and better public transit service over the next 30 years. Moving from today’s region that is largely auto-dependent to a region where numerous travel options are available and frequently used could require additional investment in public transportation.

Numerous service changes and facility improvements are planned by local transit operators to provide better local service and to support the regional high-capacity transit system. Investments include the following:

- A 40 percent increase in total transit service by the year 2010 and an 80 percent increase over 2000 levels by the year 2030.
- A 30 percent increase in demand responsive or paratransit service by 2010 and a 65 percent increase over 2000 levels by 2030.
- Expansion of regional park-and-ride capacity by 75 percent to meet projected 2010 needs (approximately 18,360 additional stalls) and by 175 percent to meet projected 2030 needs (25,850 stalls in addition to the 2010 expansion).

Beyond local transit service, major improvements are planned as part of the region’s high capacity transit system. Sound Transit, the Central Puget Sound Regional Transit Authority, is responsible for creating and maintaining a mass transit system that connects regional economic and population centers in King, Pierce, and Snohomish counties. Sound Transit has made progress towards completing the following projects identified in *Sound Move* (1996):

- **Light Rail Service.** A light rail link between the Tacoma Dome and downtown Tacoma, called Tacoma Link, has been in operation since August 2003 and currently serves nearly 3,000 riders daily. Sound Move identified plans to construct 25 miles of new electric, light rail transit, known as the Central Link system, connecting SeaTac to Northgate. As of December 2005, Sound Transit is on track to construct and operate a 14-mile Initial Segment that will connect SeaTac, the Rainier Valley, and downtown Seattle by July 2009. By December 2009, a 1.7-mile Airport Link is expected to connect the Initial Segment to Seattle-Tacoma International (Sea-Tac)

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5 The regional transit component of the Metropolitan Transportation System includes: existing and planned high-capacity transit services defined as public transportation services operating on exclusive right-of-way to provide a substantially higher level of passenger capacity, speed and service frequency than typical bus services operating on general purpose roadways; other existing and planned bus services (not considered high-capacity transit) that link major regional destinations and/or provide travel options in highly congested corridors; and existing and planned facilities that provide connections among and between the regional transit services, including large park-and-ride lots (>250 stalls), major bus transit centers, light rail and commuter rail stations, and auto and passenger-only ferry terminals.
Airport. When additional funding becomes available, Sound Transit plans to extend this light rail line from downtown Seattle to Northgate via Capitol Hill, the University District, and Roosevelt.

- **Commuter Rail Service.** The Sounder system currently provides 82 miles of bidirectional, peak-hour, weekday commuter rail service connecting points along existing railroad tracks between Everett, Seattle, Tacoma, and Lakewood. Tacoma-Seattle service began in the fall of 2000 and currently provides three morning and three afternoon trips between seven stations. The Seattle-Everett service began in 2004 and serves two stations with one morning and afternoon trip. Service between Tacoma and Lakewood is projected to begin in late 2007. Sounder fare passes are also accepted on the daily Amtrak trains, providing access to additional commuter rail service.

- **High-Occupancy Vehicle Expressway.** The region’s vision is to build a high-occupancy vehicle expressway by combining the state-funded freeway high-occupancy vehicle lane network with Sound Transit-funded direct high-occupancy vehicle access ramps. As of January 2005, more than $800 million in transportation improvement projects were complete, including new and improved transit centers, park-and-ride lots, and high-occupancy vehicle access lanes and ramps.

- **Regional Express Bus Routes.** Sound Transit’s Regional Express system includes a regional network of express bus routes operating on freeways and major arterials that service distant areas with limited stops. As of January 2005, Sound Transit operated 19 regional express bus routes that take advantage of the improved speed and reliability of the high-occupancy vehicle expressway facilities.

- **Community Connections.** As part of Sound Move, Sound Transit made the commitment to build numerous transit facilities called community connections — including transit centers, park-and-ride lots, and commuter rail and light rail stations — throughout the region to support easy connections between regional transit, local transit, and other travel modes.

4. **Nonmotorized System**

**Existing system**. The regional, nonmotorized system includes both bicycle and pedestrian facilities. The following three concepts guide the development of the regional nonmotorized transportation system:

- Link communities at the regional level.
- Substitute nonmotorized trips for vehicle trips at the local level.
- Provide intermodal connections at rail, ferry, and other transit stops.

There are five general types of nonmotorized facilities, each with varying levels of separation from adjacent roadways:

- **Shared Use Bicycle/Pedestrian Paths** are facilities that are separate from roadways.
- **Bike Lanes** are portions of roadways that are designated for exclusive bicycle travel by signs and pavement markings.
- **Bike Routes** are portions of roadways that are signed as preferred routes for bicycle travel but not striped for exclusive bicycle use.
- **Bikeways** are portions of roadways that are not signed or marked, but are accessible to bicycle travel and identified by the local jurisdiction as a preferred bicycle route.
- **Walkways** are pedestrian facilities that can be either separated from roadways, such as sidewalks and paths, or part of roadways, such as crosswalks or wide shoulders.

**Destination 2030 planned investments.** The plan includes a regional nonmotorized network based on county and local jurisdiction nonmotorized plans. The nonmotorized network is designed to connect urban centers and major destinations, link inter-modal facilities, and provide service to both commuters and recreational users.

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4 The nonmotorized component of the Metropolitan Transportation System includes facilities that meet one or more of the following criteria: multi-use trails and bike lanes within the corridors of the roadway component of the Metropolitan Transportation System, multi-use trails and bike lanes that connect designated urban centers; multi-use trails and bike lanes that are within, or provide direct access to, designated urban centers or high-capacity transit stations; and pedestrian facilities that provide circulation within, access to, or enhance designated urban centers, or high capacity transit station areas.
Priority nonmotorized investments are those that complete the nonmotorized system by filling gaps in the existing network, creating connections to and improving circulation within urban centers and high-capacity station areas, and developing inter-modal connections. *Destination 2030* nonmotorized transportation improvements include the following:

- Approximately 800 miles of new paths and bikeways by 2010, including 529 miles of separated off-road bicycle/pedestrian paths and 286 miles of on-road bicycle lanes.
- Approximately 1,200 additional miles of new paths and bikeways by 2030, including 255 miles of off-road bicycle/pedestrian paths and 945 miles of on-road bicycle lanes.
- Pedestrian improvements in selected transit station and designated urban center zones.

5. Freight and Goods System

*Existing system.* The regional freight and goods system consists of roadways, port facilities, railroads and rail yards, and airport facilities, all of which serve to move freight within and through the region. A brief description of each component of the freight system follows:

- **Freight Roadways.** Parts of the freight and goods system were first designated as critical for freight movement by the state of Washington in 1995, and updated in 1999 and 2003. The system consists of five roadway classifications (T-1 through T-5) based on annual freight tonnage carried by trucks. The heaviest tonnage routes, those designated for four million annual tons and above (T1 and T2), may receive priority for funding improvements. Within the region, the following Interstate highways and state routes have segments classified as T-1 (more than 10 million annual tons): Interstate 5 and Interstate 90, and State Routes 3, 16, 18, 99, 167, 169, 410, 512, 515, 518, 522, 526, 599, and 900.

- **Ports.** Everett, Seattle, and Tacoma provide marine deepwater ports that accommodate ocean-going container ships that carry cargo in and out of the region. The ports of Seattle and Tacoma continue to be some of the busiest ports along the West Coast, and all three ports are continuously improving their facilities to accommodate growing demand.

- **Airports.** Freight is transferred to and from aircraft at two major airports in the region: the Seattle-Tacoma International Airport (Sea-Tac) and King County International Airport (Boeing Field). Sea-Tac handles the majority of the freight, although Boeing Field has captured a growing percentage. A limited amount of freight is moved by the “sea-air” link; that is, cargo is transferred from ships, loaded onto aircraft, and flown to the East Coast, Europe, or other international destinations. Roadways that provide access to Sea-Tac and Boeing Field for trucks, which account for the majority of freight transfers at the airports, are important parts of the freight roadway system.

- **Railroads.** Two major national railroads serve the central Puget Sound region and provide intercontinental service: Burlington Northern Santa Fe and Union Pacific. Each maintains significant yard and on-dock capacity to serve the ports.

*Destination 2030 planned investments.* The plan includes a Freight Action Strategy (FAST Corridor) program that includes 15 FAST Corridor Phase I projects. These projects were identified by a public/private partnership as strategic investments in the region’s transportation system to improve port access and reduce rail/highway conflicts along the Interstate 5 corridor from Tacoma to Everett. In addition, a group of projects designed to improve surface street access to multimodal freight facilities, identified as the FAST Corridor Phase II project, are included in *Destination 2030.*

6. Intercity Passenger Rail

*Existing system.* Amtrak passenger rail trains currently provide service between Eugene, OR, and Vancouver, B.C. (Amtrak Cascades), Seattle and Los Angeles (Coast Starlight), and between Seattle and Chicago (Empire Builder). Stations within the four-county region are located in Everett, Seattle, Tukwila, Tacoma, and Lacey.

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5 The freight and goods component of the Metropolitan Transportation System includes facilities that meet the following criteria: state and local principal arterials; National Highway System routes within the region; T1 and T2 Freight and Goods Transportation System routes, as defined by the Washington State Transportation Commission in 1999; routes providing access to the designated regional growth centers, other major industrial and commercial sites; Port of Everett, Seattle and Tacoma facilities; mainline and branch rail lines, as well as intermodal rail yards associated with Burlington Northern/Santa Fe and Union Pacific railroad facilities; and air cargo facilities (Sea-Tac and King County International Airports).
Washington State is committed to safer, faster, more frequent and reliable north-south Amtrak intercity passenger rail service through western Washington. This will require capital investments in train station facilities, new train equipment, improvements to existing tracks and improved track crossings and signalization.

**Destination 2030 planned investments.** The plan includes Amtrak Cascade passenger rail service by 2018 with 13 trains per day between Seattle and Portland and four trains per day between Vancouver, B.C., and Seattle (two of which continue to Portland.) Travel time between Seattle and Portland are estimated to be approximately 2.5 hours and travel times between Vancouver, B.C., and Seattle is estimated to be just under three hours. These travel times are estimated to be between 25 and 30 percent shorter than travel times in 1999. Planned intercity rail investments include the following:

- South Tacoma crossovers
- Point Defiance bypass
- Black River Junction and Auburn sidings
- Everett yard tracks and siding
- Ballard double tracking and crossovers
- Track upgrades and signal system improvements from Everett north
- Station improvements at Tacoma, Tukwila, Seattle, Edmonds and Everett

7. Regional Aviation System

**Existing system.** The existing regional airport system is comprised of 25 public use airports and two military airfields within the four central Puget Sound counties. The airport system includes Seattle-Tacoma International Airport (the region’s primary commercial service airport), King County International Airport (Boeing Field), McChord Air Force Base, and Gray Army Airfield at Fort Lewis, five general aviation reliever airports, 13 general aviation airports, three seaplane bases, and three state-owned emergency airfields. A subset of this regionwide aviation system is considered regionally significant and is part of the Metropolitan Transportation System. This subset consists of Sea-Tac Airport, Boeing Field, Paine Field, Renton Municipal Airport, Harvey Field, and Auburn Municipal Airport.

**Destination 2030 planned investments.** The plan includes a long-range program to improve the region’s 25 general aviation airports. These system improvements will focus on maintaining and preserving the existing system, as well as on making strategic investments to meet growing demand and provide system enhancements. Aviation system investments include:

- Implementation of Sea-Tac’s adopted master plan, and subsequent refinements as outlined in the Comprehensive Development Plan, including improvements to passenger terminals and completion of a third runway.
- Improved air cargo facilities at Sea-Tac and Boeing Field.
- 753 new aircraft hangars at the region’s general aviation airports.

8. Transportation Systems Management

**Existing system.** Most of the systems that are part of the Metropolitan Transportation System include management elements so that they can be operated and utilized as safely and as efficiently as possible. System operations on the Puget Sound region’s multimodal transportation system are the responsibility of many jurisdictions and agencies.

Washington State Department of Transportation has an extensive freeway management system on the region’s freeways, and many of the region’s transit operators are using technology to provide transit information, count passengers, and collect fares. The Intelligent Transportation Systems program promotes the application of modern computer and communications technology to improve transportation operations and transportation demand management. The regionally significant Intelligent Transportation Systems projects and programs that have been applied in this region are described briefly in the following text.

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6 The regional aviation component of the Metropolitan Transportation System consists of the following facilities: Sea-Tac International Airport; King County International Airport (Boeing Field); Paine Field; Renton Municipal Airport; Harvey Field; and Auburn Municipal Airport.
Traffic Management Systems. The Washington State Department of Transportation has Traffic Management Centers in Shoreline and Lakewood to manage the Seattle area and Tacoma area freeways, respectively. A system of vehicle detectors, television cameras, ramp meters, variable message signs or reader boards, and highway advisory radio systems, called the Surveillance, Control & Driver Information system, has been installed on the region’s freeways. The ramp meters improve freeway flow and reduce merging-related accidents. The surveillance equipment helps to improve incident response and provide travel information. Many agencies in the region have their own traffic management centers that operate synchronized traffic signal systems that respond to traffic demand, thereby reducing vehicle delay during non-peak periods.

Transit Management Systems. King County Metro has implemented an Automatic Vehicle Location system to track its buses. The system allows for improved scheduling and increased security. Data from the system are also used to provide real-time transit information to riders. Transit signal priority has also been implemented by most transit agencies in the region to improve schedule reliability and reduce travel time.

Electronic Fare Payment System. The region’s transit agencies, including the Washington State Ferry System, have collaborated on a “Smart Fare Card” project to allow transit passengers to use a single fare card to pay transit fares.

Commercial Vehicle Information Systems and Networks. Commercial vehicle operations on Interstate 5 and Interstate 90 are being improved with weigh-in-motion scales, vehicle tags (called transponders) and roadside readers that allow truck weights and credentials to be checked without requiring the truck to stop. This reduces the delay for safe and legal trucks and helps focus enforcement efforts on problem truckers. Similar systems are being used at the international border and the ports of Seattle and Tacoma to help track and secure containers being imported and exported.

Destination 2030 planned investments. The plan includes the following transportation systems management strategies:

- New arterial management and transit signal priority projects on nearly 1,000 miles of roadways by 2030.
- Enhanced freeway management, including ramp metering and variable message signs on approximately 100 additional freeway miles by 2010.
- Transit operations projects, including new technology for vehicle tracking and travel information, for example.

9. Transportation Demand Management

Existing system. Transportation demand management is not focused on facilities but instead focuses on programs and strategies to improve the efficiency of the transportation system by promoting alternatives to driving alone, shifting trips out of peak travel periods or eliminating the need for trips.

The Washington State Legislature passed the Commute Trip Reduction Law in 1991, as part of the Washington Clean Air Act. The goals of the program are to reduce traffic congestion, air pollution, and petroleum consumption through employer-based programs that decrease the number of commute trips made by people driving alone. The program encourages workers to ride the bus, vanpool, carpool, walk, bike, work from home, or compress their work week. Central Puget Sound employees covered by this law made more than 14,200 fewer vehicle trips each weekday morning in 2005 than they did when their employers entered the program. It is estimated that this reduced delay by 11.6 percent during the peak travel period on average mornings in the region.

The 2006 Legislature enacted changes that are intended to make the CTR program more effective and efficient by focusing investments in urban growth areas and centers where they are expected to have the greatest potential effect. It also enables the program to be tailored to meet local needs by requiring planning, goal-setting, program implementation and monitoring on a regional basis. Washington State Department of Transportation has a Transportation Demand Management Resource Center that works to expand regional mobility options, studies transportation demand management innovations and efficiencies for congested corridors, such as State Route 520 and Interstate 405; integrates land use with transportation plans; and provides resources on transportation demand management efforts and impacts throughout the region.
**Destination 2030 planned investments.** PSRC’s Transportation and Growth Management Policy Boards endorsed the Transportation Demand Management Action Strategy for the central Puget Sound region in 1998. This strategy, developed by the 23-member Transportation Demand Management Advisory Committee, identified the following guiding principles to manage transportation demand:

- Transportation demand management strives to change people’s travel behavior by encouraging people to consider alternatives or to travel at a different time of day.
- Mutually supportive techniques should be used together in a coordinated approach.
- Transportation demand management is aimed at motivating and reinforcing changes in travel.
- The use of transportation demand management incentives and disincentives can change individual travel behavior.
- Transportation demand management includes providing alternatives to driving alone, whether by carpool, vanpool, transit, bicycling, walking, tele-work, or compressed work schedules.
- Future transportation demand management activities must be broadened to face the challenge of non-work trips in addition to commute trips.

The plan calls for the following transportation demand management investments:

- Funding and promotion of vanpool programs to double that mode’s 2001 share of work trips by 2010.
- Investments to support tax credits, public/private partnerships, innovative new strategies, and technical assistance to employers and other implementors.

### 5.3.2 Analysis of Alternatives (Long-Term Impacts)

Between 2000 and 2040, the region’s population is forecast to grow by 1.7 million residents (an increase of 52 percent) and the region’s employment base is forecast to expand by 1.2 million jobs (an increase of 69 percent). This growth is estimated to create additional demand for the region’s transportation system. The total number of miles the region’s vehicles are estimated to drive on an average weekday is expected to increase by 57 percent and, with the continued expansion of Sound Transit and other transit systems, daily transit ridership is expected to more than double (an increase of 115 percent).

Set against the backdrop of a planned 12 percent expansion of the region’s freeway and arterial lane miles, the additional regional growth and travel demand could impact the overall performance of transportation systems, mainly in the form of increased congestion and delay.

In this section, all the growth alternatives are analyzed for their varying impacts on travel behavior and on the performance of the transportation system. The analysis primarily focuses on trip-making that is internal to the region (meaning both the origin and destination are within the region), given that over 98 percent of the region's trips are internal.

The Growth Targets Extended Alternative is compared to the base year (2000) to set a context for analyzing the three remaining alternatives. The four remaining alternatives — Preferred Growth, Metropolitan Cities, Larger Cities, and Smaller Cities — are then compared to the Growth Targets Extended Alternative.

Note: Complete tables comparing various measures across alternatives and geographical subareas can be found in FEIS Appendix - Appendix I-F. In this chapter, a number of summary figures are provided for some of the transportation indicators.

### Measures

A series of key measures regarding transportation system performance are shown below, and these correlate with several criteria used in the development of the preferred growth alternative. These are not meant to represent all aspects of transportation planning; additional measures will be developed and assessed as part of the update of the region's metropolitan transportation plan - Destination 2030. The measures of travel behavior and transportation system performance included in the analysis are:
• **Trip distance** — average length (in miles) between the trip origin and destination.

• **Trip time** — average duration (in minutes) between the trip origin and destination.

• **Accessibility** — percent of regional employment within 10-minute walk, 20-minute bicycle ride, or 30-minute transit ride.

• **Mode share (Mode split)** — number or percentage of person trips made by single-occupancy vehicles, carpool, transit, and nonmotorized travel modes.

• **Vehicle miles traveled** — total miles traveled by all vehicles of a given area and for a specified period.

• **Vehicle hours traveled** — total hours traveled by all vehicles of a given area and for a specified period.

• **Delay** — additional travel time experienced as a result of traffic congestion (measured in total hours and seconds per vehicle mile).

To model travel in the year 2040, the planned transportation system (as described in *Destination 2030*) is assumed to be in place for all of the alternatives. This provides a backdrop from which to compare the effects of the land use alternatives on the transportation system.

The following sections provide a comparison of all the alternatives based on the performance measures described above. Impacts common to all the alternatives are described first, followed by a more detailed analysis of each alternative. The analysis of each alternative includes a comparison of the effects of the proposed land use changes to the current condition (year 2000) or to the Growth Targets Extended Alternative, at the regional and sub-regional level.

**Figures**

The horizontal bar charts accompanying the following sections provide baseline comparisons for key transportation system measures. In each figure, the vertical line at 100 percent is the baseline to which the each alternative is compared. The baseline for the Growth Targets Extended Alternative is the year 2000 condition; the Growth Targets Extended Alternative, in turn, is the baseline for the remaining four other alternatives.

**A. IMPACTS COMMON TO ALL ALTERNATIVES**

With the region’s population and economic base projected to expand by 1.7 million residents and 1.2 million jobs between 2000 and 2040, there could likely be significant impacts to the regional transportation system, regardless of how the growth is distributed within the region. The following points provide an indication of the scale of the impact at the regional level:

- **Overall trip-making** is estimated to increase by approximately 72 percent.
- **Single-occupancy vehicle trips** are estimated to increase 63 – 72 percent.
- **High-occupancy vehicle trips** are estimated to increase 66 – 75 percent.
- **Transit trips** is estimated to increase 76 – 146 percent.
- **Biking and walking trips** are estimated to increase 66 – 115 percent.
- **Vehicle miles traveled on the freeway system** are estimated to increase 43 – 53 percent.
- **Vehicle miles traveled on the arterial system** are estimated to increase 53 – 81 percent.
- **Vehicle hours traveled on the freeway system** are estimated to increase 48 – 99 percent.
- **Vehicle hours traveled on the arterial system** are estimated to increase 66 – 111 percent.
- **Delay on the freeway system** is estimated to increase 18 – 150 percent.
- **Delay on the arterial system** is estimated to increase 126 – 292 percent.

To help illustrate these percentages, the following figure provides an overview comparison all the alternatives to the base year 2000 and to one another.
At the regional level, the following summary comparison between the alternatives can be made:

- **Average trip distances (work and non-work):** Growth Targets Extended Alternative has the longest average trip distances of any of the alternatives.
- **Average trip times (work and non-work):** Growth Targets Extended Alternative has the longest average trip time for work trips. For non-work trips, Smaller Cities Alternative has the longest average trip time.
- **Accessibility of activities to transit:** Metropolitan Cities Alternative has a significantly higher percentage of activities in proximity to transit than any of the other alternatives.
- **Transit mode share:** Metropolitan Cities Alternative has a higher share of trips being made by transit than any of the other alternatives.
- **Walk/bike mode share:** Metropolitan Cities Alternative has a much higher share of trips being made by walk/bike than any of the other alternatives.
- **Vehicle miles traveled (freeways, expressways, and arterials):** Growth Targets Extended Alternative has the highest vehicle miles traveled on freeways, expressways, and arterials.
- **Vehicle hours traveled (freeways, expressways, and arterials):** Growth Targets Extended Alternative has the highest vehicle hours traveled of any of the alternatives on freeways, expressways, and arterials.
- **Delay (freeways, expressways, and arterials):** Growth Targets Extended Alternative has the most delay, by a significant amount, on freeways, expressways, and arterials.
B. ANALYSIS OF EACH ALTERNATIVE

The previous section highlighted some of the overall similarities among the alternatives. This section focuses on the differences between the regional growth alternatives and how those differences could vary at the regional and sub-regional levels. To set the context for the remainder of this section, Figure 5-3-4 provides a regional overview of how the alternatives compare to one another for key transportation measures and indicators.

FIGURE 5-3-4: SUMMARY COMPARISON OF TRANSPORTATION PERFORMANCE OF ALTERNATIVES, REGIONAL

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<tr>
<td>Accessibility**</td>
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<tr>
<td>Transit Access to Work</td>
<td>.70%</td>
<td>1.07%</td>
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<td>% Single-occupancy vehicle</td>
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<td>76.2%</td>
<td>73.6%</td>
<td>76.5%</td>
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</tr>
<tr>
<td>% Transit</td>
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<td>11.3%</td>
<td>11.6%</td>
<td>11.7%</td>
<td>10.5%</td>
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</tr>
<tr>
<td>% Walk/Bike</td>
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<td>6.3%</td>
<td>4.5%</td>
<td>7.2%</td>
<td>5.3%</td>
<td>4.1%</td>
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<tr>
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<tr>
<td>% Single-occupancy vehicle</td>
<td>46.2%</td>
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<td>45.5%</td>
<td>44.8%</td>
<td>45.7%</td>
<td>46.1%</td>
</tr>
<tr>
<td>% Transit</td>
<td>2.1%</td>
<td>2.9%</td>
<td>2.5%</td>
<td>3.1%</td>
<td>2.6%</td>
<td>2.1%</td>
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<tr>
<td>Average Trip Distance (miles)</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Work Trips</td>
<td>13.1</td>
<td>12.4</td>
<td>13.1</td>
<td>12.1</td>
<td>12.0</td>
<td>12.3</td>
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<tr>
<td>Non-work Trips</td>
<td>6.5</td>
<td>6.3</td>
<td>6.6</td>
<td>6.1</td>
<td>5.9</td>
<td>6.4</td>
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<tr>
<td>Average Trip Time (minutes)</td>
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<tr>
<td>Work Trips</td>
<td>25.4</td>
<td>26.5</td>
<td>29.1</td>
<td>25.4</td>
<td>25.4</td>
<td>26.2</td>
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<tr>
<td>Non-work Trips</td>
<td>14.5</td>
<td>14.8</td>
<td>15.5</td>
<td>14.3</td>
<td>14.2</td>
<td>15.7</td>
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<tr>
<td>Vehicle Miles Traveled</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total vehicle miles traveled</td>
<td>81,383,000</td>
<td>123,543,500</td>
<td>137,104,400</td>
<td>122,230,200</td>
<td>121,397,600</td>
<td>131,058,400</td>
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<tr>
<td>Freeway vehicle miles traveled</td>
<td>35,589,000</td>
<td>52,237,100</td>
<td>54,301,800</td>
<td>52,090,000</td>
<td>50,974,200</td>
<td>50,838,600</td>
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<td>Arterial vehicle miles traveled</td>
<td>45,794,000</td>
<td>71,306,400</td>
<td>82,802,600</td>
<td>70,140,200</td>
<td>70,423,400</td>
<td>80,219,900</td>
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<tr>
<td>Vehicle Hours Traveled</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total vehicle hours traveled</td>
<td>2,426,000</td>
<td>4,109,000</td>
<td>5,025,900</td>
<td>4,026,900</td>
<td>3,950,700</td>
<td>4,378,200</td>
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<td>Freeway vehicle hours traveled</td>
<td>766,000</td>
<td>1,271,900</td>
<td>1,522,800</td>
<td>1,274,700</td>
<td>1,189,200</td>
<td>1,132,300</td>
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<td>Arterial vehicle hours traveled</td>
<td>1,660,000</td>
<td>2,837,100</td>
<td>3,503,100</td>
<td>2,752,200</td>
<td>2,761,500</td>
<td>3,245,900</td>
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<tr>
<td>Delay (seconds/vehicle-mile)</td>
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<td></td>
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<tr>
<td>Total Delay</td>
<td>10.9</td>
<td>21.0</td>
<td>32.4</td>
<td>21.0</td>
<td>18.6</td>
<td>20.3</td>
</tr>
<tr>
<td>Freeway Delay</td>
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<td>25.8</td>
<td>39.0</td>
<td>26.2</td>
<td>22.0</td>
<td>18.4</td>
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<td>17.6</td>
<td>28.1</td>
<td>17.2</td>
<td>16.2</td>
<td>21.5</td>
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<tr>
<td>Delay (total hours)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total Delay</td>
<td>245,300</td>
<td>721,900</td>
<td>1,235,300</td>
<td>713,900</td>
<td>628,400</td>
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<td>373,900</td>
<td>588,700</td>
<td>378,500</td>
<td>315,500</td>
<td>260,200</td>
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<tr>
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<td>348,000</td>
<td>646,600</td>
<td>335,400</td>
<td>317,000</td>
<td>479,400</td>
</tr>
</tbody>
</table>

Note: For the geographical area listed in the figure title, the mode share and average time data refer to “trips attracted to” the geographical area; the vehicle miles traveled and delay data refer to “roadways within” the geographical area; and the accessibility data refers to “people living within” the geographical area. See FEIS Appendices - Appendix I-E – Transportation Demand Model Output Data. ** Accessibilities represent the percentage (xx% of 100%) of the region’s employment that is accessible by the average household within the allotted time frame and mode (i.e., a 10-minute walk, 20-minute bicycle ride, or 30-minute transit ride) within the region.

Each county has unique characteristics that would affect the types of impacts and where they would be located. For example, ferry terminal locations provide regional connections, but are sometimes in less urban areas. Increase ferry demand might provide regional benefits while also producing increases in traffic and congestion in terminal areas. Likewise, increases in congestion are likely to be found near other major traffic generators such as ports, airports, and centers.
The following figure (Figure 5-3-5) compares this alternative to the performance of the No Action Alternative (which is Growth Targets Extended Alternative in the year 2040) for a few representative indicators.

FIGURE 5-3-5: TRANSPORTATION PERFORMANCE OF PGA AND GROWTH TARGETS EXTENDED ALTERNATIVE

Note: 100 percent means the indicator for this alternative is the same as it would be for the Growth Targets Extended Alternative. For example, Accessibility of Activities by Transit is over 160 percent. Therefore, the amount of accessibility under the Preferred Growth Alternative is more than 1.6 times what it would be for the Growth Targets Extended Alternative.

Region

As displayed in figure 2-8, from a transportation performance measure standpoint, the Preferred Growth Alternative closely resembles the Metropolitan Cities and Larger Cities Alternatives at the regional level. However, average trip distances and times at the regional level are somewhat longer than the focused growth alternatives and, similar to the Growth Targets Extended Alternative. This is likely due to the difference in the levels of housing and employment in the unincorporated urban and rural areas. Regional vehicle miles traveled, vehicle hours traveled, and delay are slightly greater than under the Metropolitan Cities and Larger Cities Alternatives.

The distributions of growth to metropolitan cities and core cities, where transit service is most available, results in the second highest estimated percentage of trips being made by transit, and is estimated to result in the second highest percentage of "activities" (such as retail, entertainment, schools) being accessible by transit. For similar reasons, this alternative is estimated to have the second highest percentage of walking or biking trips.

As displayed (in figure 2-9), the Preferred Growth Alternative results in better transportation performance on each of the regional level indicators as compared to the Growth Targets Extended Alternative.

Counties

For transit trips at the county level, transit mode shares for work trips to King County are the second highest under the Preferred Growth Alternative, next to the Growth Targets Extended. In Snohomish County, transit mode shares for work trips rank highest among all alternatives. For non-work trips, transit shares under the Preferred Growth Alternative are among their highest (after the Metropolitan Cities Alternative) at the county level. Vehicle miles traveled, vehicle hours traveled, and delay under are at some of their lowest levels in King County under the Preferred Growth Alternative. Only the Smaller Cities Alternative yields lower levels of these measures for King County. For the remaining counties, vehicle miles traveled, vehicle hours traveled, and delay levels under the Preferred Growth Alternative fall in the middle of the range when compared to the other alternatives. With the exception of transit accessibilities for Kitsap County, county-level accessibilities rank at or near the top under the Preferred Growth Alternative.
only the Growth Targets Extended Alternative yields longer average travel time for work trips to King County. For the other counties, average travel times for work trips under the Preferred Growth Alternative fall in the middle of the range. For non-work trips, average travel times under the Preferred Growth Alternative tend toward the middle of the range for all counties.

Regional Geographies

- **Designated Regional Centers.** When comparing transit and non-motorized mode shares among the alternatives for trips to regional centers, the Preferred Growth Alternative ranks among the best of the alternatives. For work trips to regional centers, transit shares under the Preferred Growth Alternative rank second to the Growth Targets Extended Alternative and non-motorized shares rank second to the Metropolitan Cities Alternative. For non-work trips to regional centers, transit shares are highest under the Preferred Growth Alternative and non-motorized shares rank second to the Metropolitan Cities Alternative. The average travel time for work trips to regional centers is slightly longer than the other alternatives, with the exception of the Growth Targets Extended Alternative.

- **Metropolitan Cities.** Given the similar geographies, the modal profile for trips to metropolitan cities under the Preferred Growth Alternative mirrors the profile for trips to regional centers as discussed in the preceding paragraph. For vehicle miles traveled, vehicle hours traveled, and delay within metropolitan cities, levels experienced under the Preferred Growth Alternative are expected to be lower than the Growth Targets Extended and Metropolitan Cities Alternatives, but higher than the Larger and Smaller Cities Alternatives. Transit and non-motorized accessibilities for metropolitan cities are estimated to be the second highest, after the Metropolitan Cities Alternative. And similar to regional centers, the average travel time for work trips to metropolitan cities is slightly longer than the other alternatives, except for the Growth Targets Extended Alternative.

- **Core and Larger Cities.** For work trips to core and larger cities, transit and non-motorized shares under the Preferred Growth Alternative are lower than the Metropolitan Cities and Larger Cities Alternatives, but higher than the other alternatives. For non-work trips to core and larger cities, transit shares under the Preferred Growth Alternative are among the top, along with the Metropolitan Cities Alternative and non-motorized shares rank higher than under the Larger Cities Alternative. Transit and non-motorized accessibilities for core and larger cities are the second highest among all alternatives, after to the Larger Cities Alternative. Average travel times and distances for trips to core and larger cities (work and non-work) fall in the middle of range of the alternatives – they are longer than those found under the Metropolitan Cities and Larger Cities Alternatives, but shorter than those estimated for the Growth Targets Extended and Smaller Cities Alternatives.

- **Small Cities and Unincorporated Urban Growth Area.** For work trips to small cities and the unincorporated urban growth area, transit shares under the Preferred Growth Alternative falls in the middle of the range, lower than those found under the Metropolitan Cities and Larger Cities Alternatives, but higher than those expected under the Growth Targets Extend and Smaller Cities Alternatives. Accessibilities for small cities and the unincorporated urban growth area under the Preferred Growth Alternative are lower than those expected under the Smaller Cities Alternative but in line with the other alternatives. Average travel times for work trips to small cities and the unincorporated urban growth area are slightly longer than those expected under the Larger Cities and Smaller Cities Alternatives but average travel times for non-work trips are the shortest, along with the Larger Cities and Smaller Cities Alternatives.

- **Rural Areas.** Given the more modest number of transit and non-motorized trips to rural areas, there is not a large degree of variation among the alternatives with respect to mode shares. In terms of the number of trips, transit trips to rural areas (work and non-work) under the Preferred Growth Alternative are significantly lower than those expected under the Smaller Cities Alternative, but at a level consistent with the other alternatives. This relationship also holds true for all non-motorized trips to trips to rural areas. For vehicle miles traveled, vehicle hours traveled, and delay within rural areas, the levels experienced under the Preferred Growth Alternative are expected to be similar to those under the Metropolitan Cities and Larger Cities Alternatives, and lower than those expected under the Growth Targets Extended and Smaller Cities Alternatives. Accessibilities for rural areas under the Preferred Growth Alternative are lower than those expected under the Smaller Cities Alternative (where both more jobs and population is located in these areas than under current plans) but are consistent with those found in the other alternatives. There is little variation across alternatives in average travel times for work trips to rural areas. For non-work trips, however, average travel times to rural areas under the Preferred Growth Alternative are expected to be shorter than those under the Smaller Cities Alternative, but consistent with the other alternatives.
GROWTH TARGETS EXTENDED ALTERNATIVE

The following figure (Figure 5-3-6) compares this alternative to the 2000 base year for a few representative indicators.

FIGURE 5-3-6: GROWTH TARGETS EXTENDED ALTERNATIVE: COMPARISON TO BASE YEAR (2000), REGIONAL LEVEL INDICATORS

Note: 100 percent means the indicator for this alternative is the same as it would be for base year 2000. For example, Vehicle Hours Traveled – Freeways and Expressways is at 200 percent. Therefore, vehicle hours traveled are double under the Growth Targets Extended Alternative what they would be for base year 2000. Measures shown in grey are those where a greater than 100 percent score would indicate an improvement.

Region

The Growth Targets Extended Alternative continues the current pattern of more centralized employment growth and more dispersed population growth. As a result, workers throughout the region must travel farther to reach their jobs, and households must travel farther for other activities (shopping, entertainment, etc.) than in the base year (2000). An increased share of trips is made by transit, with the highest share for trips into regional centers. Although the number of “accessible” job and activity opportunities increases, the accessible share of the region’s jobs and activity opportunities decreases. Total vehicle miles traveled and vehicles hours of travel are much higher than in 2000, as is average delay.

Compared to base year 2000, and from one alternative to the next, there are slight differences in the high-occupancy vehicle shares for both work and non-work trips. This reflects the fact that high-occupancy vehicle usage is primarily a factor not of land use but related more to the presence of high-occupancy vehicle lanes, household composition, and programs such as Commute Trip Reduction at the employment site — none of which changes across the alternatives.

Counties

The pattern of changes from 2000 to the Growth Targets Extended Alternative is generally the same in all counties: more trips, greater vehicle miles traveled, and more delay. Work trips into King County are much longer in distance than into any other county, despite the slower speeds due to higher congestion. Work and non-work trips into Kitsap, Pierce, and Snohomish counties are generally shorter in length in the Growth Targets Extended Alternative than in 2000 because a greater proportion of the population growth is expected to occur in those three counties than in King County. However, even these shorter trips take more time, and many residents of these three counties could travel into King County for work and other activities, making the regional average trip length longer.
Regional Geographies

- **Designated Regional Centers.** Because they are generally better served by transit and are more densely developed, regional centers have higher transit and nonmotorized mode shares than any other geography. Except for the nonmotorized trips into King County, these shares are also higher in the Growth Targets Extended Alternative than in 2000. Both work and non-work trips into centers are longer in the Growth Targets Extended Alternative than in 2000.

- **Metropolitan Cities.** The metropolitan cities include the larger regional centers, so their mode shares and trip lengths are similar. Metropolitan cities accounted for 33 percent of the freeway vehicle miles traveled in 2000 and 23 percent of the vehicle miles traveled on other roads. With a regionwide vehicle miles traveled increase of about 70 percent throughout the region, the shares within metropolitan cities drop to 30 percent and 20 percent, respectively, with the Growth Targets Extended Alternative. People living in metropolitan cities are estimated to have about twice the accessibility to jobs and other activities compared to the regional average.

- **Core and Larger Cities.** In 2000 and with the Growth Targets Extended Alternative, the core and larger cities, together with the small cities and the remainder of the urban growth area, are the destinations for as many work trips as the metropolitan cities. The non-work trips to the core and larger cities almost equal the non-work trips to metropolitan cities. Transit and nonmotorized trips to core and larger cities are one-third and one-half, respectively, of the number of transit and nonmotorized trips to metropolitan cities. The high-occupancy vehicle mode share in the core and larger cities is about the same as in the metropolitan cities. Because many of the trips into the metropolitan cities begin in these areas of the urban growth area, well over half the region’s vehicle miles traveled occur inside the urban growth area (but outside metropolitan cities). In all counties, the average delay on all roads inside the urban growth area (but outside metropolitan cities) is three times as high with the Growth Targets Extended Alternative as in 2000, and twice as high with the Growth Targets Extended Alternative as compared to the other alternatives.

- **Small cities and Unincorporated Urban Growth Area.** The small cities and unincorporated urban growth area attract about 13 percent of the region’s work trips and about 20 percent of the non-work trips. They have a greater share of single-occupancy vehicle trips and smaller share of transit trips than the core and larger cities.

- **Rural Areas.** The rural areas have the highest single-occupancy vehicle mode share in the region, although this drops slightly between 2000 and the Growth Targets Extended Alternative. The rural areas also have the lowest transit and nonmotorized mode shares in the region. The rural areas’ share of the region’s freeway and arterial vehicle miles traveled increases from 6 percent and 27 percent in 2000 to 7 percent and 28 percent, respectively, with the Growth Targets Extended Alternative.
METROPOLITAN CITIES ALTERNATIVE

The following figure (Figure 5-3-7) compares this alternative to the performance of the Growth Targets Extended Alternative (in the year 2040) for a few representative indicators.

FIGURE 5-3-7: METROPOLITAN CITIES ALTERNATIVE: COMPARISON TO GROWTH TARGETS EXTENDED ALTERNATIVE, REGIONAL LEVEL INDICATORS

Note: 100 percent means the indicator for this alternative is the same as it would be for the Growth Targets Extended Alternative. For example, Accessibility of Activities by Transit is over 200 percent. Therefore, the amount of accessibility under the Metropolitan Cities Alternative is more than double what it would be for the Growth Targets Extended Alternative. Measures shown in grey are those where a greater than 100 percent score would indicate an improvement.

Region

By focusing both population and employment growth in metropolitan cities, the Metropolitan Cities Alternative allows for average trip lengths to be shorter than with the Growth Targets Extended Alternative, with a higher proportion of the overall miles traveled being on freeways as opposed to arterials. More trips with the Metropolitan Cities Alternative are made by nonmotorized means than with any other alternative. Because the metropolitan cities have the most transit service, there is higher accessibility by transit to both jobs and other activities. Both vehicle miles traveled and delay are lower than with the Growth Targets Extended Alternative.

Counties

Because of the distribution of metropolitan cities within the counties, King County attracts more work and non-work trips with the Metropolitan Cities Alternative than with any other alternative, Kitsap and Snohomish counties attract fewer work and non-work trips than with any other alternative, and Pierce County attracts the second lowest number of work and non-work trips. With the exception of Growth Targets Extended Alternative, transit trips and mode shares to work are higher in King County than with any other alternative. This can be attributed to higher numbers of nonmotorized trips in Metropolitan Cities Alternative.
Regional Geographies

• **Designated Regional Centers.** Regional centers are estimated to experience the highest levels of transit and nonmotorized use under this alternative. Due to a high growth allocation, they are estimated also to experience the highest levels of single-occupancy vehicle and high-occupancy vehicle trips. With more residences located close to employment locations, average trip lengths are the lowest of all alternatives.

• **Metropolitan Cities.** This alternative would direct 40 percent of new residential growth and 45 percent of new employment growth to metropolitan cities. The employment allocation is identical to the Growth Targets Extended Alternative and, as such, the modal profiles are similar for the two alternatives, with the exception being that trip making within the nonmotorized modes is significantly higher than with the Growth Targets Extended Alternative. The Metropolitan Cities Alternative is estimated also to result in the lowest average trip lengths and highest accessibility to work and non-work activities among the five alternatives. Vehicle miles traveled and delay levels are estimated to be lower in the metropolitan cities than with the Growth Targets Extended Alternative; however, because of the high number of trips being made within metropolitan cities, vehicle miles traveled and delay levels are estimated to be higher than with the Preferred Growth, Larger Cities and Smaller Cities alternatives.

• **Core and Larger Cities.** The Metropolitan Cities Alternative would direct 40 percent of new residential and employment growth to core and larger cities. These allocations are second only to the Larger Cities Alternative in order of magnitude and, as such, the impact pattern is similar. Compared to the Larger Cities Alternative, there are fewer trips across all mode categories, average trip lengths are slightly longer, and work locations and other activities are less accessible by transit.

• **Small cities and Unincorporated Urban Growth Area.** Compared to the Growth Targets Extended Alternative, the Metropolitan Cities Alternative would direct less of the new growth to small cities and the unincorporated urban growth area. Compared to all other alternatives, this alternative is estimated to result in the fewest trips across all mode categories, the longest average trip lengths, and the fewest number of locations accessible by transit.

• **Rural Areas.** This alternative would direct 5 percent of new residential and employment growth to the rural areas — the lowest level among all of the alternatives. With this allocation, trips in rural areas are estimated to be lowest across all modes, average trip lengths for work trips are estimated to be longer, the fewest number of locations are estimated to be accessible by transit, and vehicle miles traveled are estimated to be among the lowest of all the alternatives.
LARGER CITIES ALTERNATIVE

The following figure (Figure 5-3-8) compares this alternative to the performance of the Growth Targets Extended Alternative (in the year 2040) for a few representative indicators.

FIGURE 5-3-8: LARGER CITIES ALTERNATIVE:
COMPARISON TO GROWTH TARGETS EXTENDED ALTERNATIVE, REGIONAL LEVEL INDICATORS

Note: 100 percent represents conditions in the Growth Targets Extended Alternative. See the note accompanying Figure 5-3-6 which explains the percentage scale. Measures shown in grey are those where a greater than 100 percent score would indicate an improvement.

Region

Under this alternative, 80 percent of the region’s growth would occur in metropolitan, core, and larger cities, with over half of the growth directed to the core and larger cities. Compared to the Growth Targets Extended Alternative, transit trips is estimated to be lower, while walking and biking are estimated to increase at the regional level. Transit accessibility is estimated to be about the same as the Growth Targets Extended Alternative; average trip lengths (time and distance) are estimated to be the shortest and overall vehicle miles traveled and delay are estimated to be lower than the other alternatives. Like Metropolitan Cities, a higher proportion of the overall miles traveled are found on the region’s highways as opposed to its arterials.

Counties

Although the distribution of growth at the county level is quite similar to the Metropolitan Cities Alternative, there are noteworthy differences in some of the indicators, particularly in King County. Because growth is shifted away from metropolitan cities, transit trips and biking and walking in King County decrease from the levels found in the Metropolitan Cities Alternative, and locations are less accessible via transit.
Regional Geographies

- **Designated Regional Centers.** With less growth directed to cities with regional centers than under the Metropolitan Cities Alternative, transit and nonmotorized modes shares and usage are lower. Average trip lengths are slightly longer than with the Metropolitan Cities Alternative, but shorter than with the Preferred Growth, Growth Targets Extended and Smaller Cities alternatives.

- **Metropolitan Cities.** This alternative would direct the second smallest amount (20 percent) of new residential and employment growth to the metropolitan cities. Compared to the Metropolitan Cities Alternative, trip making is lower across all modes, average trip lengths are longer, fewer people live or work in locations that are easily accessible by transit, and vehicle miles traveled and delay levels are lower.

- **Core and Larger Cities.** This alternative would direct the highest level (60 percent) of new growth to core and larger cities. Compared to all other alternatives, trip making is the highest in all mode categories, average trip lengths are the shortest, and the greatest number of work and other activity locations are accessible by transit.

- **Small cities and Unincorporated Urban Growth Area.** This alternative would direct the second smallest amount of the new residential and employment growth to small cities (5 percent) and the unincorporated urban growth area (10 percent). Compared to the Smaller Cities Alternative, trip making is significantly lower across all modes, average trip lengths are equal or slightly longer, and transit accessibilities are lower.

- **Rural Areas.** This alternative would direct 5 percent of the new residential and employment growth to rural areas, identical to the amount under the Metropolitan Cities Alternative. Compared to the Metropolitan Cities Alternative, trip making in the rural areas is similar across all modes, trip lengths are slightly shorter, transit accessibilities are generally equal, and delay and vehicle miles traveled are slightly lower.
SMALLER CITIES ALTERNATIVE

The following figure (Figure 5-3-9) compares this alternative to the performance of the Growth Targets Extended Alternative (in the year 2040) for a few representative indicators.

FIGURE 5-3-9: SMALLER CITIES ALTERNATIVE: COMPARISON TO GROWTH TARGETS EXTENDED ALTERNATIVE, REGIONAL LEVEL INDICATORS

Note: 100 percent represents conditions in the Growth Targets Extended Alternative. See the note accompanying Figure 5-3-6 which explains the percentage scale. Measures shown in grey are those where a greater than 100 percent score would indicate an improvement.

Region

Under this alternative, growth would be directed away from the region’s larger cities as 75 percent of the new residential and employment growth would occur in small cities, the unincorporated urban growth area, and rural areas. With less extensive transit and nonmotorized networks in these areas, transit trips, biking and walking, and transit accessibilities are at their lowest levels among all alternatives. Due to increased employment growth directed to rural areas, average trip lengths and vehicle miles traveled are slightly lower than Growth Targets Extended, while overall delay is significantly lower.

Counties

Of all alternatives, this alternative would direct the most growth away from King County to Kitsap, Pierce, and Snohomish counties. With a lower growth allocation in King County, there are fewer trips across all modes, and transit accessibility, vehicle miles traveled, and delay in King County are at their lowest levels among all alternatives. Total trips across all modes are higher in Kitsap, Pierce, and Snohomish counties than with the other alternatives.

Regional Geographies

- **Designated Regional Centers.** This alternative results in the fewest trips across all mode categories in designated regional centers and, next to the Growth Targets Extended Alternative, the longest average trip lengths.

- **Metropolitan Cities.** This alternative would direct 10 percent of the residential and employment growth to metropolitan cities — the lowest percentage of all alternatives. Although the mode shares are generally consistent with the other alternatives, there are significantly fewer trips across all mode categories. With the exception of the Preferred Growth and Growth Targets Extended Alternatives, average trip times are the highest by a slight margin and are traceable to lower transit accessibility for work and other activities.
Consistent with reduced trip making, both vehicle miles traveled and delay are estimated to be at their lowest levels relative to the other alternatives.

- **Core and Larger Cities.** This alternative would direct the lowest percentage (15 percent) of residential and employment growth to core and larger cities. Compared to the other alternatives, the Smaller Cities Alternative is estimated to result in the fewest trips across all modes, the longest average trip times (with the exception of Growth Targets Extended Alternative), and the lowest transit accessibility for work and other activities.

- **Small cities and Unincorporated Urban Growth Area.** This alternative would direct the highest level of new growth to small cities (30 percent) and the unincorporated urban growth area (35 percent). With this growth allocation, there could be more trips in all mode categories than with the other alternatives, although the mode share profile remains relatively similar. Transit and nonmotorized accessibility to work and other activities is the highest when compared to the other alternatives.

- **Rural Areas.** Next to Growth Targets Extended, this alternative would also direct the highest level (10 percent) of new residential and employment growth to rural areas. Trip making in all mode categories in rural areas is estimated to be higher than with the other alternatives, with the single-occupancy vehicle and high-occupancy vehicle modes capturing most of the new trips. Transit and nonmotorized accessibility to both work and non-work purposes is highest with the Smaller Cities Alternative; however, this increased accessibility does not translate into shorter average trip lengths. Consistent with increased trip making, both vehicle miles traveled and delay are at their highest levels relative to the other alternatives.

### 5.3.3 Cumulative Effects

Historically, vehicle miles traveled has continually increased in the Puget Sound region and could continue to do so into the year 2040. The construction of transportation facilities has not kept up fully with demand, leading to increased vehicles hours traveled, hours of delay, congestion, and longer travel times throughout the region. The transportation analysis included in this Final Environmental Impact Statement is a cumulative analysis based on the results of travel demand modeling for the year 2040.

The analysis incorporates past and future actions as well as projected population and employment growth expected for the central Puget Sound region. The analysis of alternatives discussion primarily focuses on transportation impacts for travel that is internal to the region. Although external-trip making (meaning, either the origin or destination are outside of the region) is forecasted to grow, it is estimated to account for less than 2 percent of overall trip-making at the year 2040. While this is a relatively minor proportion of overall trip making, it does represent a significant number of trips for regions adjacent to the central Puget Sound.

Many of the specific major transportation investments that are proposed over the next 40 years are described in the Destination 2030 and shown in Figure 5-3-2. These planned transportation investments are incorporated into the transportation analysis. Additional and more detailed analysis of transportation performance will be conducted when the region's metropolitan transportation plan, Destination 2030, is updated. This will provide an opportunity to address more site- and project-specific issues.

While regional vehicle miles traveled and vehicle hours traveled is estimated to continue to increase over existing conditions, regardless of which alternative is chosen, the Metropolitan Cities and Larger Cities alternatives are estimated to result in lower vehicle miles traveled, vehicle hours traveled, delay, shorter trip lengths, fewer single-occupancy vehicle and high-occupancy vehicle trips, and more transit and walk/bike trips than the Growth Targets Extended or Smaller Cities alternatives.

### 5.3.4 Potential Mitigation Measures

All alternatives could result in substantial increases in delay throughout the four-county region by the year 2040. With any of the alternatives, transportation infrastructure improvements could likely be needed beyond those in the currently defined Destination 2030 to reduce congestion and to increase mode availability. System improvements could include the following:
• New signals and/or improvements to existing traffic signal systems. Alternatives that add growth to the metropolitan and larger cities (Metropolitan Cities and Larger Cities alternatives) could probably require fewer new signals and more improvements to existing signal software and hardware. Alternatives that add growth to smaller cities and unincorporated urban growth areas (Growth Targets Extended and Smaller Cities alternatives) might require more new signal installations.

• Additional lanes could be needed on roadways in smaller cities and unincorporated urban growth areas under the alternatives that emphasize growth in the rural areas (Growth Targets Extended and Smaller Cities alternatives). Adding turn lanes at intersections and two-way, left-turn lanes through developed areas could probably be the most cost effective way to improve traffic flow and keep collisions from increasing.

• Additional transit service and improved vanpool and carpool programs to smaller cities and unincorporated urban growth areas could likely be required with alternatives that add growth in rural areas. However, the cost and efficiency of additional service would have financial implications for regional transit agencies.

• Incident response programs would likely need to be expanded to cover more than just the freeway system. Counties and cities may need to participate with Washington State Department of Transportation in providing this service.

• VISION 2040 policies and implementation also call for actions that have the potential to reduce the impacts of growth. See VISION 2040 Actions.

• Ensure the next update of the transportation plan, Destination 2030, aligns its transportation strategies and investments with the Preferred Growth Alternative, and to further reduce transportation impacts through system or demand management programs, intelligent transportation system (ITS) improvements, tolling or other pricing strategies.

• Adoption of policies to ensure preservation of freight intermodal sites and corridors to meet long-term freight needs. This could include actions to ensure consistency between local plans and freight plans.

Regardless of which alternative is chosen, local jurisdiction concurrency standards may need to be adjusted to allow higher traffic congestion levels in order to meet growth goals associated with all of the alternatives.

More specific mitigation recommendations are intended to be identified as part of the update to Destination 2030, scheduled to follow the adoption of VISION2040.

5.3.5 Significant Unavoidable Adverse Impacts

The Growth Targets Extended Alternative, by definition, would focus employment growth in metropolitan and core cities, while it would result in population growth in these same cities, as well in the unincorporated urban and rural areas. This alternative has the greatest mismatch between where population and employment growth is allocated. To some extent, this mismatch results in Growth Targets Extended having the most adverse impacts on a variety of regional indicators (such as total vehicle miles traveled, total vehicle hours traveled, and total hours of delay).

The Smaller Cities Alternative, by definition, would focus employment and housing growth in small cities and unincorporated areas within the urban growth area, with access provided almost exclusively by automobile. This alternative disperses automobile trips to areas where additional roadway capacity can be provided; however, it appears that the associated increases to vehicular travel demand could result in significant impacts to existing and planned transportation infrastructure.

If additional roadway capacity beyond Destination 2030 is not provided or is shifted from investments in the core areas, significant traffic congestion could occur with the Growth Targets Extended and Smaller Cities alternatives. The other focused growth alternatives are also estimated to have impacts, with higher levels of congestion and increased travel times, albeit at a lesser level than Growth Targets Extended or the Smaller Cities alternative.