

DESTINATION 2030

metropolitan transportation plan

for the central puget sound region — technical appendices



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APPENDIX 1

regional growth management

and transportation policies

TEA-21 Planning Factors, State Required Factors for Regional Guidelines and Principles, and Adopted Multi-County Planning Policies

Federal Transportation Planning Requirements (23 USC 134)

Destination 2030 was developed to satisfy certain federal and state planning requirements. Federal transportation planning legislation, first adopted in 1991 as the Intermodal Surface Transportation Efficiency Act (ISTEA), and reauthorized in 1998 as the Transportation Equity Act for the 21st Century (TEA-21), calls for transportation strategies in metropolitan regions to address a number of planning factors. See Title 23, U.S.C., § 134. TEA-21 continues the intent established under ISTEA to broaden and strengthen the ability of urban regions to link comprehensive planning programs with funding decisions for transportation projects. The law states:

It is in the national interest to encourage and promote the safe and efficient management, operation, and development of surface transportation systems that will serve the mobility needs of people and freight and foster economic growth and development within and through urbanized areas, while minimizing transportation-related fuel consumption and air pollution. To accomplish this objective, metropolitan planning organizations, in cooperation with the state and public transit operators shall develop transportation plans and programs for urbanized areas of the state. The plans and programs for each metropolitan area shall provide for the development and integrated management and operation of transportation systems and facilities (including pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system for the metropolitan area and as an integral part of the intermodal transportation system for the State and the United States. The process for developing the plans and programs shall provide for consideration of all modes of transportation and shall be continuing, cooperative, and comprehensive to the degree appropriate, based on the complexity of the transportation problems to be addressed. (*Title 23, U.S.C., § 134*)

TEA-21 requires the consideration of the following seven planning factors:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency.
2. Increase the safety and security of the transportation system for motorized and nonmotorized users.
3. Increase the accessibility and mobility options available to people and for freight.
4. Protect and enhance the environment, promote energy conservation, and improve quality of life.
5. Enhance the integration and connectivity of the transportation system, across and between modes, for people and for freight.
6. Promote efficient system management and operation.
7. Emphasize the preservation of the existing transportation system.

Several of these factors provide a context for linking transportation planning and programs with growth and development considerations.

Federal law requires an update of a region's metropolitan transportation plan every three years. In 1998 the Regional Council developed a progress report on the 1995 Metropolitan Transportation Plan to satisfy this requirement. However, for 2001, a more extensive update was developed. *Destination 2030* provided an opportunity to build in many of the programs and provisions that were developed in the five years since the 1995 Metropolitan Transportation Plan was adopted. For example, in 1996, voters in the central Puget Sound region approved a measure to develop high-capacity transit in King, Pierce and Snohomish counties. *Destination 2030* reflects this decision, as well as other changes to projects, programs, and policies in the region.

Washington State's Growth Management Act (RCW 36.70A; 47.80)

Both the 1995 VISION 2020 Update and *Destination 2030* reflect the guidance and requirements of Washington State's Growth Management Act (GMA). This Act, adopted initially in 1990 and amended several times between 1991 and 1998, establishes planning goals and requirements for multicounty, countywide, and local planning. A Regional Transportation Planning Organization (RTPO) provision in the GMA provides additional directives for regional transportation planning. See RCW 47.80.

When the GMA was first adopted in 1990, it was intended to provide the means by which local governments could create and adopt comprehensive plans and development regulations to address escalating development pressures of rapidly growing urbanized areas. The focus of the GMA is to encourage development in identified urban growth areas in order to support efficient expansion of infrastructure and services, including transportation facilities, and to preserve rural and resource lands.

Local plans are directed to include specific topics or "elements" that must be incorporated into the plan. Optional elements may be included at the discretion of the local jurisdiction. The discussion contained within the local comprehensive plan policies, as well as the directives for land use development and the provision of transportation facilities, are to reflect an interrelationship between land use and transportation and are to be mutually supportive. See RCW 36.70A.

The GMA requires that all comprehensive plans be both internally consistent, and coordinated with one another. More specifically land use designations plans (including the type, extent, density, and area growth) must be coordinated with those standards and strategies that are outlined in the transportation element of the local plan in order to maintain a sufficient level of service. The GMA clearly directs that the approval of

new development be subject to either concurrent improvement of the transportation system, or to the commitment to complete improvements within a six-year period following project approval (RCW36.70A.070 (6)).

Recognizing that an efficient transportation system is created from the coordinated integration of transportation planning and land use decisions throughout local jurisdictions, the GMA authorized and sanctioned the creation of regional transportation planning organizations, such as the Puget Sound Regional Council (PSRC). These organizations perform a number of functions that develop growth strategies including:

- Preparation of a regional transportation plan which considers and coordinates policy consistency of state and local transportation plans.
- Preparation and execution of periodic updates to regional strategies which focus on modes and transportation demand management.
- Certification that comprehensive plans prepared by local jurisdictions are consistent with the regional transportation plan.
- Development of a regional transportation improvement program (TIP) which prioritizes local projects and programs, and a financial plan that details program funding.

In addition, the GMA calls for RTPOs to develop regional guidelines and principles, which are to provide direction both for regional transportation plans and for local transportation planning. These guidelines and principles are also to serve as a basis for the certification of transportation elements in local comprehensive plans, when reviewed for conformity with GMA requirements and consistency with the adopted regional transportation plan (RCW 47.80). Ten factors are identified for developing regional guidelines and principles:

1. Freight transportation and port access.
2. Development patterns that promote pedestrian and non-motorized transportation, circulation systems, access to regional system, and effective and efficient highway systems.
3. Transportation demand management.
4. Present and future railroad right-of-way corridor.
5. Intermodal connections.
6. Concentration of economic activity.
7. Residential density.
8. Development corridors and urban design that support high-capacity transit.
9. Ability of transportation facilities and programs to retain existing and attract new jobs and private investment to accommodate growth in demand.
10. Joint and mixed-use development. (RCW 47.80)

These factors place a great deal of emphasis on land use considerations impacting transportation, particularly development patterns, residential densities, concentrations of economic activity, urban design, and mixed-use development. The GMA not only provides the opportunity to link land use and transportation planning, it provides a clear directive that such a linkage be made in the area of regional transportation planning, and as a basis for coordination between regional and local planning efforts. The whole set of policies in *Destination 2030* serves as the "regional guidelines and principles" for the central Puget Sound region. This Appendix documents those adopted policies.

Finally, the state RTPO legislation requires a review of regional transportation plans every two years. *Destination 2030* satisfies this requirement.

VISION 2020: The Region's Growth Strategy

VISION 2020 serves as King, Kitsap, Pierce and Snohomish counties' integrated long-range growth management, economic and transportation strategy. It contains strategies and policies addressing eight key components of regional growth and development. These components are: 1) Urban Growth Areas, 2) Contiguous and Orderly Development, 3) Regional Capital Facilities, 4) Housing, 5) Rural Areas, 6) Open Space, Resource Protection and Critical Areas, 7) Economics, and 8) Transportation. Multicounty planning policies, required under the Growth Management Act, have been adopted for each of these components. These multicounty policies are meant to guide countywide and local planning efforts.

VISION 2020 calls for locating development in defined urban growth areas, creating compact communities with employment and housing growth focused in centers. This strategy is designed to foster a greater mix of land uses, a more complete and efficient network of streets and other public rights-of-way, and, in general, support an urban environment which is amenable to walking, biking and using transit. VISION 2020 also aims to conserve forests and other natural resources, and to preserve rural areas through low-density residential living maintained by rural levels of service and locating employment, housing and services in cities and towns in rural areas. It represents a major public policy commitment to both managed growth and the efficient provision of public services and facilities, particularly transportation investments that emphasize transit, ride-sharing, demand management and the maintenance of current facilities.

LINKING THE REGION'S GROWTH AND TRANSPORTATION STRATEGIES

The overall transportation strategy embodied in VISION 2020 promotes the development of a coordinated transportation system that is integrated with and supported by the growth management strategy. The system will coordinate transportation of different types, including travel by automobile, transit, rail, ferry, bicycle, and foot. VISION 2020 is intended to focus new development in urban growth areas, compact urban communities, designated urban centers and along urban travel corridors.

This strategy is designed to foster a greater mix of land uses, a more complete and efficient network of streets and other public rights-of-way, and to support an urban environment which is more amenable to walking, biking, and using transit.

To support this growth strategy, transportation improvements and programs must be focused on establishing a more balanced transportation system, shifting emphasis from movement of vehicles to movement of people and goods. A balanced system provides travel options, including private vehicle, public transit, ridesharing, walking, biking and various freight modes.

VISION 2020 includes multicounty planning policies which, as required by the State Growth Management Act, articulate the overall policy direction of the region. See RCW 36.70A.210(7). Multicounty policies included in the 1995 VISION 2020 Update provide direction for transportation planning and investment decisions and form the policy framework for development of *Destination 2030*. The multicounty policies provide direction for development in urban growth areas, contiguous and orderly development, siting of regional capital facilities, housing, growth in rural areas, open space and resource protection, economic development, and transportation. Because VISION 2020 is an integrated growth management, economic, and transportation strategy, the *Destination 2030* policy framework is comprised of general, regional framework policies from each of these areas as well as more specific transportation policies. The following multicounty framework and transportation policies comprise the impetus that guided development of both the 1995 Metropolitan Transportation Plan and *Destination 2030*. They represent a subset of the policies contained in VISION 2020.

Adopted Multicounty Framework Policies – RCW 36.70A.210

URBAN GROWTH AREAS:

RG-1 Locate development in urban growth areas to conserve natural resources and enable efficient provision of services and facilities. Within urban growth areas, focus growth in compact communities and centers in a manner that uses land efficiently, provides parks and recreation areas, is pedestrian-oriented, and helps strengthen communities. Connect and serve urban communities with an efficient, transit-oriented, multimodal transportation system.

CONTIGUOUS AND ORDERLY DEVELOPMENT:

RC-2 Coordinate provision of necessary public facilities and service to support development and to implement local and regional growth planning objectives. Provide public facilities and services in a manner that is efficient, cost-effective, and conserves resources. Emphasize interjurisdictional planning to coordinate plans and implementation activities and to achieve consistency.

REGIONAL CAPITAL FACILITIES:

RF-3 Strategically locate public facilities and amenities in a manner that adequately considers alternatives to new facilities (including demand management), implements regional growth planning objectives, maximizes public benefit, and minimizes and mitigates adverse impacts.

HOUSING:

RH-4 Provide a variety of choices in housing types to meet the needs of all segments of the population. Achieve and sustain an adequate supply of low-income, moderate-income and special needs housing located throughout the region.

RURAL AREAS:

RR-5 Preserve the character of identified rural areas by protecting and enhancing the natural environment, open space and recreational opportunities, and scenic and historic areas; support small-scale farming and forestry uses; permitting low-density residential living and cluster development maintained by rural levels of service. Support cities and towns in rural areas as locations for employment, mix of housing types, urban services and cultural activities.

OPEN SPACE, RESOURCE PROTECTION AND CRITICAL AREAS:

RO-6 Use rural and urban open space to separate and delineate urban areas and to create a permanent regional greenspace network. Protect critical areas, conserve natural resources, and preserve lands and resources of regional significance.

ECONOMICS:

RE-7 Foster economic opportunity and stability, promote economic well being, and encourage economic vitality and family wage jobs while managing growth. Support effective and efficient mobility for people, freight, and goods that are consistent with the regions growth and transportation strategy.

Maintain region-wide information about past and present economic performance. Assess future economic conditions that could affect the central Puget Sound region.

TRANSPORTATION:

RT-8 Develop a transportation system that emphasizes accessibility, includes a variety of mobility options, and enables the efficient movement of people, goods and freight, and information.

Adopted Multicounty Transportation Policies

OPTIMIZE AND MANAGE THE USE OF TRANSPORTATION FACILITIES AND SERVICES

- RT-8.1** Develop and maintain efficient, balanced, multimodal transportation systems which provide connections between urban centers and link centers with surrounding communities by:
- Offering a variety of options to single-occupant vehicle travel.
 - Facilitating convenient connections and transfers between travel modes.
 - Promoting transportation and land use improvements that support localized trip-making between and within communities.
 - Supporting the efficient movement of freight and goods.
- RT-8.2** Promote convenient intermodal connections between all elements of the regional transit system (bus, rail, ferry, air) to achieve a seamless travel network which incorporates easy bike and pedestrian access.
- RT-8.3** Maintain and preserve the existing urban and rural transportation systems in a safe and usable state. Give high priority to preservation and rehabilitation projects, which increase effective multimodal and intermodal accessibility, and serve to enhance historic, scenic, recreational and/or cultural resources.
- RT-8.4** Maximize multimodal access to marine ferry routes through:
- a. Coordinated connections to land-based transit.
 - b. Safe and convenient bicycle and pedestrian linkages.
 - c. Preferential access for high-occupancy vehicles, and freight and goods movement on designated routes.
- RT-8.5** Encourage public and private sector partnerships to identify freight mobility improvements which provide access to centers and regional facilities, and facilitate convenient intermodal transfers between marine, rail, highway and air freight activities, to and through the region.
- RT-8.6** Promote efficient multimodal access to interregional transportation facilities such as airports, seaports, and inter-city rail stations.
- RT-8.7** Where increased roadway capacity is warranted to support safe and efficient travel through rural areas, appropriate rural zoning and strong commitments to access management should be in place prior to authorizing such capacity expansion in order to prevent unplanned growth in rural areas.
- RT-8.8** Support transportation system management activities, such as ramp metering, signalization improvements, and transit priority treatments, to achieve maximum efficiency of the current system without adding major new infrastructure.

- RT-8.9 Develop and periodically update regional transportation system performance standards to assist in the development of level-of-service standards for state owned and/or operated transportation facilities which seek to assure effective coordination and mutual benefit between local and state transportation systems.
- RT-8.10 Support the retrofit of existing roadways and other transportation facilities to control and reduce noise, polluting runoff and barriers to fish passage.

MANAGE TRAVEL DEMAND ADDRESSING TRAFFIC CONGESTION AND ENVIRONMENTAL OBJECTIVES

- RT-8.11 Promote demand management and education programs that shift travel demand to non-single-occupant vehicle travel modes and to off-peak travel periods, and reduce the need for new capital investment in surface, marine and air transportation.
- RT-8.12 Support transportation system management programs, services, and facility enhancements which improve transit's ability to compete with single-occupant vehicle travel times.
- RT-8.13 Regional, major corridor, and urban center goals should be established reflecting regional policy intent to achieve increased proportional travel by transit, high-occupancy vehicle, and nonmotorized travel modes to achieve reduced dependence on single-occupant vehicle travel, with the greatest proportional increases in urban centers. Such goals should be set for 5- to 10-year periods and periodically updated in consultation with local jurisdictions, transit agencies and WSDOT.
- RT-8.14 Emphasize transportation investments that provide alternatives to single-occupant vehicle travel to and within urban centers and along corridors connecting centers.
- RT-8.15 Develop a public dialogue and seek broad public support for implementation of transportation pricing strategies, which can reduce subsidies for less efficient travel and manage travel demand. Pricing strategies are intended to assist in achieving growth management and economic development goals and policies, and should also support objectives for energy conservation, air quality improvement and congestion management.
- RT-8.16 Support opportunities to use advanced transportation and information technologies, which demonstrate support for regional growth and transportation strategies.

FOCUS TRANSPORTATION INVESTMENTS SUPPORTING TRANSIT AND PEDESTRIAN-ORIENTED LAND USE PATTERNS

- RT-8.17 Integrate land use and transportation solutions that offer the best opportunity to reduce air pollution, conserve energy, and protect the natural environment.
- RT-8.18 Investments in transportation facilities and services should support compact, pedestrian-oriented land use development throughout urban communities, and encourage growth in urban areas, especially in centers.
- RT-8.19 Promote transportation improvements that support the redevelopment of lower-density, auto-dominated arterials to become more pedestrian and transit compatible urban transportation corridors.
- RT-8.20 Encourage a mix of land uses and densities at major transit access points to meet passenger needs and offer an opportunity to reduce vehicle trips.

- RT-8.21 Promote the development of local street patterns and pedestrian routes that provide access to transit services within convenient walking distance of homes, jobs, schools, stores, and other activity areas.
- RT-8.22 Support the establishment of high capacity transit stations that advance regional growth objectives by:
 - a. Maximizing opportunities to walk, bike or take short transit trips to access regional transit stations.
 - b. Locating stations within urban centers and at sites supporting development of concentrated urban corridors.
 - c. Providing direct, frequent and convenient regional transit service between urban centers.
 - d. Providing system access to urban areas in a manner that does not induce development in rural areas.
- RT-8.23 Regional high capacity transit station area guidelines should be developed by the Puget Sound Regional Council in cooperation with the Regional Transit Authority, WSDOT, local transit agencies, and local jurisdictions to establish regionally consistent expectations of appropriate development in the vicinity of high capacity transit stations (including rail, major bus, and ferry) that best support and assure effective utilization of the regional transit system.
- RT-8.24 The regional high capacity transit station area guidelines should be addressed by the Regional Transit Authority, transit agencies and WSDOT in conducting planning activity through interlocal agreements to be developed with local jurisdictions for station area planning. Such planning shall set forth conditions for development and access around high capacity transit stations. Consistency with transit station area guidelines, in conjunction with other regional policies, should be addressed in developing the regional transit system within corridors.
- RT-8.25 Local jurisdictions that are or will be directly served by the high capacity transit system identified in the Metropolitan Transportation Plan should develop specific station area plans as part of their comprehensive planning efforts that provide for development, services and facilities sufficient to support efficient transit service commensurate with the regional investment in transit. Local station area plans should be consistent with regional high capacity transit station area guidelines, and at a minimum address land use and density, transit-supportive development regulations, urban design, parking, and nonmotorized and motorized access.

EXPAND TRANSPORTATION CAPACITY OFFERING GREATER MOBILITY OPTIONS

- RT-8.26 Upon potential achievement of broad public support, regional transportation pricing strategies should be considered as a method to assist in financing the costs for development, maintenance and operation of the regional multimodal transportation system in order to reflect a more direct relationship between transportation system costs and benefits.
- RT-8.27 Promote an interconnected system of high-occupancy vehicle lanes on limited access freeways that provides options for ridesharing and facilitates local and express transit services connecting centers and communities. Assure safe and effective operation of the HOV system at intended design speed for transit vehicles while also enabling the region to assure attainment and maintenance of federal and state air quality standards.

- RT-8.28 Support the design and development of components of the regional high-occupancy vehicle (HOV) system, which improve transit access and travel time relative to single-occupant vehicle travel.
- RT-8.29 Promote and support the development of arterial HOV lanes and other transit priority treatments in urban areas to facilitate reliable transit and HOV operations.
- RT-8.30 Promote and assist in coordinated development and operation of high speed intercity rail corridor services and facilities connecting the Puget Sound region with effective interregional and interstate transportation mobility which may reduce highway and air travel demands in such corridors.
- RT-8.31 Support effective management and preservation of existing regional air transportation capacity and ensure that future air transportation capacity and phasing of existing airport facilities needs are addressed in cooperation with responsible agencies. Coordinate this effort with long-range comprehensive planning of land use, surface transportation facilities for effective access, and development of financing strategies.
- RT-8.32 Ensure adequate capacity to serve cross-sound travel demands that focus on foot-passenger travel and freight and goods movement. Promote convenient connections for foot-passengers to the regional transit network.
- RT-8.33 Develop a regionally coordinated network of facilities for pedestrians and bicycles which provides effective local mobility, accessibility to transit and ferry services and connections to and between centers.
- RT-8.34 Support the development of roadways when they are needed to provide more efficient connections for a comprehensive road network to move people and goods when such roads will not cause the region to exceed air quality standards.
- RT-8.35 Support appropriate development of freight access improvements for greater reliability and efficiency in the movement of freight and goods. Such improvements may include but are not limited to consideration of exclusive freight access facilities and/or preferential freight access where appropriate.
- RT-8.36 Transportation investments in major facilities and services should maximize transportation system continuity and be phased to support regional economic development and growth management objectives.
- RT-8.37 Improve intermodal connections between high capacity transit stations, (including ferry terminals, rail stations, and bus centers), major transfer points, and the communities they serve, primarily through more frequent and convenient transit service.
- RT-8.38 Support opportunities to redevelop the road system as multimodal public facilities which accommodate the needs of pedestrians, cyclists, transit, high-occupancy vehicles, automobiles, and trucks.
- RT-8.39 Develop a high-capacity transit system along congested corridors that connects urban centers with frequent service sufficient to serve both community and regional needs.
- RT-8.40 Encourage, when possible, the use of local labor when building regional transportation systems and components which could generate new economic and employment opportunities.

Additional Adopted Multicounty Policies Related to Regional Guidelines and Principles – RCW 47.80

The following VISION 2020 policies, in addition to the adopted Multicounty Framework and Transportation Policies, satisfy the objectives of the Region's Guidelines and Principles, pursuant to RCW 47.80.

CONCENTRATION OF ECONOMIC ACTIVITY

RE-7.6 Promote economic opportunity by encouraging employment growth in all centers, and foster strength and sustainability by supporting centers-based economic strategies identified in local comprehensive plans and countywide planning policies.

RESIDENTIAL DENSITY

RG-1.9 Encourage growth in compact, well-defined urban centers which: (1) enable residents to live near jobs and urban activities, (2) help strengthen existing communities, and (3) promote bicycling, walking and transit use through sufficient density and mix of land uses. Connect and serve urban centers by a fast and convenient regional transit system. Provide service between centers and nearby areas by an efficient, transit-oriented, multi-modal transportation system.

RG-1.10 Provide opportunities for creation of town centers in urban areas that: (1) serve as focal points for neighborhoods and major activity areas, (2) include a mix of land uses, such as pedestrian-oriented commercial, transit stops, recreation and housing, and (3) encourage transit use, biking and walking through design and land use density.

DEVELOPMENT CORRIDORS AND URBAN DESIGN THAT SUPPORT HIGH-CAPACITY TRANSIT

RG-1.6 Support the transformation of low-density auto-oriented transportation corridors to higher-density mixed-use urban transportation corridors when redevelopment would not detract from centers or compact communities. Corridors that offer potential include those that are located near significant concentrations of residences or employment, and have the potential to support frequent transit service and increased pedestrian activity. Encourage the redevelopment of these arterials through:

- a. Addition of transit facilities, pedestrian-oriented retail, offices, housing, and public amenities.
- b. Building design and placement, street improvements, parking standards, and other measures that encourage pedestrian and transit travel.
- c. Provision of pedestrian and bicycle connections between transportation corridors and nearby neighborhoods.

ABILITY OF TRANSPORTATION FACILITIES AND PROGRAMS TO RETAIN EXISTING AND ATTRACT NEW JOBS AND PRIVATE INVESTMENT TO ACCOMMODATE GROWTH IN DEMAND

RE-7.12 Through broad participation of the private sector and major institutions, identify transportation requirements and improvements necessary to sustain and enhance existing economic activity in the region and promote accessibility to and within all centers for people, information, and goods.

RE-7.13 Identify the transportation requirements of leading and emerging sectors of the regional economy, and develop a multi-modal transportation system that recognizes the distinctive needs of

all business sectors of the regional economy to move goods, people and information within and through the region.

RE-7.14 Coordinate investments in transportation infrastructure with the needs of the private sector to maximize the development of current and future industrial sites, including existing ports, and to enhance the movement of goods, information and services within and between manufacturing/ industrial centers.

RE-7.15 Maintain and enhance the economic viability of centers and compact communities by improving accessibility to commercial and retail sector activities and promoting circulation of goods and people.

JOINT AND MIXED USE DEVELOPMENTS

RG-1.9 Encourage growth in compact, well-defined urban centers which: (1) enable residents to live near jobs and urban activities, (2) help strengthen existing communities, and (3) promote bicycling, walking and transit use through sufficient density and mix of land uses. Connect and serve urban centers by a fast and convenient regional transit system. Provide service between centers and nearby areas by an efficient, transit-oriented, multi-modal transportation system.

APPENDIX 2

environmental justice

Since the 1995 Metropolitan Transportation Plan was adopted, a renewed emphasis on environmental justice has become a more integral part of the transportation planning process for urban regions in the United States. The concept of environmental justice includes the identification and assessment of disproportionately high and adverse effects of programs, policies or activities on minority and low-income population groups. Within the context of regional transportation planning, environmental justice considers the relative distribution of costs and benefits from transportation investment strategies and policies upon different segments of society.

President Clinton's 1994 executive order on environmental justice requires federal agencies to monitor programs, policies and activities for compliance with environmental justice provisions.¹ In response, the Federal Highway Administration and the Federal Transit Administration have renewed their commitments to assure that environmental justice is carried out in the programs and strategies they fund, including the activities of metropolitan planning organizations.²

Specific guidance from federal agencies is not yet available concerning how regional transportation planning efforts should address environmental justice. Nevertheless, the process to develop Destination 2030 has included environmental justice considerations from the outset.³ The Regional Council set out to ensure that the burdens and benefits of implementing Destination 2030 are equitably distributed across groups based on race, income, age, or disability. The Council's analysis included (1) outreach and meaningful participation

¹ See Title VI of the Civil Rights Act of 1964 and Executive Order 12898 on Environmental Justice. The executive order states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

² See FHWA and FTA Action Implementing Title VI Requirements in Metropolitan and Statewide Planning (October 1999).

³ The *Metropolitan Transportation Plan Alternatives Analysis and Draft Environmental Impact Statement* (August 2000) describes low-income and minority population groups in the four-county central Puget Sound region and provides a series of maps showing concentrations of poverty, distributions of low-income population, general concentrations of minority groups, and job location centers. The analysis then discusses the significance of transportation for minority and low-income population groups in terms of travel modes, infrastructure investments, congestion, accessibility, growth, and air quality.

from minority and low-income population groups in the development of the plan, and (2) an assessment to determine any discrimination of minority and low-income population groups in the distribution of impacts and benefits associated with the projects and programs advanced in Destination 2030.

GEOGRAPHIC AND DEMOGRAPHIC PROFILE OF THE CENTRAL PUGET SOUND REGION

Guidance from the United States Department of Transportation on addressing environmental justice identifies low-income populations as those persons whose household incomes are at or below the Department of Health and Human Services poverty guidelines.⁴ Since no current set of data was readily available for identifying persons meeting these guidelines within the four-county region, census low-income household measures based on regional median income were used as alternatives.

Low-Income Populations

Two separate approaches to measure and compare income levels within the region were used and are described below.

- The first is a measure of poverty status from the 1990 Census. This analysis examines census block group data to understand spatial patterns of poverty concentration. Within the central Puget Sound region, 9.3 percent of all persons were under the poverty threshold in 1989.
- The second measure is regional median household income – which was estimated to be \$52,335 in 1997, using a Regional Council model to update 1990 Census data. This analysis examines census tract level estimates of household median income when comparing income levels to the regional median. Low-income populations are identified as census tracts where the median household income is at or below 50 percent of the regional median.

When analyzing the spatial location of low-income households and persons below the poverty level both of the above measures reveal similar distributions.

Minority Populations

In 1998, the region's minority population was estimated by the Washington State Office of Financial Management to be 15 percent of the total population (5 percent Black/African American; 2 percent Indian/Eskimo/Aleut; and 8 percent Asian/ Pacific Islander).⁵ Minority populations are identified as census tracts where the percent of minority persons is one standard deviation above the regional percentage.

General Observations

Low-income populations are generally more concentrated in the three largest urban centers: Seattle, Tacoma, and Everett. Census tracts with the highest household incomes are primarily located on the east side of Lake Washington.

The largest concentrations of minority populations are found in census tracts in northern Pierce County and southwestern King County. King County and Pierce County each have a minority population larger than

⁴ See, for example, *Environmental Procedures Manual*, Section 458 (November 2000).

⁵ Source data provided by the Washington State Department of Social and Health Services, Research and Data Analysis. Original data estimates from Washington State Adjusted Population Estimates, based on estimates by Claritas Inc. and the Washington State Office of Financial Management (June 30, 1997).

overall regional average percentage. In Kitsap County, minority populations are generally found in census tracts near the City of Bremerton. Snohomish County has the lowest percentage of minorities among the counties in the central Puget Sound region, about one half the overall regional average.

Table 2-1 below displays the percent of minority persons by county within the central Puget Sound region. Maps 2-1 through 2-6 display concentrations of poverty, low income and minorities in the region.

TABLE 2-1. 1998 County Population by Race in the Central Puget Sound Region*

	TOTAL POPULATION	WHITE/CAUCASIAN POPULATION	%	BLACK/AFRICAN AMERICAN POPULATION	%	INDIAN, ESKIMO AND ALEUT POPULATION	%	ASIAN AND PACIFIC ISLANDER POPULATION	%	TOTAL % NON-WHITE
King	1,665,801	1,379,584	83	92,456	6	20,827	1	172,934	10	17.2
Kitsap	229,000	203,647	89	7,586	3	4,320	2	13,447	6	11.1
Pierce	686,801	574,286	84	53,928	7	10,640	2	47,947	7	16.4
Snohomish	568,100	524,398	92	7,102	1	8,336	2	28,264	5	7.7
Total	3,149,702	2681915	85	161072	5	44123	2	262592	8	14.9

Source: Office of Financial Management, 1999 Population Trends, pages 61 and 69, September 1999.

* Hispanic origin is not a separate racial category, but counted in other racial categories. Hispanics accounted for the following totals: King County 57,716; Kitsap County 8,631; Pierce County 28,901; Snohomish County 15,851; regional total 111,099.

Jobs are reasonably well distributed throughout the urban area of the central Puget Sound region (see *1999 Central Puget Sound Region Economic Report*, PSRC). Compared to many major U.S. metropolitan areas this region has seen a significant share of recent job growth locate within the central cities. This is especially true in downtown Seattle.

Table 2-2, based on 1998 employment data, summarizes analysis that identified all jobs located within one mile of census block groups with 20 percent, or more, of persons below the poverty level. The information on the table compares the number of jobs among employment classifications.

TABLE 2-2. Jobs Located within One Mile of High Poverty Census Block Groups

EMPLOYMENT CLASSIFICATION	JOBS LOCATED NEAR CONCENTRATED POVERTY	TOTAL REGION JOBS	% OF JOBS NEAR CONCENTRATED POVERTY
Agriculture and Mining	5,512	15,525	36%
Construction	35,596	76,987	46%
Manufacturing	147,187	253,974	58%
Wholesale, Communication, Transport, Utilities	117,428	186,124	63%
Retail Trade	155,297	270,689	57%
Finance, Insurance, and Real Estate	60,342	92,164	65%
Personal Services	17,904	30,055	60%
Business Services	65,268	123,947	53%
Health Services	80,238	107,298	75%
Legal Services	11,167	12,541	89%
Education Services	9,604	15,886	60%
Social Services	22,682	36,658	62%
Other Services	75,461	126,665	60%
Total	803,686	1,348,513	60%

The significant percentage of regional jobs within close proximity of high concentrations of poverty suggests that proximity and access to employment is not the only factor that leads to greater economic opportunities.

Transportation Services Available in Destination 2030

The Preferred *Destination 2030* Plan is most closely related to Alternative III presented in the *Metropolitan Transportation Plan Alternatives Analysis and Draft Environmental Impact Statement* (August 2000 – hereafter, the *Draft EIS*). With an emphasis on maintaining and further developing various modes of travel throughout the region, including transit, this alternative is consistent with the goals and objectives of environmental justice.

The other alternatives analyzed in the *Draft EIS* tend to demonstrate increased burdens and impacts on the region in general. Alternative I primarily carries out the existing 1995 Metropolitan Transportation Plan to the year 2030 with only minor changes. Alternative II cuts back from many of the provisions and improvements identified in the 1995 Metropolitan Transportation Plan in response to a lack of adequate revenues. Many of the impacts of these two alternatives are economic; they advance a transportation system that nearly necessitates travel exclusively by automobile, and burden population groups that can least afford it with the expenses of owning and operating vehicles. (The same burdens are also placed on individuals unable to drive a car, such as the young, many of the elderly, and disabled population groups.)

The preferred *Destination 2030* plan includes transit improvements that provide links between many of the region's major job centers and low-income and minority neighborhoods. Roadway improvements will also provide improved connections for all population groups – including low income and minority populations – without unduly burdening these groups with impacts.

Public Outreach

Throughout the development of *Destination 2030*, the process has included public outreach efforts to ensure that all members of the public have had the opportunity to participate meaningfully in shaping the preferred *Destination 2030* plan. The outreach efforts included opportunities to hear and address the concerns of minority and low-income communities throughout the region.

A 30-day public comment period to develop the scope of the environmental review to produce *Destination 2030* took place between September 15 and October 15, 1999. An announcement of the scoping process was published in local newspapers and in the Regional Council's newsletter, *Regional VIEW*. The scoping documents were mailed to local jurisdictions, agencies with jurisdiction and expertise, tribal governments, interest and community groups, and individual citizens who have asked to be placed on the mailing list.⁶ Four public meetings – one in each of the four counties in the region – were held during the comment period.⁷

With the release of the *Draft EIS* (August 2000), intensive public review and outreach were conducted in September and October 2000. Public meetings were geographically distributed throughout the region, and a series of targeted "brown bag" meetings aimed at special interest and special needs groups – groups traditionally underserved.⁸ Meeting sites were selected based on transit availability and Americans with Disabilities

⁶ See the *2001 Metropolitan Transportation Plan Alternative Analysis and Draft Environmental Impact Statement (DEIS) Appendix 1, Scope of the Environmental Review for the 2001 Update of the Metropolitan Transportation Plan* (December 1999).

⁷ For dates and locations of these meetings, see *Scope of the Environmental Review for the 2001 Update of the Metropolitan Transportation Plan* (December 1999), page 3.

⁸ See *DEIS* (August 2000), page 202.

Act accessibility, as well as taking into account the income and ethnic diversity of the community. A public hearing was held on *Destination 2030* on April 10, 2001. See Map 2-7 for meeting locations. Direct mail, telephone calls, display advertisements in newspapers, news releases to all news media in the region, feature articles in *Regional VIEW* (more than 8,000 circulation), website access, and special news media efforts – including public service announcements and cable-TV broadcasts of many Regional Council meetings – provided information on the *Draft EIS*, the public review process, and outreach opportunities.⁹

Requests were made to all jurisdictions, as well as to all community and interest groups the Regional Council could identify, for formal presentations by Regional Council staff. At least two presentations were requested by and given to transit user groups where low-income and transit-dependent individuals were represented.

The Regional Council accepted public comment on the Draft EIS in Autumn 2000. Only two of the 1378 comments received during the public review period address environmental justice directly. These two comments questioned the relevance of considering environmental justice as part of the work in developing *Destination 2030*. See Map 2-8 for the identified locations from which the Regional Council received comments from groups and individuals who provided addresses.

Infrastructure and Service Investments

Investments in the transportation systems advanced by *Destination 2030* typically provide mobility and access benefits to a broad range of transportation users in the region – especially since many projects and programs are designed to accommodate different modes of travel along the same corridor.

ACCESSIBILITY

Local transit service in *Destination 2030* has increased over the levels described in the *1995 Metropolitan Transportation Plan*. Such service provides greater local access and better serves the needs of many of the identified population groups. Expanded transit service supports a more intense land use pattern in designated urban centers and other compact communities throughout the region. More compact development patterns will lead to greater local access to needed activities for a greater portion of the region's urban population – including minority and low-income population groups.

Destination 2030 identifies a number of transit centers throughout the region. These facilities provide transit access to individuals from the immediate vicinity and from adjacent neighborhoods. In addition, *Destination 2030* places a stronger emphasis on nonmotorized travel, providing improved pedestrian and bicycle access to transit. Such improvements are targeted throughout the region, including low-income and minority neighborhoods.

Destination 2030 works with the understanding that local transit providers now meet and will continue to meet the requirements of the Americans with Disabilities Act (ADA). In addition, the transit agencies in the four-county area have a regional reduced fare permit for disabled individuals and the elderly. Transit agencies have also developed partnerships and programs with social service agencies to provide for client access to social and medical services, as well as employment and job training opportunities.

⁹ The following newspapers serving minority or low-income communities in the central Puget Sound region were contacted to provide information on the Destination 2030 planning process to their readers: (1) *The Facts*, (2) *Northwest Asian Weekly*, and (3) *Real Change*.

MODAL CHOICE

Destination 2030 includes a multimodal investment strategy with increased local transit service. These investments provide expanded mobility choices for minority and low-income populations, as well as for other groups that are transit-dependent, including the elderly and disabled.

TRAFFIC SAFETY

Destination 2030 conforms with regulations that expand safety requirements to all federally-funded projects. Improvements in safety due to *Destination 2030* projects and programs should be enjoyed by members of all income and ethnic groups throughout the region at a level *at least* commensurate with their numbers in the region. Extensive expenditures to improve the region's transit service, as well as substantial investments in pedestrian and bicycling facilities, should reduce the toll on pedestrians. Additional design steps are encouraged at the local level, which have the additional effect of calming traffic. See the Physical Design Guidelines, *Destination 2030* Chapter 4.

CONGESTION

A major focus of the infrastructure investments in *Destination 2030* is to control the growth of delay in the region due to congestion. At a regional level, congestion is held relatively constant, while the region absorbs an addition 1.5 million residents over the next 30 years. Ongoing efforts to monitor congestion levels in subareas and corridors throughout the region will continue to be carried out after the adoption of *Destination 2030*. Attention must be given to what is happening with congestion levels in areas where minority and low-income groups live.

Growth Management and Community

Destination 2030 actively supports the growth management planning goals and objectives of the region's various communities. The growth patterns assumed in regional and local plans support the viability of transit and other publicly-supported forms of mobility. Such growth patterns foster additional opportunities to create a greater variety of housing including additional affordable housing – in centers, compact communities, and neighborhoods in which low-income and minority populations reside.

Mitigation measures based on *VISION 2020* policies provide for the siting of transportation facilities and improvements to avoid destruction or alteration of historic properties or cultural resources. New facilities, such as transit stations, are encouraged to be designed in a manner that enhances existing neighborhoods and communities. Design features should be attentive to height, scale, landscaping, built form, street furniture, and materials that either blend with or enhance existing commercial and residential structures. Facility improvements in all communities, including low-income and minority neighborhoods, should be of the highest aesthetic quality.

Noise

The character and level of noise impacts locally depend on proximity to and design of facilities. New lanes and access points for high-occupancy vehicle (HOV) lanes may bring traffic closer to abutting land uses, although the overall change in noise would be slight. Nevertheless mitigation measures, including the construction of barriers, can reduce noise by eight to 10 decibels (dBAs). Such measures are typically determined by project level planning. Where such remedies are not adequate, property acquisition may be an alternative.

In the case of airport noise, sound insulation programs are commonly used to reduce the impacts of airport noise in residential units and other noise sensitive land uses. At larger airports, sound insulation is usually part of a more comprehensive noise compatibility program. Seattle-Tacoma International Airport (Sea-Tac), King County International Airport/Boeing Field, and Snohomish County Airport/Paine Field have developed FAR Part 150 Noise Compatibility Programs to mitigate noise impacts in nearby communities, and McChord Air Force Base has developed an Air Installation Compatible Use Zone (AICUZ) study with similar goals. These programs contain a wide range of actions to address airport noise, including land acquisition, sound insulation, airport compatible land use, aircraft operational measures to reduce noise at the source, and others. All these programs are designed to address the impacts of airport activity and growth, which are most significant in the immediate vicinity of the airports. Therefore, those residents most impacted by airport noise are also those who receive the most benefit from the noise mitigation programs. Regional aircraft flight tracks have the potential to affect low income and minority populations. Decisions on flight tracks should be evaluated relative to environmental justice requirements.

The other general aviation facilities in the region serve lower volumes of aircraft activity, are used by smaller, quieter aircraft, and generally do not create significant noise impacts on surrounding communities. While many of these airports perform noise analysis as part of their airport master plans to assist in adjacent area land use planning, they do not have specific noise mitigation programs.

Air Quality

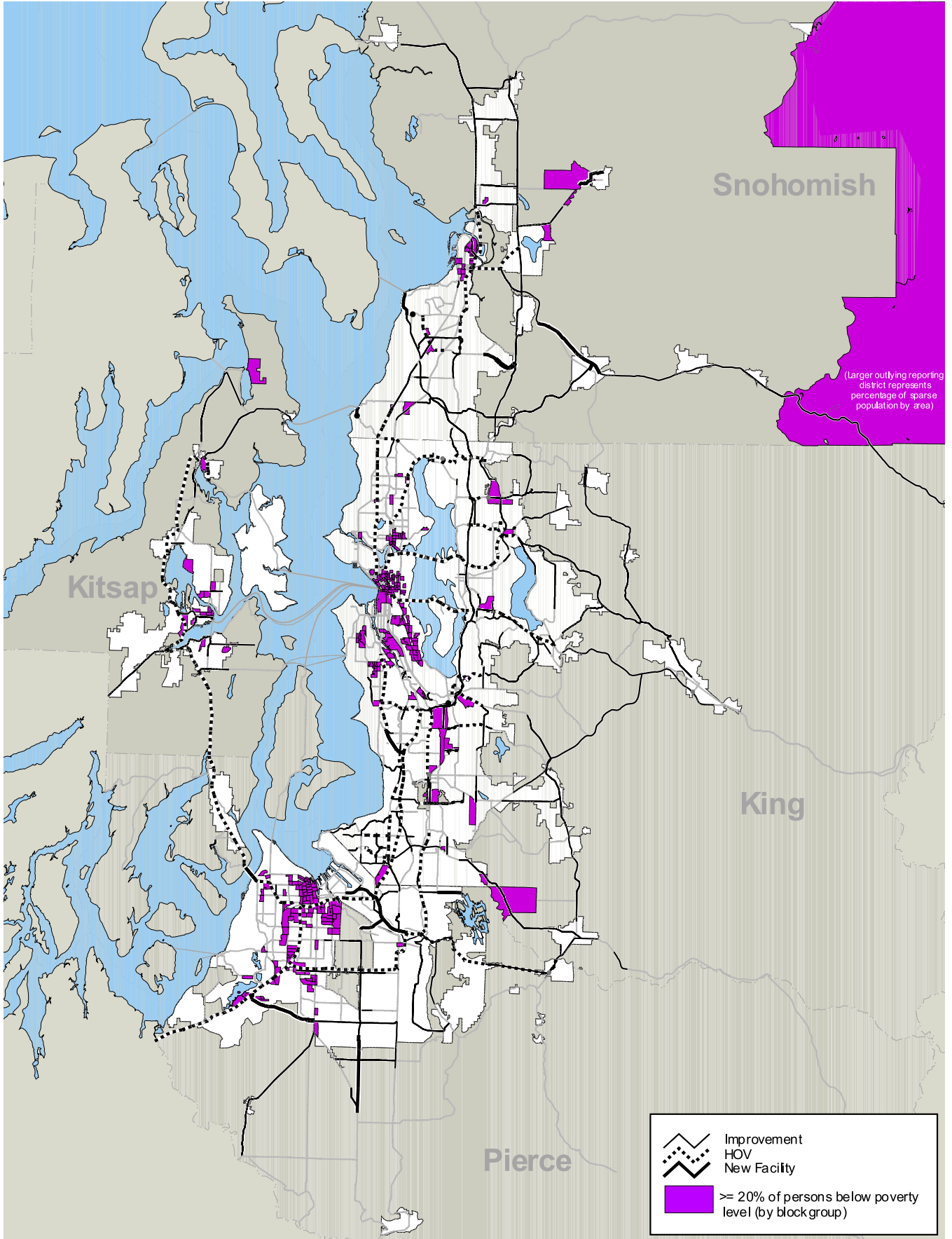
The *Destination 2030* plan conforms with federal and state air quality standards. In fact, even though population and highway travel are expected to increase by 50 percent over the next 30 years, air quality analysis based on the most recent methodology developed by the federal Environmental Protection Agency demonstrates that total emissions of carbon monoxide, ozone precursors, and particulates from on-road mobile sources will remain at levels below those of the late 1990s. The entire population of the region, including low-income and minority groups, will benefit from the continuing improvements in vehicle and fuel technologies.

Summary

After reviewing the broad distribution of projects and programs identified in *Destination 2030*, coupled with the wide distribution of minority and low-income population groups in the central Puget Sound region, it can be concluded that any adverse effects and benefits associated with implementing *Destination 2030* are not distributed to minority and low income populations in a significantly different manner than to the region's population as a whole. This is not to say that individual projects and programs would have no adverse effects on these population groups. A determination of no adverse effects – or identification of mitigation for adverse effects – must be made on a project by project basis. Such a determination would need to be evaluated during project level environmental analysis.

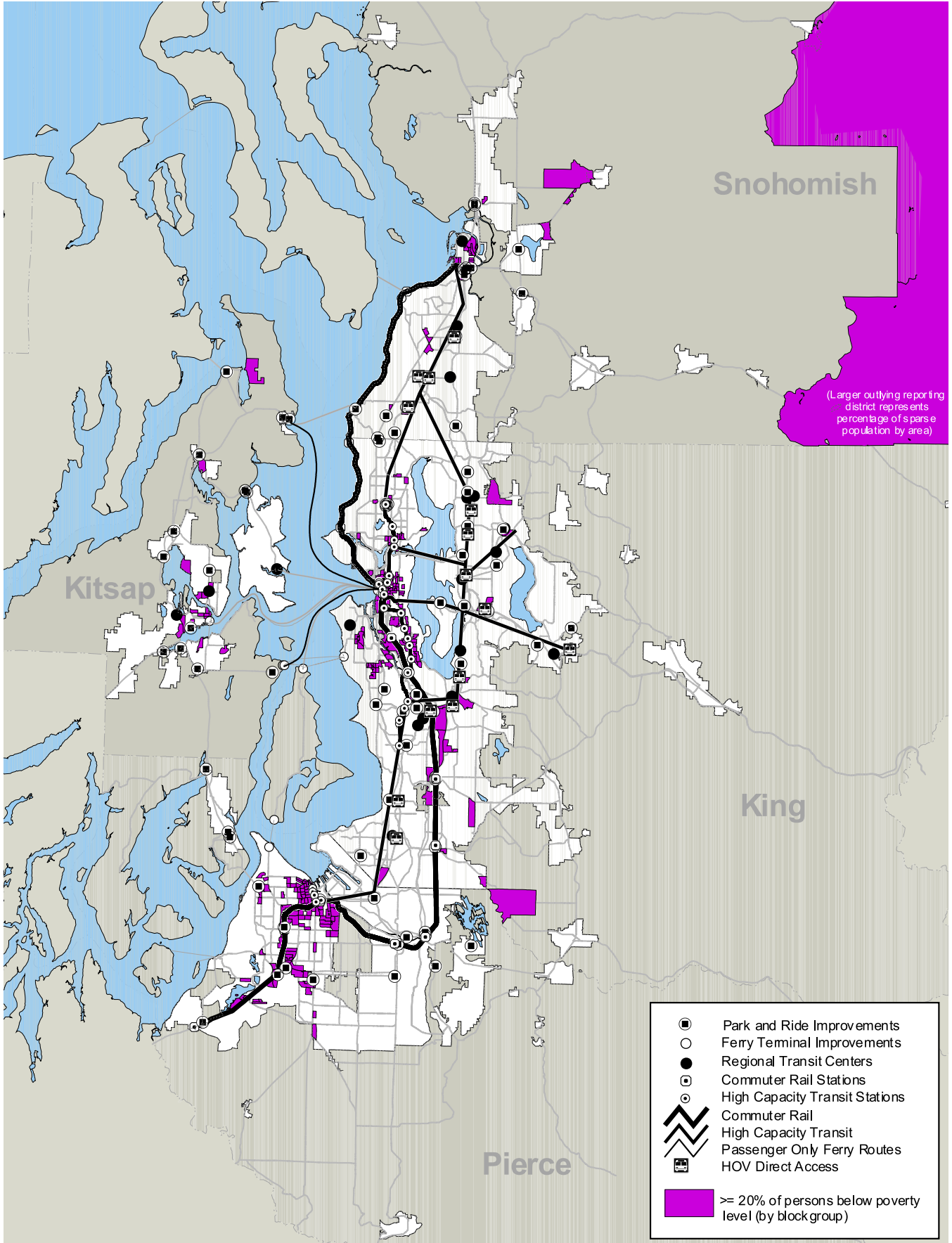
Environmental justice will continue to be a major consideration as work is carried out to implement *Destination 2030*. As capabilities for analysis improve, the region will also be able to improve the ways in which it addresses environmental justice issues. Specifically, project level environmental analysis will provide additional site-specific information that will examine in greater detail impacts on low-income and minority population groups in the central Puget Sound region. Monitoring efforts related to environmental justice will also be further developed as part of the region's ongoing work to implement *Destination 2030*.

MAP 2-1. Concentrations of Poverty and Roadway Projects



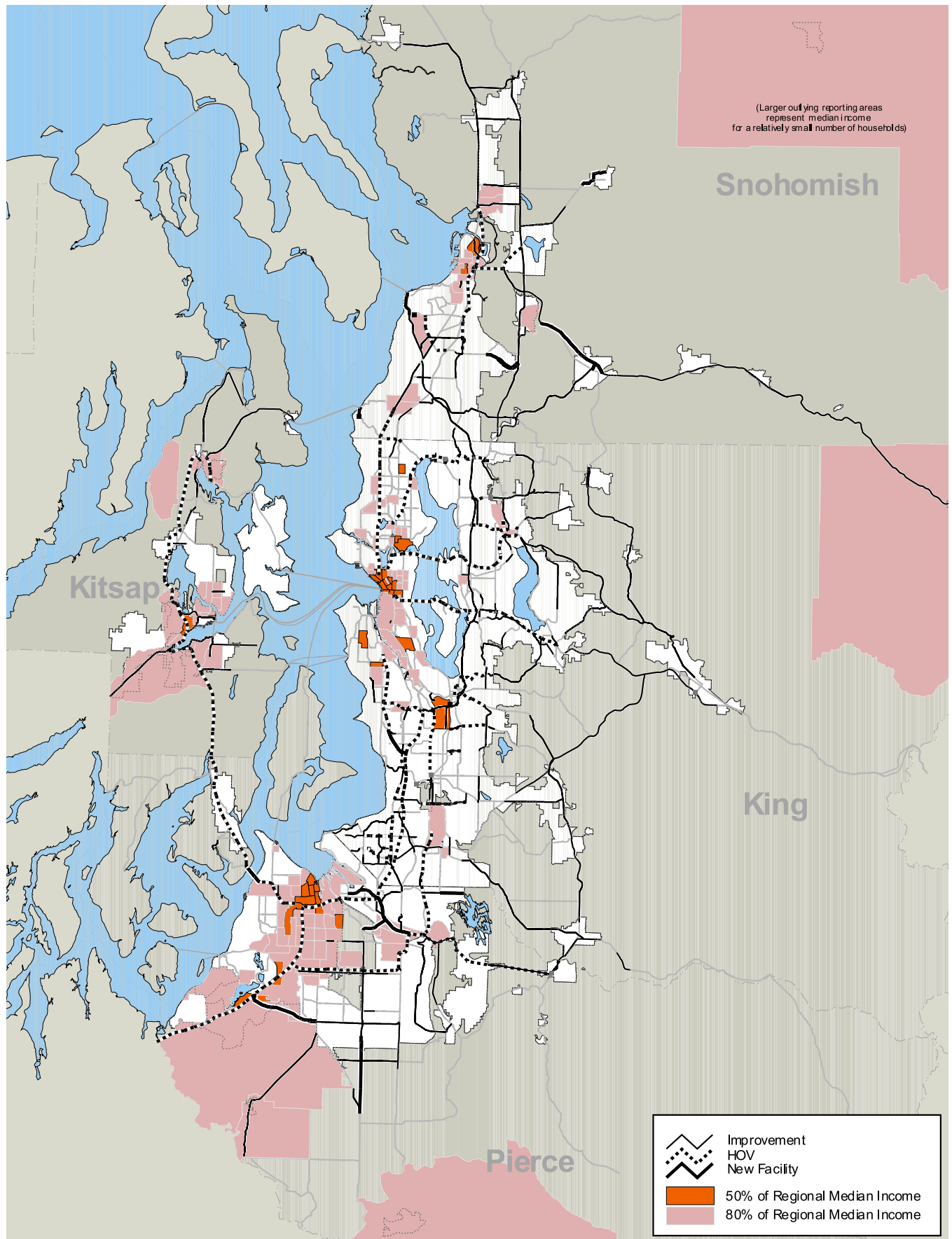
Adoption Date: May 24, 2001

MAP 2-2. Concentrations of Poverty and Transit Projects



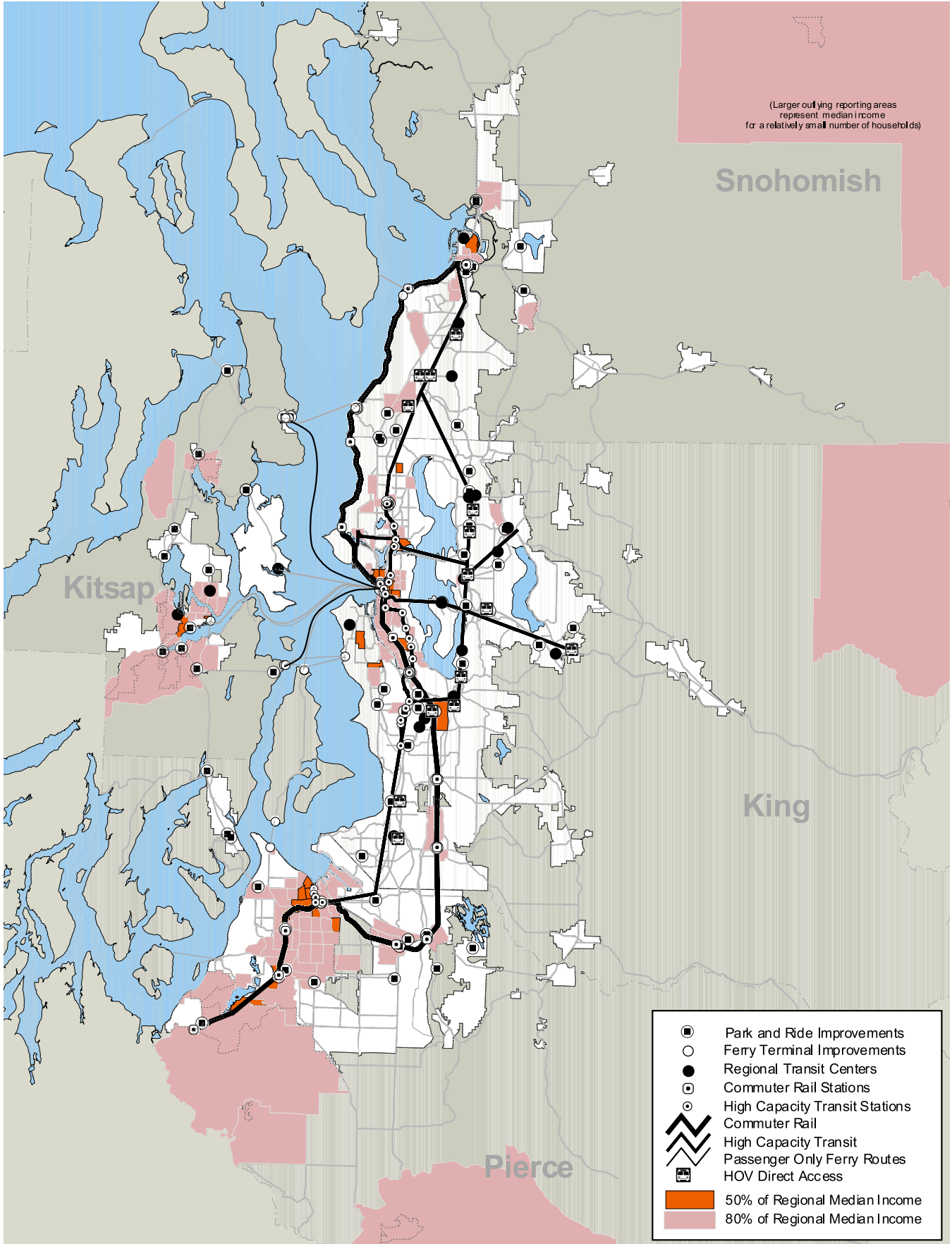
Adoption Date: May 24, 2001

MAP 2-3. Low Income Population and Roadway Projects



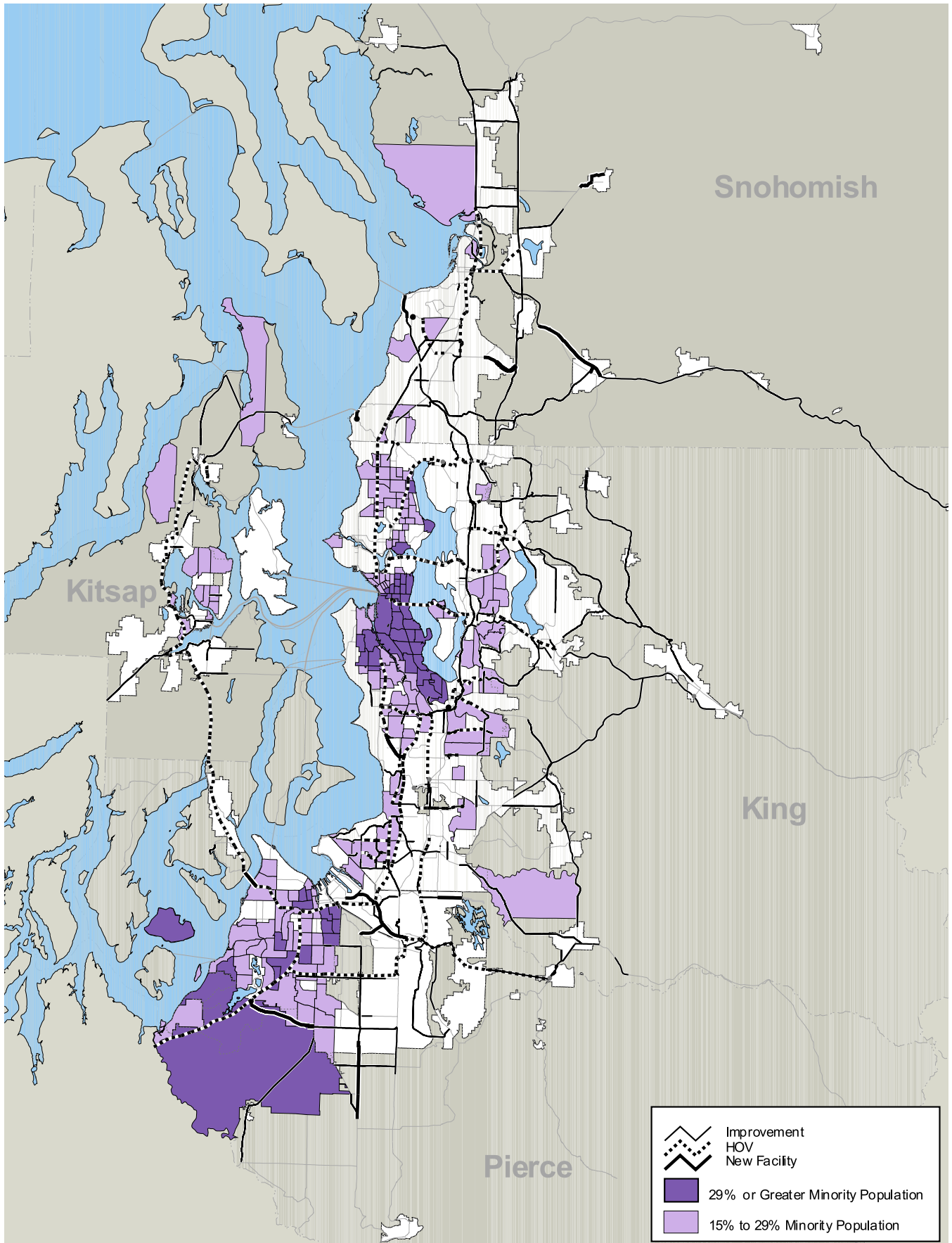
Adoption Date: May 24, 2001

MAP 2-4. Low Income Population and Transit Projects

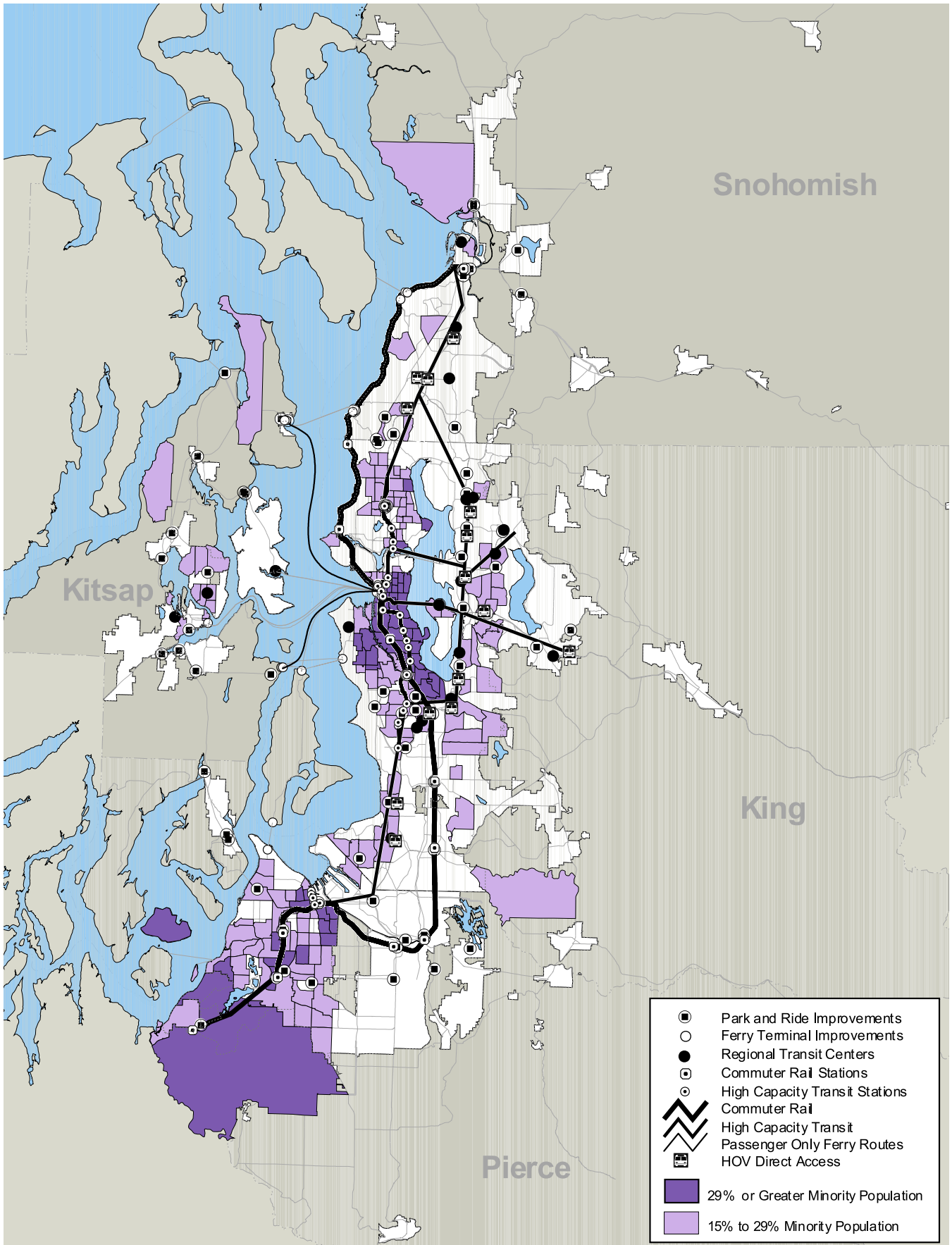


Adoption Date: May 24, 2001

MAP 2-5. Minority Population and Roadway Projects

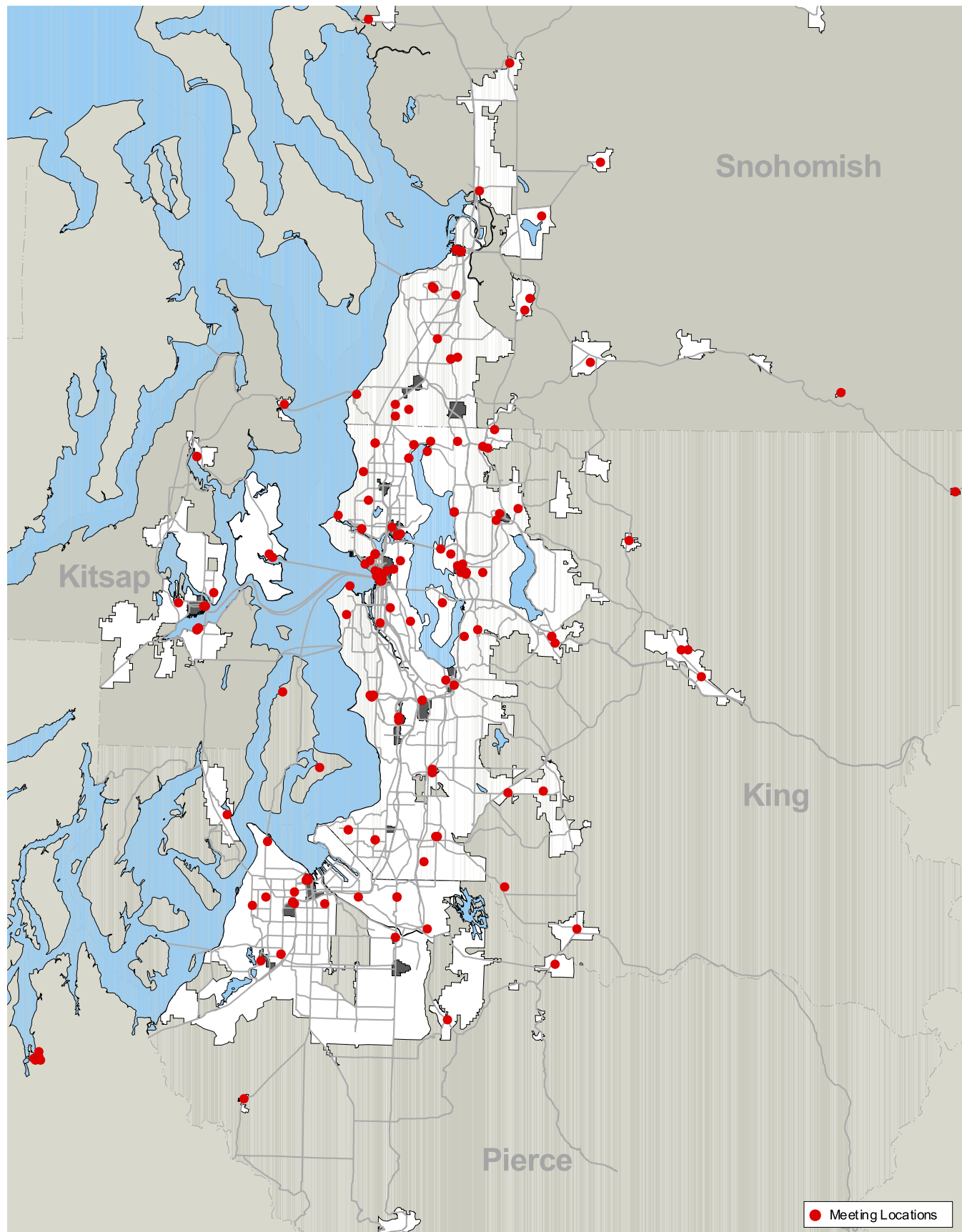


MAP 2-6. Minority Population and Transit Projects



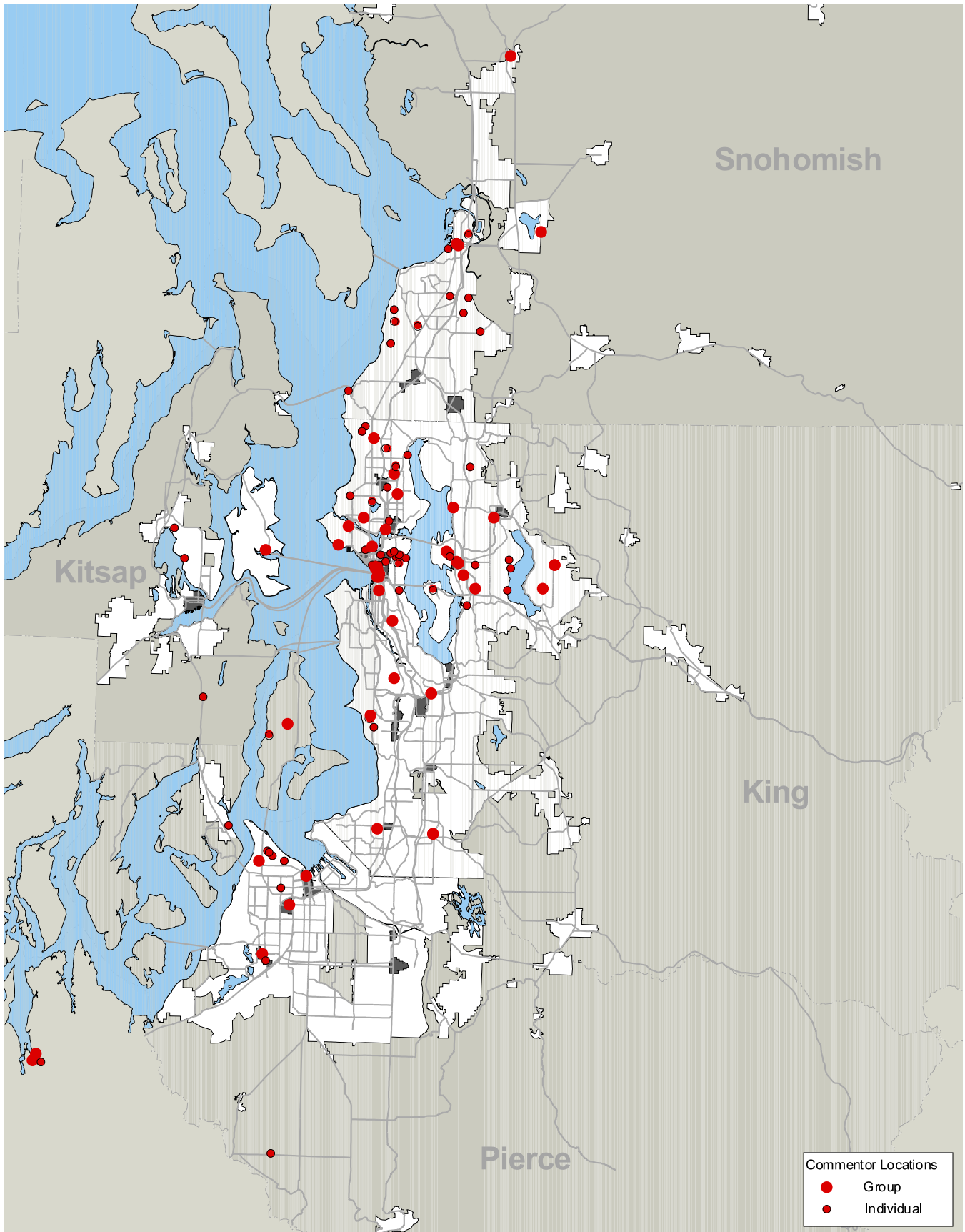
Adoption Date: May 24, 2001

MAP 2-7. Locations of Meetings and Presentations on Destination 2030



Adoption Date: May 24, 2001

MAP 2-8. Locations of DEIS Respondents who Provided Addresses



Adoption Date: May 24, 2001

APPENDIX 3

air quality conformity

Introduction

This paper documents the positive air quality findings for the analysis of *Destination 2030*, the long-range Metropolitan Transportation Plan of the central Puget Sound region, for conformity with the State Implementation Plan (SIP). Required under the federal Clean Air Act, the SIP provides a blueprint of how maintenance and nonattainment areas will meet the National Ambient Air Quality Standards (NAAQS). Plan conformity analyses and a positive finding of conformity are required by the federal Clean Air Act (CAA), the Transportation Equity Act for the 21st Century (TEA-21) and the Clean Air Washington Act. Positive conformity findings will allow the region to proceed with implementation of transportation projects in a timely manner.

Transportation conformity is a mechanism for ensuring that transportation activities – plans, programs and projects – are reviewed and evaluated for their impacts on air quality prior to funding or approval. The intent of transportation conformity is to ensure that new projects, programs and plans do not impede an area from meeting and maintaining air quality standards. Specifically, regional transportation plans, improvement programs and projects may not cause or contribute to new violations, exacerbate existing violations, or interfere with the timely attainment of air quality standards or the required interim emissions reductions towards attainment. Meeting conformity requirements takes the collective participation of all jurisdictions and agencies that implement transportation projects and programs within the central Puget Sound region.

Air Quality Status

The central Puget Sound region is currently designated by the U.S. Environmental Protection Agency (EPA) as a maintenance area for particulate matter less than 10 microns in diameter (PM_{10}), carbon monoxide (CO) and ground level ozone (O_3). Map 3-1 shows the location of the maintenance area boundaries.

In 1978, the central Puget Sound region was classified as a nonattainment area by the U.S. Environmental Protection Agency (EPA) for CO and O_3 . In 1987, the industrial areas of the Seattle Duwamish River, Kent Valley and Tacoma Tidelands were classified as nonattainment areas for PM_{10} . The Seattle and Tacoma industrial areas



include the ports of both those cities. Areas designated as nonattainment have exceeded the National Ambient Air Quality Standards (NAAQS) for those pollutants. In 1996, having met the federal standards for several years, the region was redesignated by the EPA as a maintenance area for CO and O₃. The three PM₁₀ areas have also met the federal standards for the past several years, and were redesignated as maintenance areas effective May 14, 2001. Map 3-1 displays designated maintenance areas for criteria pollutants – carbon monoxide, Ozone and particulate matter.

As required by the CAA, the Puget Sound region has a maintenance plan for the three PM₁₀ areas and for the CO and O₃ maintenance areas. All of these plans have been approved by the EPA. Approval of the CO maintenance plan occurred on October 11, 1996; approval for the O₃ maintenance plan occurred on November 25, 1996; and approval of the PM₁₀ maintenance plan occurred in December, 2000, with the plan becoming effective May 14, 2001.

Consultation Process

Federal Clean Air Act regulations, as identified in the federal conformity rule (40 CFR Parts 51 and 93), and Clean Air Washington Act regulations defined in the state conformity rule (WAC 173-420-070), require formal consultation procedures for conducting conformity analyses. The consultation procedures for the conformity analysis of *Destination 2030* are consistent with the Regional Council's Public Participation Plan, which is in compliance with the Statewide and Metropolitan Planning regulations as well as the above conformity regulations. The Public Participation Plan may be obtained by contacting the Regional Council's Information Center (206-464-7532), or through the Regional Council's web site (psrc.org).

A major task identified under the consultation procedures requirements is the presentation of key staff assumptions on the process for conducting conformity analyses. Consistent with past practice, the Regional Council held a scoping meeting with federal, state and local agencies to present the staff interpretation of conformity tests that are required and key analytical assumptions involved in the conformity analysis of *Destination 2030*. This scoping meeting met the formal consultation requirements of the federal and state clean air acts.

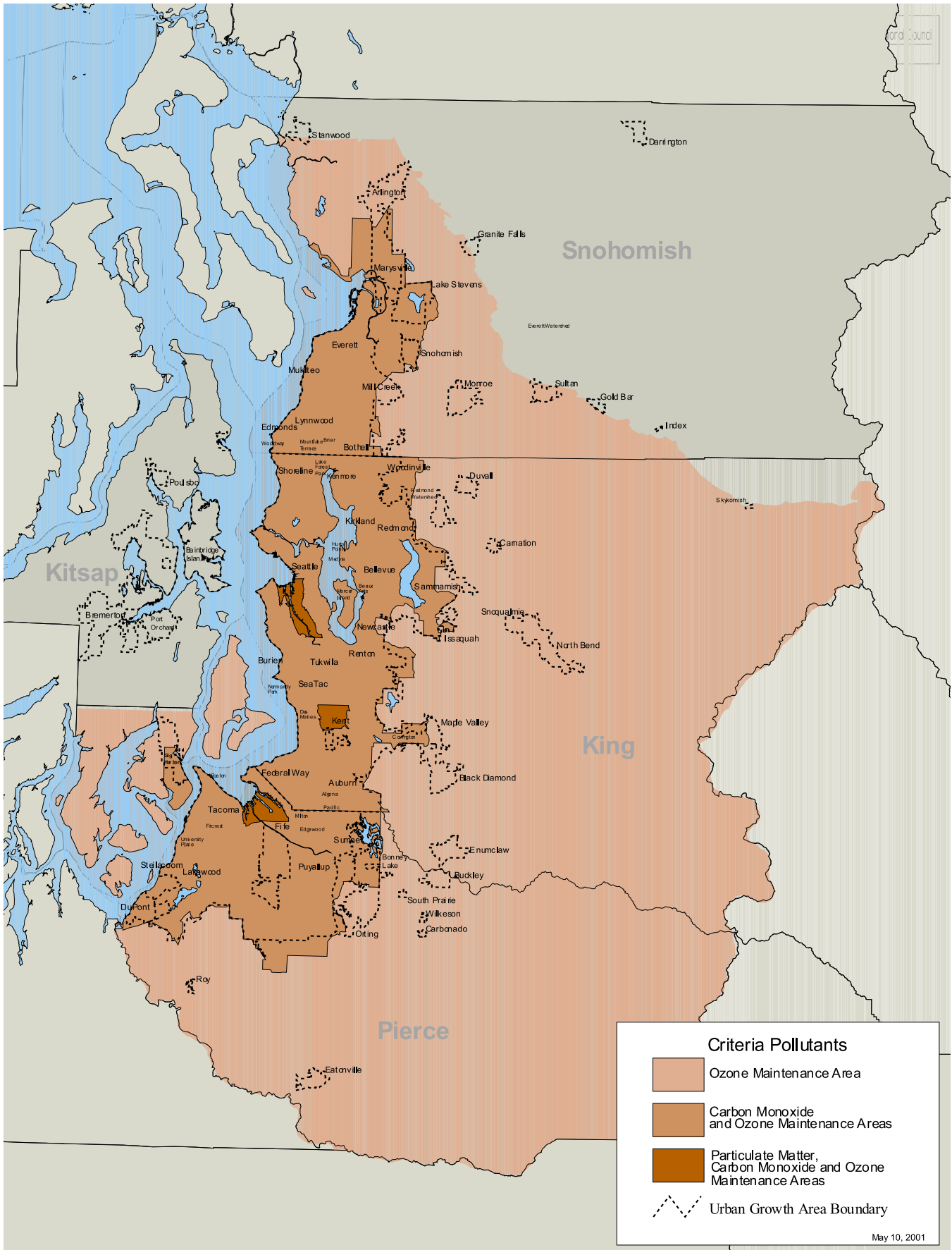
The scoping meeting was held on June 13, 2000. Notification of the meeting was made through public announcements in local newspapers and PSRC's web site (psrc.org). Those invited to the meeting included representatives from the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), EPA, the Washington State Department of Transportation (WSDOT), the Washington State Department of Ecology (Ecology), and the Puget Sound Clean Air Agency (PSCAA). A summary of the June 13, 2000 Scoping Meeting is contained in Appendix 3A. In addition, the Regional Council held working group sessions with these air quality partner agencies after the June 2000 scoping meeting to further discuss and refine modeling procedures and inputs. These meetings were held on September 12, 2000 and December 11, 2000.

Status of Transportation Control Measures

According to the federal conformity rule, transportation plans must provide for the timely implementation of Transportation Control Measures (TCMs) from an applicable maintenance plan (40 CFR §93.113). TCMs are projects, programs or actions that will aid in the elimination or reduction of the severity or number of violations of the NAAQS, and help expeditiously attain and maintain those standards. TCMs can be strategies to increase the efficiency of existing transportation facilities, reduce travel demand, or lower the amount of emissions in vehicles leading to measurable vehicle emissions reductions. Expected emis-



MAP 3-1. Designated Maintenance Areas for Criteria Pollutants – Carbon Monoxide, Ozone and Particulate Matter



sions reductions, or credits, from these TCMs are included in maintenance plan inventories and attainment/maintenance demonstrations.

Control measures identified in the CO maintenance plan relating to on-road mobile sources include the continuation of the existing vehicle Inspection and Maintenance (I/M) program administered by Ecology, and the development and implementation of a program sponsored by PSCAA to prevent exceedances of the NAAQS for CO through congestion management activities in locations with high measured CO values. Both of these programs have been implemented and are still in place, however no emissions reduction credit from the congestion management program was included in the maintenance plan inventory. Control measures identified in the O₃ maintenance plan relating to on-road mobile sources include a public smog awareness program which is triggered by weather conditions which could result in elevated ozone levels, and which is designed to encourage voluntary changes in behavior which would reduce emissions. This program has also been implemented and is still currently in place, however no emissions reduction credits from the program were included in the maintenance plan inventory. There are no control measures in the PM₁₀ maintenance plan relating to on-road mobile sources.

Conformity Analysis Requirements

Section 93.109 of the federal conformity rule identifies the applicable criteria and procedures for determining conformity of transportation plans. The following paragraphs summarize the sections of the final conformity rule which contain the criteria and procedures required for conformity tests for each maintenance area.

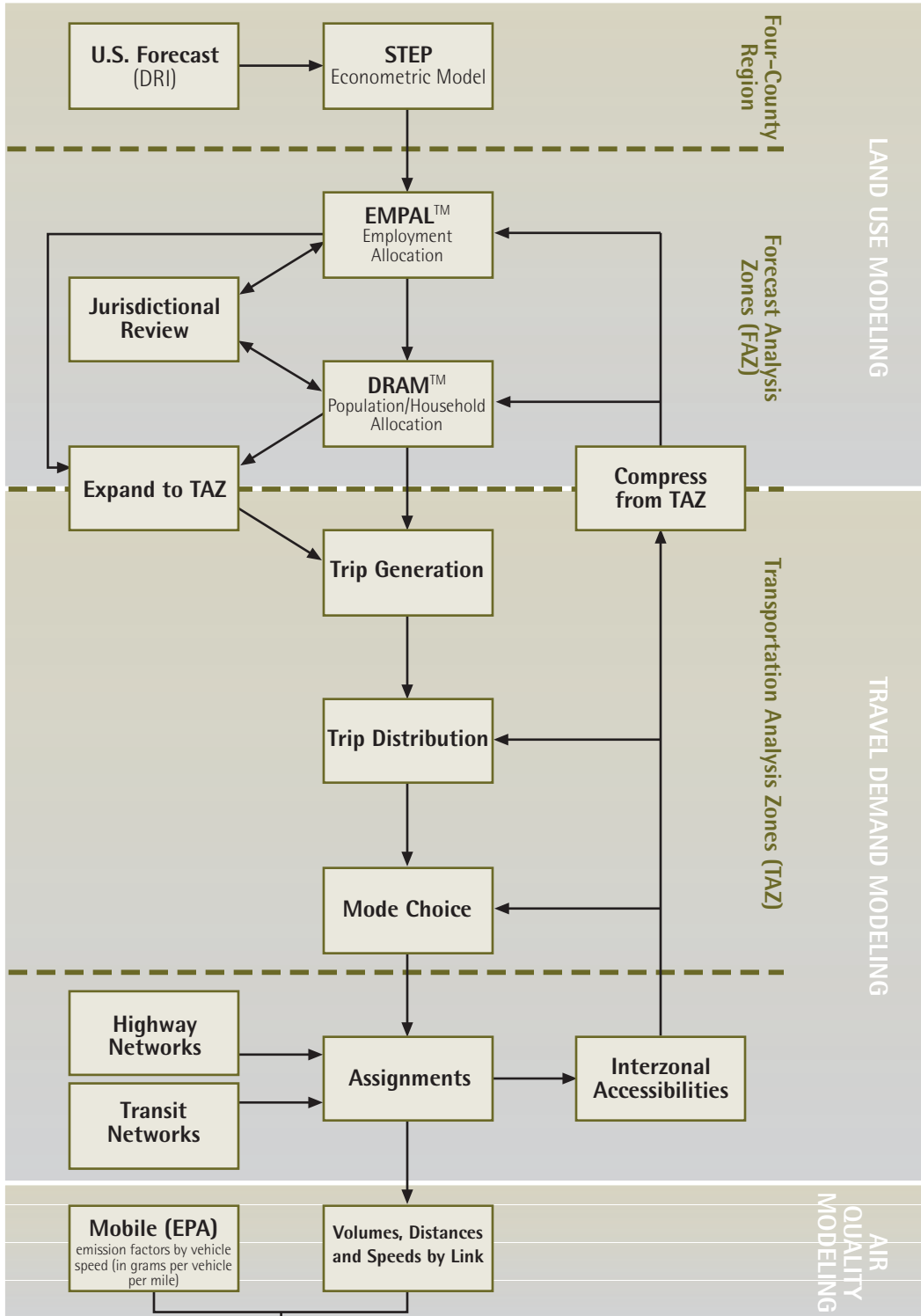
PLAN CONFORMITY CRITERIA – ALL POLLUTANTS AND PERIODS

- | | |
|----------------|--|
| Section 93.110 | The conformity determination must be based on the latest planning assumptions. |
| Section 93.111 | The conformity determination must be based on the latest emissions estimation model available. |
| Section 93.112 | The MPO must make the conformity determination according to consultation procedures identified in the conformity rule. |
| Section 93.113 | The Plan must provide for the timely implementation of Transportation Control Measures (TCMs) from the applicable SIP. |
| Section 93.118 | The Plan must be consistent with the motor vehicle emissions budget in the applicable SIP or submitted SIP revision. |

Technical Analysis Procedures

The federal conformity rule includes procedures for estimating regional emissions for transportation plan conformity analyses (§93.112). The process for estimating regional emissions for the conformity analysis of *Destination 2030* involves the integration of the Regional Council's land use and travel demand modeling with EPA's MOBILE5 emissions factor model. Figure 1 provides an overview of the models used in the Regional Council's transportation and air quality analysis process. For a more detailed description of the transportation and air quality analysis conducted by the Regional Council, consult the *Metropolitan Transportation Plan: Technical Report*, (MTP-12), available through the Puget Sound Regional Council's Information Center (206-464-7532).

FIGURE 1: Overview of Models Used in PSRC Transportation Planning to Prepare Mobile Source Emissions



- Summed, by nonattainment areas selected for analysis.
- Used in analysis for conformity determination.

The conformity analysis must include modeling of all regionally significant projects. As defined by the conformity rule, a regionally significant project is:

"a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel."

The conformity analysis includes all modelable projects and programs in *Destination 2030*. These projects were coded into the Regional Council's travel demand model networks for their respective years of implementation. *Destination 2030* Appendix 9, along with the Supplemental *Destination 2030* Project List, provide listings of all of the projects in the plan that were modeled for air quality purposes.

Modeling Assumptions

The conformity analysis of *Destination 2030* is based on the most current socioeconomic, travel and emissions information.

The conformity analysis is based on the most recent population and employment forecasts consistent with the 1998 MTP Progress Report, using national and regional data. The regional population and employment forecasts were updated in 1997. The land use allocations of these forecasts were updated in 2000. The next update of the regional population and employment forecasts is expected to be in late 2001. The land use allocations of these forecasts are updated annually.

The conformity analysis is based on a definition of High Occupancy Vehicle (HOV) as 2-plus persons per vehicle, due to a lack of legally binding assurances in state policies regarding when the HOV occupancy level will be increased. All other assumptions in the analysis followed the Regional Council's travel demand modeling procedures, which are certified every three years by FHWA and FTA. These procedures are detailed in *Land Use and Travel Demand Models: Current Model Documentation*, prepared for the PSRC by Cambridge Systematics, Inc., June 30, 2001. The document is available through the Puget Sound Regional Council's Information Center (206) 464-7532.

The emissions for the CO and O₃ analyses were generated by output from the Regional Council's travel demand model and the EPA-required MOBILE5 emissions factor model. The model settings were coordinated with the Regional Council's air quality partner agencies. The most current vehicle registrations and I/M settings were used. The analysis for CO was performed using version MOBILE5b, with region-specific adjustment factors for the Tier II Gasoline/Sulfur Rule. The O₃ analysis was performed using version MOBILE5a, with nationwide adjustment factors for the Tier II Gasoline/Sulfur Rule. Both sets of adjustment factors were provided to the Regional Council by EPA.

The PM₁₀ analysis was performed using the same procedures that were used by PSCAA to develop the emissions inventories in the PM₁₀ maintenance plan. The analysis was performed using EPA's particulate emissions factor model, PART5, with the most current vehicle registrations. The mobile-source emissions totals were based on the total road dust and vehicle exhaust emissions for arterials and freeway road segments within the three respective PM₁₀ maintenance areas, and for heavy trucks serving the ports of Seattle and Tacoma. Future Port truck volumes were derived from forecasts of total port activity. See Appendix 3B.



Results

The conformity analysis must show that the total regional emissions produced by projects in *Destination 2030*, plus activity on the existing travel network, do not exceed the motor vehicle emissions budget identified in the maintenance plan for each respective criteria pollutant. The emissions budget is a ceiling of total emissions that cannot be exceeded. Emissions are calculated on an individual link basis, based on the vehicle miles traveled (VMT) and speed of each link. This calculation is performed separately for the a.m. peak, p.m. peak and off-peak periods. Emissions are calculated for both intrazonal trips and interzonal trips. The calculated emissions of individual links are then summed for each of the three time periods, which in turn are summed for the total daily emissions in each maintenance area.

Tables 1, 2 and 3 identify the motor vehicle emissions budget for each criteria pollutant, and display the *Destination 2030* analysis results. All emissions totals are given in metric tons per day for CO and O₃, and pounds per day for PM₁₀. The CO, O₃ and PM₁₀ maintenance plans each identify motor vehicle emission budgets out to the year 2010; under consultation with the Regional Council's air quality partner agencies and consistent with standard practices (Section 93.118. (b)(2)(ii) of the federal conformity rule), these 2010 motor vehicle emissions budgets were carried forward in this analysis as the budgets for 2020 and 2030.

TABLE 1. Destination 2030 CO Analysis Results

	MAINTENANCE AREA VMT (MILES PER DAY)	CO (TONS PER DAY)
Emissions Budget	n/a	1,497.0*
2010	74,084,544	860.4
2020	82,257,088	718.5
2030	87,398,768	734.6

TABLE 2. Destination 2030 O₃ Analysis Results

	MAINTENANCE AREA VMT (MILES PER DAY)	VOCS (TONS PER DAY)	NOX (TONS PER DAY)
Emissions Budget	n/a	248.2*	263.0*
2010	89,212,336	163.7	206.4
2020	99,309,440	171.3	199.4
2030	109,163,632	201.8	217.0

TABLE 3. Destination 2030 PM₁₀ Analysis Results

	KENT		DUWAMISH		TACOMA	
	VMT (MILES/DAY)	PM ₁₀ (LBS./DAY)	VMT (MILES/DAY)	PM ₁₀ (LBS./DAY)	VMT (MILES/DAY)	PM ₁₀ (LBS./DAY)
Emissions Budget	n/a	231.5*	n/a	844.4*	n/a	460.8*
2010	729,010	138.9	2,683,766	509.7	1,611,698	308.8
2020	777,858	140.1	2,744,899	488.7	1,800,226	320.7
2030	841,860	150.6	2,878,424	520.7	1,958,689	364.4

* The highlighted values represent the motor vehicle emissions budget for each pollutant, as identified in the appropriate maintenance plan. All other values represent modeled emissions.



As shown in the previous tables, the emissions levels from the projects and programs in *Destination 2030* for each of the analysis years are below the established daily motor vehicle emissions budgets for the criteria pollutants of CO, O₃ (consisting of the precursor pollutants, VOCs and NO_x) and PM₁₀, as identified in their respective maintenance plans. The analysis for VOCs and PM₁₀ in Kent and Tacoma indicates that emissions will gradually increase from 2010 to 2030, while still remaining below their respective budgets. The analysis for CO, NO_x and PM₁₀ in the Duwamish area indicates that emissions will decline between 2010 and 2020, and then gradually increase again by 2030. The CO and NO_x values can be explained by the fact that there will be a large decrease in the emissions of these pollutants from motor vehicles between 2010 and 2020 when new regulations and technologies take effect. Between 2020 and 2030 the emissions from motor vehicles will continue to decrease but at a less dramatic rate; coupled with the growth in VMT during this time period, overall emissions will gradually increase. The explanation for why PM₁₀ values in the Duwamish area follow a different pattern than PM₁₀ values in the Kent and Tacoma areas lies in the fact that while PM₁₀ emissions from motor vehicles will decrease from 2010 to 2020, the growth in VMT is large enough in the Kent and Tacoma industrial areas to result in an overall increase in emissions in these two areas. The growth in VMT in the Duwamish industrial area is more gradual, so the effect of lower emissions from motor vehicles between 2010 and 2020 results in a drop in overall emissions in this area during this time period. PM₁₀ emissions from motor vehicles between 2020 and 2030 remains stagnant, while VMT continues to grow in all three areas, resulting in an increase in overall emissions during this time period.

Conclusions

The projects included in this analysis meet the conformity tests as identified in the federal and state conformity regulations. The analysis provides sufficient basis for the Regional Council to determine that the long-range metropolitan transportation plan, *Destination 2030*, conforms to the CO, O₃ and PM₁₀ maintenance plans as required by the federal Clean Air Act and the state Clean Air Washington Act.



Appendix 3A. June 13, 2000 Scoping Meeting Summary

SCOPING MEETING: AIR QUALITY CONFORMITY ANALYSIS FOR THE 2001 UPDATE TO THE METROPOLITAN TRANSPORTATION PLAN – JUNE 13, 2000

MEETING SUMMARY

The meeting was convened by Puget Sound Regional Council staff with the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA) and the Washington State Departments of Ecology and Transportation to clarify the assumptions to be used and procedures to be followed in the process to conduct the air-quality conformity analysis for the 2001 Update to the Metropolitan Transportation Plan. Additionally, the meeting was intended to allow the Environmental Protection Agency (EPA), the Puget Sound Clean Air Agency (PSCAA) and other interested representatives of the public to provide input. This consultation prior to entering into a plan or program conformity analysis meets the requirements of the State (WAC 173-420-070) and Federal (40 CFR Parts 51 and 93) Conformity Rules.

Attendance: Paul Carr - Ecology; Janelle Hitch - WSDOT; John Anderson, Kwami Agyei - PSCAA; Vernon Mickelsen - FHWA; - FTA; Karen Richter, Larry Blain, Robin Rock, Kelly McGourty - Puget Sound Regional Council.

1. *Call to Order*

Kelly McGourty called the meeting to order and the attendees introduced themselves. Kelly said the purpose of the scoping meeting was to discuss and clarify the assumptions and procedures for the conformity analysis of the 2001 Update to the Metropolitan Transportation Plan (MTP) as required by state and federal laws.

2. *Public Comment Period*

An opportunity was provided for public comment. None was received.

3. *Summary of Assumptions for Analysis*

Larry Blain presented the summary of assumptions for the analysis. A handout was distributed summarizing all of the information presented.

A. Projects Eligible for Regional TIP Modeling

I. Candidate projects to be considered for air quality modeling include:

- All federally funded non-exempt projects
- WSDOT projects
- Non-federally funded regionally significant projects and
- Projects from the current TIP with major changes to project scope, design or timing.

II. Criteria for Selecting Transportation Projects to be Modeled

The criteria used for selecting which projects will be modeled include:

- a project screening for functionally classified minor arterials and above (PSRC staff will determine the "modelability" of projects).
- highway projects that result in new links, capacity changes on an existing link or change in average speed on existing link will be included in analysis.
- PSRC staff will determine the modelability of non-highway projects and submit modelable projects for analysis.



Note: All projects must have an identified funding source or sources and must be consistent with VISION 2020 and the Metropolitan Transportation Plan to be included in the TIP and modeled for conformity.

B. Areas and Pollutants to be Analyzed

Larry reviewed the boundaries of the three types of nonattainment or maintenance areas in the region, and the types of pollutants to be tested for each area. The carbon monoxide (CO) maintenance area encompasses the federal urbanized area including Seattle, Everett and Tacoma. The ozone (O₃) maintenance area encompasses all of Pierce County, most of King County, and the southwestern portion of Snohomish County. The precursor pollutants of ozone, hydrocarbons (HC) and oxides of nitrogen (NO_x), will be individually tested. There are three small particulate matter nonattainment areas in the region: the Duwamish River Industrial area in Seattle, the Kent Valley area, and the Tacoma Tidelands area.

C. Conformity Tests

- I. The test to be applied for carbon monoxide area: TIP vs. Emissions Budget
- II. The test to be applied for the ozone area: TIP vs. Emissions Budget
- III. The tests to be applied for the particulate matter area: TIP vs. 1990 Baseline
TIP vs. Emissions Budget

D. Emissions Budgets

The emissions budget identified in the Carbon Monoxide Maintenance Plan is the 1993 on-road emissions levels. The Ozone Maintenance Plan has separate on-road precursor emissions budget levels (NO_x and HC) for each analysis year between 1995 and 2010. 2010 emissions levels will be used for 2020 horizon year budget test. For the particulate matter SIP budget test, on-road emissions levels from 1991 SIPs will be used.

E. Analysis Years

The analysis years for carbon monoxide and ozone will be: 2000, 2010 and 2020 (the horizon year of the MTP). For particulate matter, 1990 (baseline year), 2000, 2010 and 2020 will be the analysis years.

F. Transportation Model Assumptions

Larry said the Regional Council's travel demand forecasts will be used, including the latest planning assumptions and based on the MTP as refined in 1998. He said the 2010 analysis will be based on the 6-year Action Strategy travel network. There have been no significant changes in transportation model assumptions since adoption of the maintenance plans. Recent refinements include modeling of park and ride lots, grade separations, and queuing at ferries.

G. Emissions Model Assumptions

Larry described the emissions model assumptions. For the CO and O₃ analyses, EPA's MOBILE5a model will be used, with settings obtained from the CO and O₃ Maintenance Plans. There will be no wintertime oxygenated fuels included and the vehicle fleet age mix is based on dynamic registration, which was used to develop the CO and O₃ Maintenance Plan emissions inventories. A discussion was held on using the vehicle fleet age mix as assumed in the Maintenance Plan, or using the existing vehicle fleet age mix which is slightly older. Analysis of the existing fleet based on information pro-



vided by Ecology indicates that even though the fleet is older, the actual emissions are comparable to the emissions predicted by Mobile5a for the fleet assumed for the Maintenance Plan. Therefore, it was decided to continue to use the vehicle fleet age mix as assumed in the Maintenance Plan, with documentation of the analysis just mentioned. For the PM₁₀ analysis, the procedure used in previous TIP and MTP conformity analyses, which is consistent with the development of the Particulate Matter SIPs, will be used.

H. Procedures and Time Periods to be Analyzed

For carbon monoxide, ozone and particulate matter, daily estimates will be tested. These are the same as the maintenance plan and SIP inventories.

4. Documentation for Public Review

Documentation will be released for public review at the August 12, 1999 Transportation Policy Board meeting. Karen said the following documentation would be available for public review at the PSRC Information Center:

- A. This summary of the June 7, 1999 Scoping Meeting.
- B. Summaries of methodology and analysis.
- C. Findings and conclusions.

5. Overview of Schedule

Karen gave a brief overview of the schedule for the major amendment to the 2000-2002 Regional TIP, including the conformity analysis, public review, and TIP adoption. Copies of the schedule were made available. The travel demand and air quality modeling will be conducted in July. Assuming that the initial findings are positive, the analysis results will be prepared and a conformity finding will be released for public review in early August. The Transportation Policy Board is scheduled to act on the proposed TIP and conformity analysis at its regularly scheduled September meeting, with Executive Board approval scheduled two weeks later. The TIP and conformity finding will then be transmitted for approval by the Governor. Final approval of the State TIP (and regional conformity finding) is expected in December or early January.

6. Adjourn

The meeting was adjourned at 11:00 a.m.



Appendix 3B. MOBILE5 and PART5 Input Parameters

The following files are included in this appendix: **MOBILE5A INPUT FILE FOR O₃ ANALYSIS**
MOBILE5B INPUT FILE FOR CO ANALYSIS
PART5 INPUT FILE FOR PM₁₀ ANALYSIS

The Tier II Gasoline/Sulfur Rule adjustment factors supplied by EPA are applied to the outputs resulting from these MOBILE5 input files. For further information on these adjustment factors, please contact Kelly McGourty of the Puget Sound Regional Council at 206-464-7892.

MOBILE5A INPUT FILE FOR 2010 O₃ (1982 IM PROGRAM)

1 PROMPT - no prompting, vertical format
 Puget Sound (2010) Typical Day Summertime Ozone, orig I/M Program, 2000 reg/rates
 1 TAMFLG - M4.1 tampering rates
 1 SPDFLG - one speed for all vehicle types
 1 VMFLAG - M4.1 VMT mix
 3 MYMFRG - user supplied reg. dist., M4.1 mileage accumulation rate
 1 NEWFLG - M4.1 basic exhaust emission rates
 2 IMFLAG - I/M program
 1 ALHFLG - no additional correction factors
 1 ATPFLG - no anti-tampering program
 5 RLFLAG - zero out refueling emissions
 2 LOCFLG - one local area parameter record for all scenarios
 1 TEMFLG - calculate exhaust temperatures
 6 OUTFMT - spreadsheet format
 1 PRTFLG - calculate factors for HC
 (3 PRTFLG - calculate factors for NOx)
 1 IDLFLG - no idle emission factors
 3 NMHFLG - calculate VOC hydrocarbons
 1 HCFLAG - print sum of VOC components
 .045 .056 .056 .059 .055 .061 .055 .060 .051 .057 LDGV, MY 1-10
 .054 .052 .047 .044 .039 .034 .027 .017 .012 .011 LDGV, MY 11-20
 .010 .013 .011 .008 .067 LDGV, MY 21-25
 .034 .047 .045 .055 .042 .046 .058 .047 .042 .045 LDGT1, MY 1-10
 .046 .050 .042 .038 .045 .036 .033 .023 .018 .019 LDGT1, MY 11-20
 .017 .025 .022 .020 .104 LDGT1, MY 21-25
 .034 .047 .045 .055 .042 .046 .058 .047 .042 .045 LDGT2, MY 1-10
 .046 .050 .042 .038 .045 .036 .033 .023 .018 .019 LDGT2, MY 11-20
 .017 .025 .022 .020 .104 LDGT2, MY 21-25
 .029 .040 .031 .032 .025 .034 .032 .027 .024 .025 HDGV, MY 1-10
 .029 .034 .031 .026 .027 .029 .028 .017 .014 .015 HDGV, MY 11-20
 .015 .047 .057 .051 .280 HDGV, MY 21-25
 .045 .056 .056 .059 .055 .061 .055 .060 .051 .057 LDDV, MY 1-10
 .054 .052 .047 .044 .039 .034 .027 .017 .012 .011 LDDV, MY 11-20
 .010 .013 .011 .008 .067 LDDV, MY 21-25
 .034 .047 .045 .055 .042 .046 .058 .047 .042 .045 LDDT, MY 1-10
 .046 .050 .042 .038 .045 .036 .033 .023 .018 .019 LDDT, MY 11-20
 .017 .025 .022 .020 .104 LDDT, MY 21-25

.067	.084	.052	.057	.049	.062	.052	.043	.039	.040	HDDV, MY 1-10
.057	.045	.039	.034	.034	.037	.028	.016	.017	.018	HDDV, MY 11-20
.017	.021	.015	.012	.063						HDDV, MY 21-25
.056	.066	.054	.043	.042	.036	.034	.034	.024	.020	MC, MY 1-10
.021	.569	.000	.000	.000	.000	.000	.000	.000	.000	MC, MY 11-20
.000	.000	.000	.000	.000						MC, MY 21-25

82 30 86 05 04 09 095 112 2222 2212 220. 1.20 999.

I/M

p:\airquality\m5a\imdata.d

_____	60.	92.	8.2	8.2	20	1	1	1	1	LAP
1 20	3.0	81.0	20.6	27.3	20.6	7				SCENARIO RECORDS
1 20	4.0	81.0	20.6	27.3	20.6	7				Puget Sound - (20)
1 20	5.0	81.0	20.6	27.3	20.6	7				Ozone - Typical Day
...										Speeds from 2.5 to 65 mph
...										in 1 mi. increments

IM record for 1993 IM area:

93 30 86 05 04 09 095 112 2222 2212 220. 1.20 999.

I/M record outside 1982 and 1993 IM area:

(none)

Changes to IM record for 2020:

82 (93) 30 96 15 04 09 095 112 2222 2212 220. 1.20 999.

Changes to IM record for 2030:

82 (93) 30 06 20 04 09 095 112 2222 2212 220. 1.20 999.

MOBILE5B INPUT FILE FOR 2010 CO (1982 IM PROGRAM)

1 PROMPT - no prompting, vertical format
 Puget Sound (2010) Typical Day Wintertime CO, orig I/M Program, 2000 reg/rates

1 TAMFLG - M4.1 tampering rates
 1 SPDFLG - one speed for all vehicle types
 1 VMFLAG - M4.1 VMT mix
 3 MYMRFG - user supplied reg. dist., M4.1 mileage accum. rate
 1 NEWFLG - M4.1 basic exhaust emission rates
 6 IMFLAG - I/M program
 1 ALHFLG - no additional correction factors
 1 ATPFLG - no anti-tampering program
 5 RLFLAG - zero out refueling emissions
 2 LOCFLG - one local area parameter for all scenarios
 1 TEMFLG - calculate exhaust temperatures
 6 OUTFMT - spreadsheet format
 2 PRTFLG - CO factors only
 1 IDLFLG - no idle emission factors
 1 NMHFLG - only calculating CO factors
 1 HCFLAG - only calculating CO factors

.045	.056	.056	.059	.055	.061	.055	.060	.051	.057	LDGV, MY 1-10
.054	.052	.047	.044	.039	.034	.027	.017	.012	.011	LDGV, MY 11-20
.010	.013	.011	.008	.067						LDGV, MY 21-25



.034	.047	.045	.055	.042	.046	.058	.047	.042	.045	LDGT1, MY 1-10
.046	.050	.042	.038	.045	.036	.033	.023	.018	.019	LDGT1, MY 11-20
.017	.025	.022	.020	.104						LDGT1, MY 21-25
.034	.047	.045	.055	.042	.046	.058	.047	.042	.045	LDGT2, MY 1-10
.046	.050	.042	.038	.045	.036	.033	.023	.018	.019	LDGT2, MY 11-20
.017	.025	.022	.020	.104						LDGT2, MY 21-25
.029	.040	.031	.032	.025	.034	.032	.027	.024	.025	HDGV, MY 1-10
.029	.034	.031	.026	.027	.029	.028	.017	.014	.015	HDGV, MY 11-20
.015	.047	.057	.051	.280						HDGV, MY 21-25
.045	.056	.056	.059	.055	.061	.055	.060	.051	.057	LDDV, MY 1-10
.054	.052	.047	.044	.039	.034	.027	.017	.012	.011	LDDV, MY 11-20
.010	.013	.011	.008	.067						LDDV, MY 21-25
.034	.047	.045	.055	.042	.046	.058	.047	.042	.045	LDDT, MY 1-10
.046	.050	.042	.038	.045	.036	.033	.023	.018	.019	LDDT, MY 11-20
.017	.025	.022	.020	.104						LDDT, MY 21-25
.067	.084	.052	.057	.049	.062	.052	.043	.039	.040	HDDV, MY 1-10
.057	.045	.039	.034	.034	.037	.028	.016	.017	.018	HDDV, MY 11-20
.017	.021	.015	.012	.063						HDDV, MY 21-25
.056	.066	.054	.043	.042	.036	.034	.034	.024	.020	MC, MY 1-10
.021	.569	.000	.000	.000	.000	.000	.000	.000	.000	MC, MY 11-20
.000	.000	.000	.000	.000						MC, MY 21-25

1 1 2 1

82 30 86 05 04 09 095 112 2222 2212 220. 1.20 999. I/M

p:\airquality\m5b\imdata4.d

----- 34. 50.0 12.8 12.8 20 1 1 1 LAP
 1 10 3.0 45.0 20.6 27.3 20.6 SCENARIO RECORDS

1 10 4.0 45.0 20.6 27.3 20.6
 1 10 5.0 45.0 20.6 27.3 20.6 Puget Sound - (10)
 ... CO - Typical Day
 ... Speeds from 2.5 to 65 mph
 ... in 1 mi. increments

IM record for 1993 IM area:

93 30 86 05 04 09 095 112 2222 2212 220. 1.20 999.

I/M record outside 1982 and 1993 IM area:

(none)

Changes to IM records for 2020:

82 (93) 30 96 15 04 09 095 112 2222 2212 220. 1.20 999.

Changes to IM records for 2030:

82 (93) 30 06 25 04 09 095 112 2222 2212 220. 1.20 999.

PART5 INPUT FILE FOR 2010

2010, 2000 registrations, 2010 maintenance plan VMT mix and HDDT/Buses

2 :VMFLAG (alternate VMT mixes)
 3 :MYMRFG (alternate mileage accumulation rates and registration)
 2 :IMFLAG (Inspection and maintenance)
 1 :RFGFLG (2 to apply reformulated gasoline effects, 1 not to)
 3 :OUTFMT (indicates type of output format)
 2 :IDLFLG (2 to print idle emissions, 1 not to print them)
 2 :SO2FLG (2 to print Gaseous SO2 emissions, 1 not to print them)
 1 :PRTFLG (determines which pollutants to print out)
 2 :BUSFLG (determines which alternative bus cycles to print out)

.045	.056	.056	.059	.055	.061	.055	.060	.051	.057	LDGV, MY 1-10
.054	.052	.047	.044	.039	.034	.027	.017	.012	.011	LDGV, MY 11-20
.010	.013	.011	.008	.067						LDGV, MY 21-25
.034	.047	.045	.055	.042	.046	.058	.047	.042	.045	LDGT1, MY 1-10
.046	.050	.042	.038	.045	.036	.033	.023	.018	.019	LDGT1, MY 11-20
.017	.025	.022	.020	.104						LDGT1, MY 21-25
.034	.047	.045	.055	.042	.046	.058	.047	.042	.045	LDGT2, MY 1-10
.046	.050	.042	.038	.045	.036	.033	.023	.018	.019	LDGT2, MY 11-20
.017	.025	.022	.020	.104						LDGT2, MY 21-25
.029	.040	.031	.032	.025	.034	.032	.027	.024	.025	HDGV, MY 1-10
.029	.034	.031	.026	.027	.029	.028	.017	.014	.015	HDGV, MY 11-20
.015	.047	.057	.051	.280						HDGV, MY 21-25
.056	.066	.054	.043	.042	.036	.034	.034	.024	.020	MC, MY 1-10
.021	.569	.000	.000	.000	.000	.000	.000	.000	.000	MC, MY 11-20
.000	.000	.000	.000	.000						MC, MY 21-25
.045	.056	.056	.059	.055	.061	.055	.060	.051	.057	LDDV, MY 1-10
.054	.052	.047	.044	.039	.034	.027	.017	.012	.011	LDDV, MY 11-20
.010	.013	.011	.008	.067						LDDV, MY 21-25
.034	.047	.045	.055	.042	.046	.058	.047	.042	.045	LDDT, MY 1-10
.046	.050	.042	.038	.045	.036	.033	.023	.018	.019	LDDT, MY 11-20
.017	.025	.022	.020	.104						LDDT, MY 21-25
.035	.040	.036	.040	.044	.063	.053	.053	.048	.055	2BHDDT, MY 1-10
.059	.049	.031	.044	.039	.043	.052	.037	.028	.015	2BHDDT, MY 11-20
.020	.024	.021	.014	.057						2BHDDT, MY 21-25
.035	.040	.036	.040	.044	.063	.053	.053	.048	.055	LHDDT, MY 1-10
.059	.049	.031	.044	.039	.043	.052	.037	.028	.015	LHDDT, MY 11-20
.020	.024	.021	.014	.057						LHDDT, MY 21-25
.035	.040	.036	.040	.044	.063	.053	.053	.048	.055	MHDDT, MY 1-10
.059	.049	.031	.044	.039	.043	.052	.037	.028	.015	MHDDT, MY 11-20
.020	.024	.021	.014	.057						MHDDT, MY 21-25
.035	.040	.036	.040	.044	.063	.053	.053	.048	.055	HHDDT, MY 1-10
.059	.049	.031	.044	.039	.043	.052	.037	.028	.015	HHDDT, MY 11-20
.020	.024	.021	.014	.057						HHDDT, MY 21-25
.030	.060	.059	.058	.057	.055	.054	.053	.052	.050	BUSES, MY 1-10
.050	.049	.047	.046	.045	.044	.044	.043	.042	.010	BUSES, MY 11-20
.008	.007	.006	.005	.025						BUSES, MY 21-25



1 2010 2 55.0 : region, year, speed cycle, speed
 05.7 0.02 1 : unpaved silt%, ind. silt g/m², WHEELFLG
 153 1 : number of precip. days
 Seat1 2010, 2000 registration/rates
 10.00 – Particle size cutoff
 6000 : fleet average vehicle weight
 0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
 0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"
 1 2010 2 55.0 : region, year, speed cycle, speed
 05.7 0.02 1 : unpaved silt%, ind. silt g/m², WHEELFLG
 153 1 : number of precip. days
 Taco1 2010, 2000 registration/rates
 10.00 – Particle size cutoff
 6000 : fleet average vehicle weight
 0.6478 0.1689 0.0849 0.0175 0.0054 0.0042 : VMT MIX
 0.0019 0.0107 0.0000 0.0139 0.0431 0.0018 : VMT MIX "Seat 1"
 1 2010 2 55.0 : region, year, speed cycle, speed
 05.7 0.02 1 : unpaved silt%, ind. silt g/m², WHEELFLG
 153 1 : number of precip. Days
 Kent3 2010, 2000 registration/rates
 10.00 – Particle size cutoff
 6000 : fleet average vehicle weight
 0.6552 0.1708 0.0858 0.0245 0.0055 0.0043 : VMT MIX
 0.0019 0.0108 0.0000 0.0159 0.0232 0.0020 : VMT MIX "Seat 1"
 1 2010 2 55.0 : region, year, speed cycle, speed
 05.7 0.02 1 : unpaved silt%, ind. silt g/m², WHEELFLG
 153 1 : number of precip. days
 2010,55mph,Silt=0.02,cruis (Freeways)
 10.00 – Particle size cutoff
 6000 : fleet average vehicle weight
 0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
 0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"
 1 2010 2 35.0 : region, year, speed cycle, speed
 05.7 0.40 1 : unpaved silt%, ind. silt g/m², WHEELFLG
 153 1 : number of precip. days
 2010,35mph,Silt=0.4,cruis (Highways)
 10.00 – Particle size cutoff
 6000 : fleet average vehicle weight
 0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
 0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"
 1 2010 2 35.0 : region, year, speed cycle, speed
 05.7 1.45 1 : unpaved silt%, ind. silt g/m², WHEELFLG
 153 1 : number of precip. days
 2010,35mph,Silt=1.45,cruis (Collectors)
 10.00 – Particle size cutoff
 6000 : fleet average vehicle weight
 0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
 0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"
 1 2010 2 25.0 : region, year, speed cycle, speed
 05.7 2.50 1 : unpaved silt%, ind. silt g/m², WHEELFLG



153 1 : number of precip. days
 2010,35mph,Silt=2.5,cruis (Local)
 10.00 – Particle size cutoff
 6000 : fleet average vehicle weight
 0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
 0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"

ADDITIONAL INPUTS FOR PM₁₀ EMISSION CALCULATIONS

	KENT	DUWAMISH	TACOMA
2010 PORT VMT	0	27364	16837
2020 PORT VMT	0	35544	24097
2030 PORT VMT	0	46170	28408
2010 VMT ADJUSTMENT FACTORS			
1	0.716	0.876	0.889
2	0.716	0.876	0.889
3	0.710	0.829	0.940
4	0.710	0.829	0.940
5	0.492	1.311	1.472
6	0.710	0.829	0.940
7	2.441	2.731	2.787
2020 AND 2030 VMT ADJUSTMENT FACTORS			
1	0.716	0.876	0.889
2	0.716	0.876	0.889
3	0.710	0.829	0.940
4	0.710	0.829	0.940
5	0.492	1.311	1.472
6	0.710	0.829	0.940
7	2.441	2.731	2.787
2010 PM2 PT EMISSION FACTORS (EXHAUST, BRAKE AND TIRE)			
	0.0520	0.0542	0.0586
	0.421	0.421	0.421
	0.004		
	0.059		
	0.143		
	0.206		
2020 AND 2030 PM₁₀ EMISSION FACTORS (EXHAUST, BRAKE AND TIRE)			
	0.0463	0.0481	0.0512
	0.311	0.4311	0.311
	0.004		
	0.059		
	0.143		
	0.206		



APPENDIX 4

the metropolitan transportation system

This appendix contains a detailed description of the central Puget Sound's Metropolitan Transportation System, in accordance with federal Metropolitan Planning Organization planning requirements. See 23 USC 134(g). As part of a cooperative effort between the Regional Council, Washington State Department of Transportation (WSDOT) and local jurisdictions, regional facilities and services that comprise the region's Metropolitan Transportation System were identified as part of the 1995 Metropolitan Transportation Plan (MTP) and updated in 1998.

Destination 2030 once again updates the Metropolitan Transportation System. The plan emphasizes an integrated multi-modal transportation system and describes the regionally significant modal components of that system. The Metropolitan Transportation System consists of regionally significant multi-modal transportation facilities and services that are crucial to the mobility needs of the region. The Metropolitan Transportation System serves as a planning tool used to identify regional transportation problems, analyze and develop regional solutions, and it serves as a focus for required state and regional transportation system performance monitoring, particularly for the federally-required congestion management system (CMS). *Destination 2030* Map 3 is a composite map of the existing Metropolitan Transportation System.

Some transportation facilities may be included within more than one Metropolitan Transportation System component; this occurs most often with roadway facilities. These systems are highly interdependent. The ferry system, for example, would not perform as well without a roadway or transit system. Services included in the Metropolitan Transportation System, unlike facilities, do not necessarily have a physical structure to them, but nevertheless are considered regionally significant. Services help provide access to activities that are crucial to the social or economic health of the central Puget Sound region. Regionally significant transportation services help to improve overall system performance. These services are generally known as Transportation System Management, which includes intelligent transportation systems (ITS) and vehicle trip reduction programs. ITS services help to optimize and integrate the operation of the multi-modal transportation system, while vehicle trip reduction (also known as transportation demand management "TDM") programs encourage people to make fewer single occupant vehicle trips.

TRANSPORTATION FACILITIES AND SERVICES OF STATEWIDE SIGNIFICANCE.

In 1998, the State Legislature enacted HB 1487, more commonly known as the Level of Service or LOS bill, to recognize the importance of specific categories of transportation facilities and services that are of statewide significance. This legislative action amended the Growth Management Act (RCW 36.70A), Priority Programming for Highways (RCW 47.05), and Regional Transportation Planning Organizations (RCW 47.80) to direct further definition and planning through state, regional and local actions. As now codified under RCW 47.06.140, the nine categories of transportation facilities and services of statewide significance include:

1. The interstate highway system
2. Interregional state principal arterials including ferry connections that serve statewide travel
3. Intercity passenger rail services
4. Intercity high-speed ground transportation
5. Major passenger intermodal terminals, excluding all airport facilities and services
6. The freight railroad system
7. The Columbia/Snake navigable river system
8. Marine port facilities and services that are related solely to marine activities affecting international and interstate trade
9. High-capacity transportation systems serving regions as defined in RCW 81.104.015 (in the central Puget Sound, this is the Sound Transit express bus and rail system plus the state HOV system and related supporting facilities).

The first two categories include the interstate highway system and interregional state principal arterials and ferry connections. These state system elements were formally defined and designated in 1999 by respective actions of the State Transportation Commission and State Legislature as Highways of Statewide Significance (HSS) and include key ferry routes.

ROADWAY SYSTEM

The roadway and high occupancy vehicle (HOV) systems are integral components to the region's transportation system and will continue to be into the foreseeable future.

METROPOLITAN TRANSPORTATION SYSTEM (MTS) DEFINITION

MTS facilities and services are defined both functionally and geographically. A facility or service is part of the MTS if it provides access to any activities crucial to the social or 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 MTS. Any link that accesses major regional activity centers, such as an airport, is also a critical element of the MTS. Specific facilities or services are included in the MTS based on their function within the regional transportation system rather than their geometric design or physical characteristics.

Facilities in the MTS include those from the following seven transportation systems, supported by Transportation System Management services:

- Roadway System
- Ferry System
- Transit System
- Non-motorized System
- Freight and Goods System
- Intercity Passenger Rail
- Regional Aviation

REGIONAL ROADWAY COMPONENT OF THE METROPOLITAN TRANSPORTATION SYSTEM

Streets and highways are the backbone of the Region's transportation system. Any highway or roadway facility that is part of one of the three following categories is included as part of the Destination 2030 roadway MTS:

- Roadways included in the National Highway System (includes all interstate and US highways)
- State highways
- Principal arterials, either locally identified or officially identified according to the Federal Functional Classification System (approved by FHWA in April 1993)

The 1995 Metropolitan Transportation Plan advanced a balanced multi-modal transportation system that provides options to users and reduces the dependence upon single-occupant vehicles, while encouraging alternate modes of travel. *Destination 2030* also recognizes that highway improvements and capacity enhancements are needed to improve mobility on the region's roadways. Since 1995, great progress has been made in identifying local and regional arterial network improvements. Map 4-1 displays the roadway component of the Metropolitan Transportation System.

Individual streets and roads do not function independently, but rather form a network through which traffic flows. The 16,790 miles of roadways in the region can be classified along two dimensions: the functional classification system that is used to characterize the purpose of a roadway, and the system of ownership by which the management and financing of the roadway system is organized.

Centerline Miles by Jurisdictional Geography and Functional Classification, 1999

COUNTY	OWNER	INTERSTATE	PRINCIPAL ARTERIAL	MINOR ARTERIAL	COLLECTOR	LOCAL	TOTAL	% WITHIN COUNTY	% WITHIN REGION
King	State	114	207	125	0	-	445	6.0%	2.7%
	County	-	45	263	303	1,383	1,994	26.9%	11.9%
	Cities	-	240	424	410	3,278	4,352	58.6%	25.9%
	Other	-	1	-	-	633	635	8.5%	3.8%
	Total	114	493	811	714	5,294	7,426	100.0%	44.2%
Kitsap	State	-	87	13	3	-	103	6.1%	0.6%
	County	-	8	100	210	615	934	55.5%	5.6%
	Cities	-	7	20	58	220	305	18.1%	1.8%
	Other	-	-	-	-	342	342	20.3%	2.0%
	Total	-	101	133	272	1,178	1,683	100.0%	10.0%
Pierce	State	26	64	162	39	-	291	7.5%	1.7%
	County	-	52	246	401	807	1,505	38.9%	9.0%
	Cities	-	96	156	140	1,145	1,537	39.7%	9.2%
	Other	-	-	-	-	534	534	13.8%	3.2%
	Total	26	212	564	580	2,486	3,867	100.0%	23.0%
Snoh.	State	45	107	91	35	-	278	7.3%	1.7%
	County	-	5	73	436	1,083	1,598	41.9%	9.5%
	Cities	-	28	74	150	785	1,036	27.2%	6.2%
	Other	-	-	-	-	900	900	23.6%	5.4%
	Total	45	140	238	621	2,768	3,813	100.0%	22.7%
Region	State	185	464	391	77	-	1,117		6.7%
	County	-	111	682	1,350	3,888	6,032		35.9%
	Cities	-	371	673	758	5,428	7,230		43.1%
	Other	-	1	-	-	2,410	2,411		14.4%
	Total	185	947	1,746	2,186	11,726	16,790		100.0%

Source: Washington State Department of Transportation, January 2001

Roads serve two primary functions: mobility to move traffic, goods, and people from one location to another; and to provide access to land. The degree to which one of these functions predominates over the other determines the road's functional classification. The functional classification system describes roadways via a

hierarchy, and is comprised of the following categories: 1) interstate highways, 2) principal arterials, 3) minor arterials, 4) collectors, and 5) local streets.

The National Highway System (NHS). Title 23 of the U.S. Code section 103 states that the purpose of the NHS is to provide an interconnected system of principal routes that serve major population centers, international border crossings, ports, airports, public transportation facilities, intermodal transportation facilities, major travel destinations, meet national defense requirements, and serve interstate and interregional travel. Facilities included in the NHS are of clear regional significance.

State Highways. State highways are inherently of regional significance since inclusion in the state highway system requires that these routes function as the most important interregional, intra-regional, and urban-rural connections.

Principal Arterials. Principal arterials are classified by either the state for federal purposes, or local jurisdictions for developing Comprehensive or Arterial Plans. Classification as a principal arterial in either system denotes a facility of regional significance.

HOV System. The high occupancy vehicle (HOV) system includes dedicated lanes on freeways, regional arterials and local streets, limited access ramps to those facilities and designated by-pass lanes. High occupancy vehicles that use the dedicated facilities include public transit, vanpools, and carpools that carry at least two or more passengers (three or more in one case).

The Washington State Department of Transportation has responsibility for the planning, construction, and operations of freeway high occupancy vehicle lanes in the region, but coordinates planning and operations with local jurisdictions, transit service providers and the Regional Council. The department has further prioritized the freeway system through the identification of the "core" HOV lanes. The core system represents a subset of those identified in *Destination 2030* and includes higher priority dedicated lanes on interstate and limited access state routes. Like freeway HOV lanes, arterial HOV lanes provide greater speed and reliability for high occupancy vehicles. Arterial HOV lanes increase service reliability by avoiding congested intersections and general-purpose lanes.

FERRY SYSTEM

The regional ferry system is a unique hybrid of two modes. Ferry routes function as vehicle-carrying marine highways moving people and goods across Puget Sound. Ferries also are a high capacity transit mode for thousands of walk-on passengers. In addition to ferry boats, the ferry system includes routes and terminals, as well as other support facilities.

The Washington State Department of Transportation operates ferry service on ten routes in the four-county region. Two of these routes serve walk-on passengers only. The regional system also includes two other routes: a privately operated service in Kitsap County and ferries operated by Pierce County. Routes serve both commuters and recreational travelers. The ferry system component of the Metropolitan Transportation System is displayed on Map 4-2.

Terminals and Other Support Facilities. These facilities provide an important link between the termination of the ferry route and the landside transportation system on both sides of Puget Sound. Ongoing improvement projects at all terminals are designed to strengthen connections between ferries and other forms of transportation, such as bus, rail, auto, pedestrian, bicycle, and other modes. Other facilities are important in

FERRY COMPONENT OF THE METROPOLITAN TRANSPORTATION SYSTEM

The ferry component of the Metropolitan Transportation System consists of:

- Auto Ferries
- Passenger Only Ferries
- All WSDOT Ferry Terminals and support facilities

REGIONAL TRANSIT COMPONENT OF THE METROPOLITAN TRANSPORTATION SYSTEM

The regionally significant transit component of the Metropolitan Transportation System consists of:

- Existing and planned HCT 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 HCT) that link major regional destinations and/or provide travel options in highly congested corridors.
- 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.

supporting these transportation system interconnections. These include park-and-ride lots at most of the terminals, dedicated HOV lanes to assure ridesharing vehicles minimal delay when boarding or leaving ferries, and maintenance facilities such as the primary maintenance base at Eagle Harbor on Bainbridge Island.

TRANSIT SYSTEMS

The transit component of the Metropolitan Transportation System is comprised of major regional transit services and facilities that make a regionally-significant contribution toward providing public transportation access between activities that are crucial to the social or economic health of the central Puget Sound region.

Regional transit services that weave various parts of the region together and provide access to major regional activity centers, including connections between the designated urban centers and other major regional employment locations, are included as part of the Metropolitan Transportation System. In addition, regional transit services are those that provide efficient travel opportunities in congested areas by accommodating high volume demand. These services help to provide an alternative where congestion is particularly severe and travel options may be limited. In addition to the region's planned fixed route high capacity transit systems (light rail and commuter rail), and passenger-only ferry service, which identify actual transit routes, regional transit services are also represented on the Transit component of the Metropolitan Transportation System by the transportation facilities that they use, which include general purpose roadways, HOV lanes, and exclusive transit rights-of-way.

Regional transit facilities are included as part of the Metropolitan Transportation System based on their contribution to facilitate convenient connections between different public transit modes (for example, ferry and bus) and between transit and other transportation modes (for example, bus and auto). The major transit connection points include major park-and-ride lots, major transit centers, and ferry terminals. Transit centers, including rail, bus, and ferry, primarily serve connections between public transit modes while park-and-ride lots primarily serve connections between transit and auto. Some facilities serve as both major park-and-ride lots and transit centers (such as Northgate, Tacoma Dome). Major park-and-ride lots were defined as having a minimum of 250 parking stalls. Major transit centers are defined as locations with facility and access improvements focused on providing transfer opportunities to or between one or more regionally significant transit routes. All WSDOT ferry terminals, commuter rail stations, and light rail stations are considered major transit facilities as well as the larger bus transit facilities in the region. The public transit component of the Metropolitan Transportation System is displayed on Map 4-3.

PEDESTRIAN AND BICYCLE NON-MOTORIZED TRANSPORTATION SYSTEM

The regional non-motorized system includes facilities for both bicycle and pedestrian travel. The system consists of three conceptual components: linking communities at the regional level, substituting non-motorized trips for vehicle trips at the local level, and providing intermodal connections at rail, ferry, and other transit stops. The non-motorized component of the Metropolitan Transportation System is displayed on Map 4-4. There are five general types of non-motorized facilities, each with varying levels of separation from adjacent roadways:

- **Shared Use Bicycle/Pedestrian Paths** are facilities that are physically separate from roadways. These are usually appropriate for both bicycle and pedestrian travel.

NON-MOTORIZED COMPONENT OF THE METROPOLITAN TRANSPORTATION SYSTEM

Facilities within the Destination 2030 regional non-motorized network meet one or more of the following criteria:

1. Multi-use trails and bike lanes within the corridors of the roadway component of the Metropolitan Transportation System.
2. Multi-use trails and bike lanes that connect designated urban centers.
3. Multi-use trails and bike lanes that are within, or provide direct access to, designated urban centers or high capacity transit stations.
4. Pedestrian facilities that provide circulation within, access to, or enhance designated urban centers, or high capacity transit station areas.

PEDESTRIAN IMPROVEMENT ZONES

Pedestrian infrastructure and design in these zones should include:

- Wide, continuous sidewalks on both sides of streets
- Narrower streets scaled for pedestrians and lower vehicle speeds
- Interconnected streets and small block patterns
- Marked crosswalks and signal improvements at major intersections with crossing opportunities at least every two blocks
- Wide curb bulbs, and crosswalk and intersections curb ramps
- Street furniture and amenities such as benches and water fountains
- Street lighting at pedestrian scale
- Awnings/covered building entrances that shelter pedestrians from weather
- Planting buffers, landscaping and/or street trees
- Public spaces adjacent to main pedestrian travel ways that provide places to rest and interact
- Traffic calming devices to slow traffic
- Median islands to provide safe refuge areas for pedestrians
- On-street parking restrictions near pedestrian crossing areas
- Signage identifying nearby services

- **Bike Lanes** are portions of roadways that are physically 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.
- **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. Walkways are designed, or appropriate, for use by pedestrians.

An important distinction should be made between local and regional facilities. At the local level, facilities are important links in the non-motorized transportation system, as they both feed into regional-level facilities. However, it is not effective or efficient to designate all facilities as regional. Therefore, a subset of facilities were identified as regional, based on their function and location. Regional pedestrian facility improvement zones are located in designated urban centers and regional transit station areas. Regional transit station areas include bus, rail and ferry facilities. See Maps 2 and 7.

Due to safety concerns, much of the regional non-motorized network is situated on roads with lower levels of automobile traffic. These roads often are parallel to major arterials and highways that comprise the roadway component of the MTS. A road that is not part of the roadway MTS, yet contains a regional non-motorized facility, does not necessarily become part of the federally-required Congestion Management System, and is considered regional for non-motorized transportation planning purposes only.

Pedestrian Improvement Zones. Pedestrian Improvement Zones are areas that are targeted as top priority for pedestrian improvements. These zones generally extend for 1/2 mile radius around designated Urban Centers, regional transit station areas, and other regionally-significant places.

The regional non-motorized network is based on county and local jurisdiction non-motorized plans. It was designed to link and provide access to urban centers and major destinations, and to provide connections to major inter-modal facilities.

FREIGHT AND GOODS MOBILITY

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. The Freight and Goods mobility component of the Metropolitan Transportation System is displayed on Map 4-5.

Freight Roadways. Parts of the Freight and Goods System were first designated by the State of Washington in 1995, and updated in 1999. The State's system consists of road classifications based on the amount of annual freight tonnage carried by trucks. The heaviest tonnage routes, those designated for 4 million annual tons and above (T1 and T2), may receive priority for funding future improvements. These routes are primarily freeways and major state highways. In addition to T1 and T2 routes, as part of the Freight and Goods component of the Metropolitan Transportation System, the Regional Council has identified additional regionally significant roadways, also based on current use and a broad set of regional criteria.

Ports. There are three marine deepwater ports in the region, in Everett, Seattle, and Tacoma. These ports accommodate ocean-going container ships that carry cargo in and out of the region. Together, the Ports of Seattle and Tacoma are the second largest marine container terminal complex in North America. The

FREIGHT AND GOODS COMPONENT OF THE MTS

Facilities that meet the following criteria are included as the Freight and Goods mobility component of the MTS:

- State and local principal arterials, as identified on Map 4-5.
- 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 Urban 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.
- Air Cargo Facilities (Sea-Tac and King County International Airports)

Ports of Seattle, Tacoma, and Everett are making on-going improvements to their facilities (berths, cranes, on-dock rail and access roads) to meet growing demand in regional and Pacific Rim trade.

Railroads. Two major national railroads serve the central Puget Sound region. Burlington Northern/Santa Fe and Union Pacific provide intercontinental freight service on their nationwide rail networks; each maintains significant yard and on-dock capacity to serve the ports. Both mainline and branch lines as well as intermodal connector rail yards are indicated on Map 4-5.

Airports. Freight is transferred to and from aircraft at two major airports in the region: Seattle-Tacoma International Airport (Sea-Tac) and King County International Airport (Boeing Field). Sea-Tac Airport handles the majority of the freight, although Boeing Field has captured a growing percentage. Freight is carried in the cargo holds of passenger aircraft, or in all-cargo aircraft. 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 accessing Sea-Tac Airport and Boeing Field are important parts of the inter-modal and freight roadway systems.

REGIONAL AVIATION SYSTEM

The existing regional airport system is comprised of 26 public use airports and 2 military airfields within the four central Puget Sound counties of King, Kitsap, Pierce, and Snohomish. The airport system includes Seattle-Tacoma International Airport (the region's primary commercial service airport), McChord Air Force Base, Gray Army Airfield at Fort Lewis, 5 general aviation reliever airports, 13 general aviation airports, 4 seaplane bases, and 3 state-owned emergency airfields. A subset of this region-wide aviation system is considered regionally significant, and is part of the Metropolitan Transportation System. The aviation component of the Metropolitan Transportation System is defined as noted in the sidebar below, and is displayed on Map 4-6.

Mandate for Inclusion of the Regional Aviation System in Destination 2030. State legislation requires that Regional Transportation Planning Organizations include existing and planned airports in their regional transportation plans. In addition, the National Environmental Policy Act (NEPA) rules for airports (FAA Order 5050.4A, "Airport Environmental Handbook") require that major airport projects involving a NEPA record of decision must be "...reasonably consistent with plans of public agencies for development of the area." *Destination 2030* fulfills these requirements by including airport improvement projects which address the region's commercial and general aviation improvement needs. *Destination 2030* replaces the 1988 Regional Airport System Plan (RASP) with long range policy direction and an ongoing planning program for improving the region's 25 general aviation airports. The program also provides for continuing analysis of regional aviation system issues and needs.

REGIONAL AIRPORT FACILITIES IN THE MTS

The aviation component of the MTS consists of the following airport facilities:

- Sea-Tac International Airport
- King County International Airport (Boeing Field)
- Paine Field
- Renton Municipal Airport
- Harvey Field
- Auburn Municipal Airport

The following table displays the region's existing airport facilities by type of use and ownership/management (that is, public or private facilities).

Regional Airport Facilities

TYPE OF USE	AIRPORT FACILITY	OWNERSHIP/MANAGEMENT (PUBLIC / PRIVATE)
Primary Commercial (air passenger and cargo)	Sea-Tac International Airport	Public (Port of Seattle)
General Aviation/Reliever (provide relief for Sea-Tac)	Auburn Municipal Airport	Public (City of Auburn)
	Harvey Field	Private
	King County Int'l (Boeing Field)	Public (Metropolitan King County)
	Paine Field	Public (Snohomish County)
	Renton Municipal Airport	Public (City of Renton)
General Aviation	Apex Airpark	Private
	Arlington Municipal	Public (City of Arlington)
	Bremerton National	Public (Port of Bremerton)
	Crest Airpark	Private
	Darrington Municipal	Public (City of Darrington)
	FirstAir Field	Private
	Pierce County/Thun Field	Public (Pierce County)
	Port Orchard	Private
	Sky Harbor	Private
	Spanaway	Private
	Swanson	Public (City of Eatonville)
	Tacoma Narrows	Public (City of Tacoma)
	Vashon Island	Private
General Aviation/Seaplane Base	American Lake	Private
	Kenmore Air Harbor	Private
	Lake Union Chrysler Air	Private
	Will Rogers/Wiley Post	Public (City of Renton)
General Aviation/Emergency Airfields (emergency landings and support for search and rescue)	Bandera State	Public (WSDOT)
	Ranger Creek State	Public (WSDOT)
	Skykomish State	Public (WSDOT)
Military Airfields	Gray Army Airfield (Fort Lewis)	US Army
	McChord Air Force Base	US Air Force

As of 1999 the region's airports were home to 3,620 based aircraft (53 percent of the state's total based aircraft) and served nearly 2.1 million annual flights (take-offs and landings). Of these, there were over 1.6 million flights at general aviation airports while Sea-Tac Airport handled 434,425 flights (20 percent of the region's total). Sea-Tac Airport served over 27 million passengers in 1999. Sea-Tac passenger forecasts show demand will grow from 27.7 million in 1999 to 44.6 million in 2020, while flights will increase from 434,000 to 532,000 over the same time period. Forecasts of regional general aviation activity show the number of based aircraft will increase from 3,620 in 1999 to 4,832 in 2030, while general aviation flights will increase from nearly 1.7 million in 1999 to 2.0 million in 2030.

The region's five reliever airports provide alternate landing areas for flights that might otherwise use Seattle-Tacoma International Airport, thereby allowing Sea-Tac to focus almost exclusively on meeting the region's

commercial passenger and air cargo market. These reliever airports provide a high level of aviation services and facilities to meet the aviation needs of the region. Together, these five airports served some 950,000 annual take-offs and landings in 1999, and were home to nearly 1,800 based aircraft, about half of the regional total. Three of the region's five reliever airports (Boeing Field, Paine Field, and Renton Airport) provide critical airport infrastructure supporting the Boeing Commercial Airplane Company's production of commercial jet aircraft to serve the world's passenger and air cargo markets. These airports support the production, testing, certification, and eventual customer delivery of the majority of Boeing's large commercial jet aircraft.

Commercial Aviation. A Regional Airport System Plan (RASP) was adopted in 1988 to provide general direction for development of the region's commercial and general aviation airport facilities. The 1988 RASP was partially modified and incorporated into the 1995 Metropolitan Transportation Plan (MTP) as the interim regional aviation system component of the MTP to reflect changing needs and findings related to commercial air passenger travel demand in the early 1990s. In 1996, after years of extensive technical and environmental analysis to address long-range commercial air transportation capacity options, a major step was taken when the Regional Council amended the MTP to include planning for a third runway at Sea-Tac International Airport. That policy is currently being implemented at the project level by the Port of Seattle. *Destination 2030* does not revisit the commercial aviation decisions made in 1996. While including the planned third runway at Sea-Tac Airport, *Destination 2030* updates the 1988 RASP to provide direction for investments in the general aviation airport system. See Appendix 7 for summary documentation of Regional Council actions related to commercial aviation.

According to the Port of Seattle's Airport Master Plan and associated environmental documents, the third runway at Sea-Tac will bring the airport's theoretical maximum capacity to 600,000-630,000 annual takeoffs and landings. This level of airport capacity would meet the region's forecast demand until the year 2030 or beyond. In the longer term, beyond the capacity of the third runway, the Regional Council recognizes the need for additional commercial airport capacity to meet state and regional needs, and recommends that the state, in cooperation with appropriate local jurisdictions and regional transportation planning organizations, implement a comprehensive process for evaluating all options to meet the State of Washington's long-term air travel and inter-regional ground transportation needs, including high speed rail.

Air Cargo. With a national growth rate of over 6 percent per year, air cargo is the fastest growing segment of the aviation industry. Regional air cargo forecasts predict total air cargo volumes will grow from 613,099 U.S. tons in 1998 to 1,048,795 U.S. tons in 2010. To meet these needs, the Airport Master Plans prepared for Sea-Tac Airport and King County International Airport/Boeing Field identify facility requirements for the coming 10-15 years. Beyond that time frame, there is a need for additional long range strategic and facility planning to address the region's air cargo facility needs, including ground access improvements. These needs will be addressed in future updates to the Sea-Tac Airport and Boeing Field master plans in coordination with regional airport system planning by the Regional Council.

General Aviation. The regional airport system includes both general aviation and commercial aviation facilities that accommodate commercial passenger demand, air cargo, and a range of general aviation activity. Air carrier airports serve certified air carrier airlines offering scheduled service. These airports primarily accommodate passenger and cargo airlines using large jet and commuter aircraft. General aviation airports are smaller, have shorter runways, and primarily serve business and corporate aviation, personal air travel, and recreational users. While the region has experienced growth in the general aviation market, recent analysis shows there is no need to develop new general aviation airports within the region between 2000 and 2030, as forecast aviation needs can be accommodated by improvements to existing general aviation airports.

Military Airfields. The region's two existing military airfields are McChord Air Force Base and Gray Army Airfield at Fort Lewis. Both are located in Pierce County and are used exclusively by the military to fulfill U.S. Department of Defense military missions. The Defense Department indicates that the missions for these two bases continue to be critical to national defense and their role as military airfields will continue over the coming decades. Therefore, no changes are envisioned for these military airfields in the planning horizon for *Destination 2030*. The Regional Council will continue to support compatible land use planning programs adjacent to these military airfields, and will support transportation improvements providing surface access to these airfields.

COMMUTE TRIP REDUCTION

The Commute Trip Reduction (CTR) law was enacted in 1991 as part of the Washington Clean Air Act. It has proven that vehicle trip reduction programs can have a significant impact on the populations they serve. Between 1993 and 1999, the region reduced its single-occupant vehicle rate for work commutes of CTR-covered employees by 5.5 percent. However, only 22 percent of the region's jobs are covered by the law, and only 20 percent of the region's trips are work trips. Expanding CTR and other vehicle trip reduction services and incentives to other work commutes and to nonwork trips could result in tremendous vehicle-travel reductions for the region.

MTS MANAGEMENT

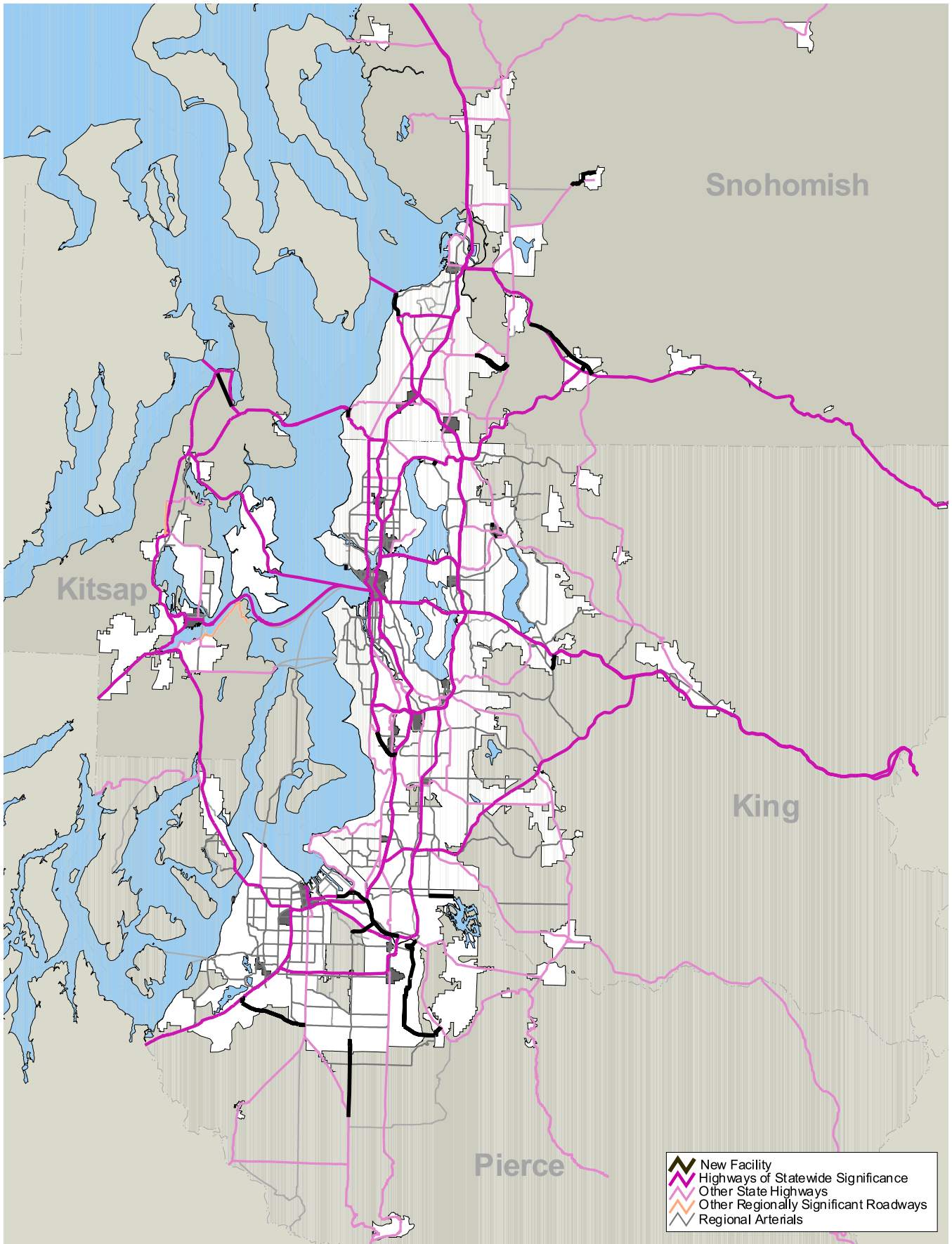
Most of the systems that are part of the Metropolitan Transportation System include system management elements so that they can be operated and utilized as safely and as efficiently as possible. System operations on the Puget Sound region's multimodal transportation system are the responsibility of many jurisdictions and agencies. In many cases the safety, efficiency and dependability of the overall Metropolitan Transportation System can be enhanced by developing methods for integrating various system management organizations. *Destination 2030* identifies the management centers, communications infrastructure and roadside equipment that make up the Regional Intelligent Transportation System Architecture and are used to operate and integrate this system as an integral part of the Metropolitan Transportation System.

The WSDOT Traffic Operation Centers (TOCs) in Shoreline and Tacoma are one example of a type of management center that is used to optimize the performance of part of the MTS, in this case the freeway system. The TOCs monitor traffic and road conditions, identify and verify incidents, detect faults in operations, and collect data for traffic strategy development and long range planning. This is done using information collected by roadside equipment, like cameras and loop detectors, that is supplied by a communication link to the TOC. The WSDOT TOCs also have a communication link to the Washington State Patrol's (WSP) Computer Aided Dispatch System so they can respond quickly to incidents in a coordination with WSP.

Transit agencies also operate management centers, communications and roadside equipment that help optimize the routing and scheduling transit services. Transit operators use management centers to monitor performance of the transit system to aide in schedule adherence and to respond to incidents. This information is provided to the management center over communication links. Transit vehicles also communicate in the field with other devices to enable technologies like transit signal priority (TSP). TSP is where a transit vehicle is given a longer green light at traffic signals so that it can remain on schedule or get back on schedule.

Vehicle trip reduction is a major policy area included in *Destination 2030*. Unlike other MTS components, demand management is not focused on facilities, but rather on programs or strategies designed to manage demand for vehicle travel to achieve system performance, environmental, and growth objectives. Demand management strategies are designed to 1) promote alternatives to driving alone, 2) shift trips out of peak travel periods, or 3) eliminate the need for certain trips. One of the best known vehicle trip reduction programs is the Commute Trip Reduction law enacted in 1991.

MAP 4-1. Metropolitan Transportation System (MTS) Roadway Component








Snohomish

Kitsap

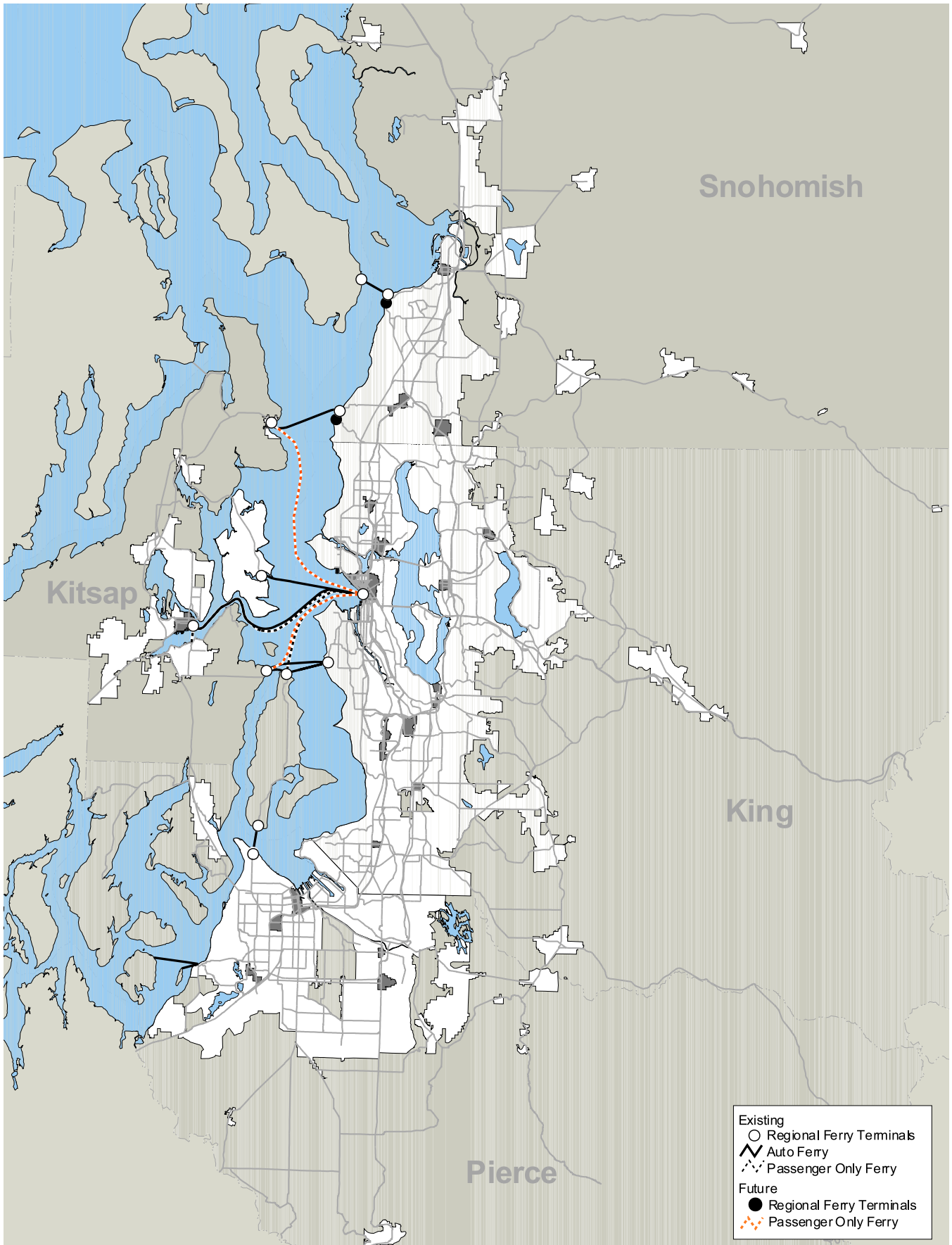
King

Pierce

-  New Facility
-  Highways of Statewide Significance
-  Other State Highways
-  Other Regionally Significant Roadways
-  Regional Arterials

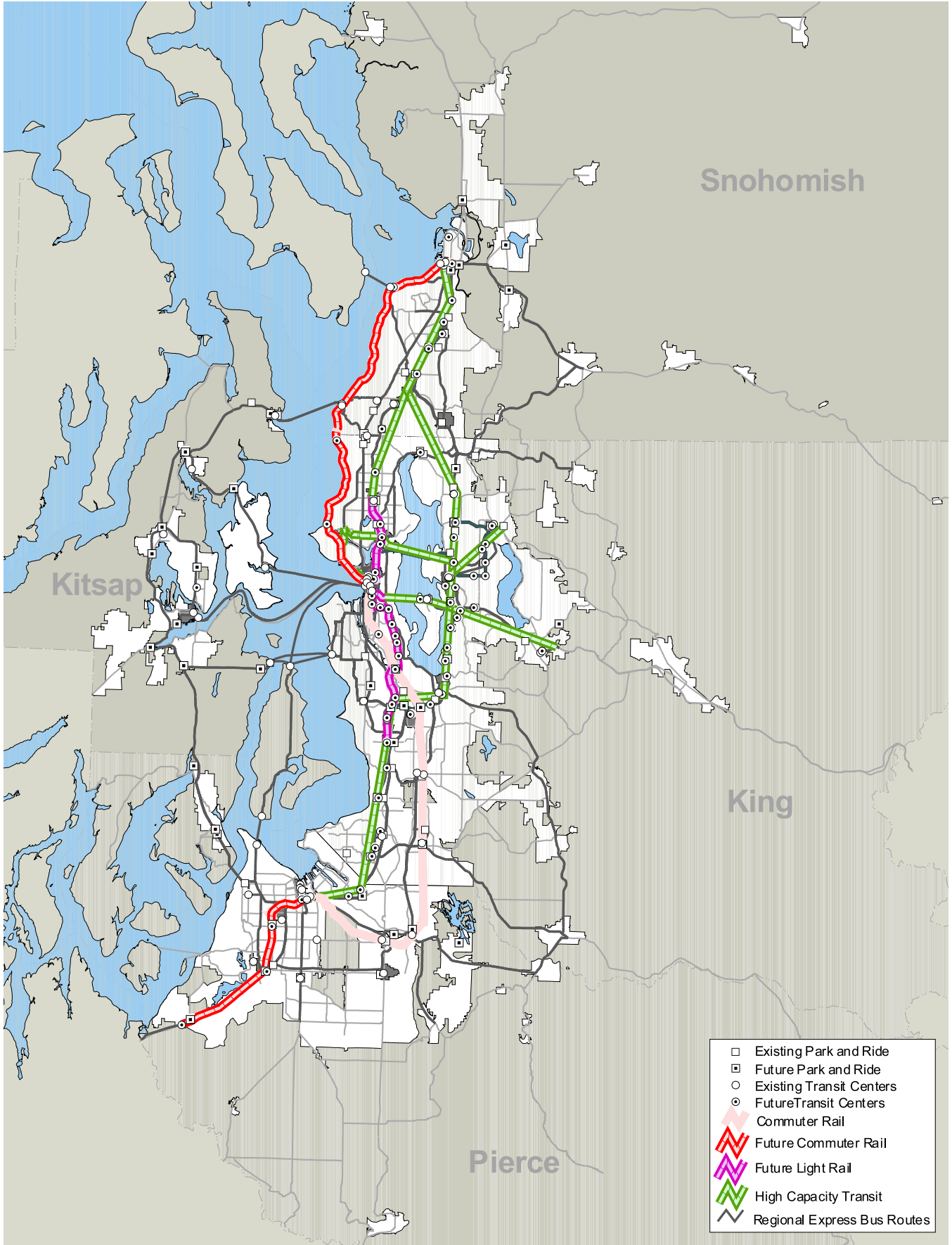
Adoption Date: May 24, 2001

MAP 4-2. MTS Ferry Component



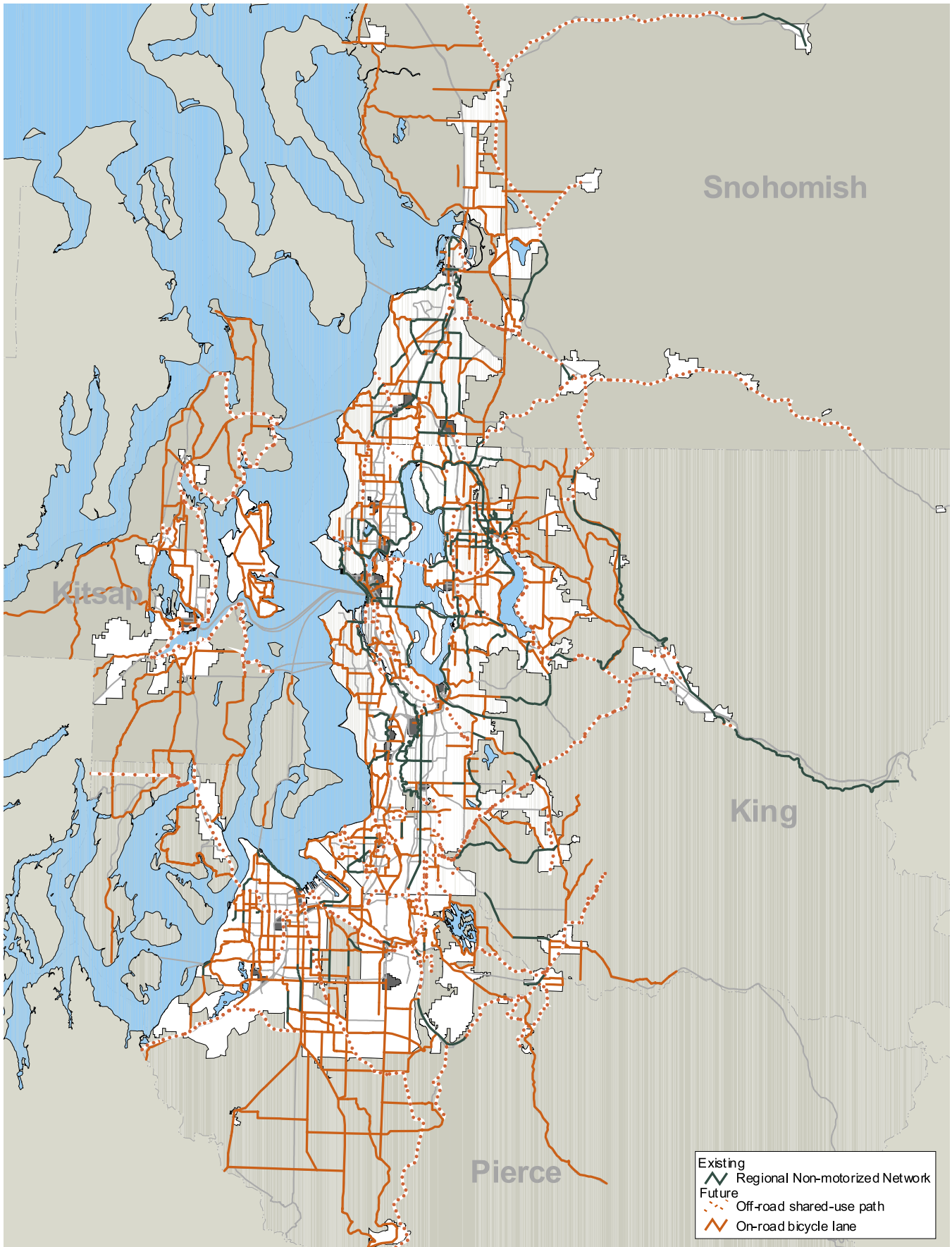
Adoption Date: May 24, 2001

MAP 4-3. MTS Regional Transit Component



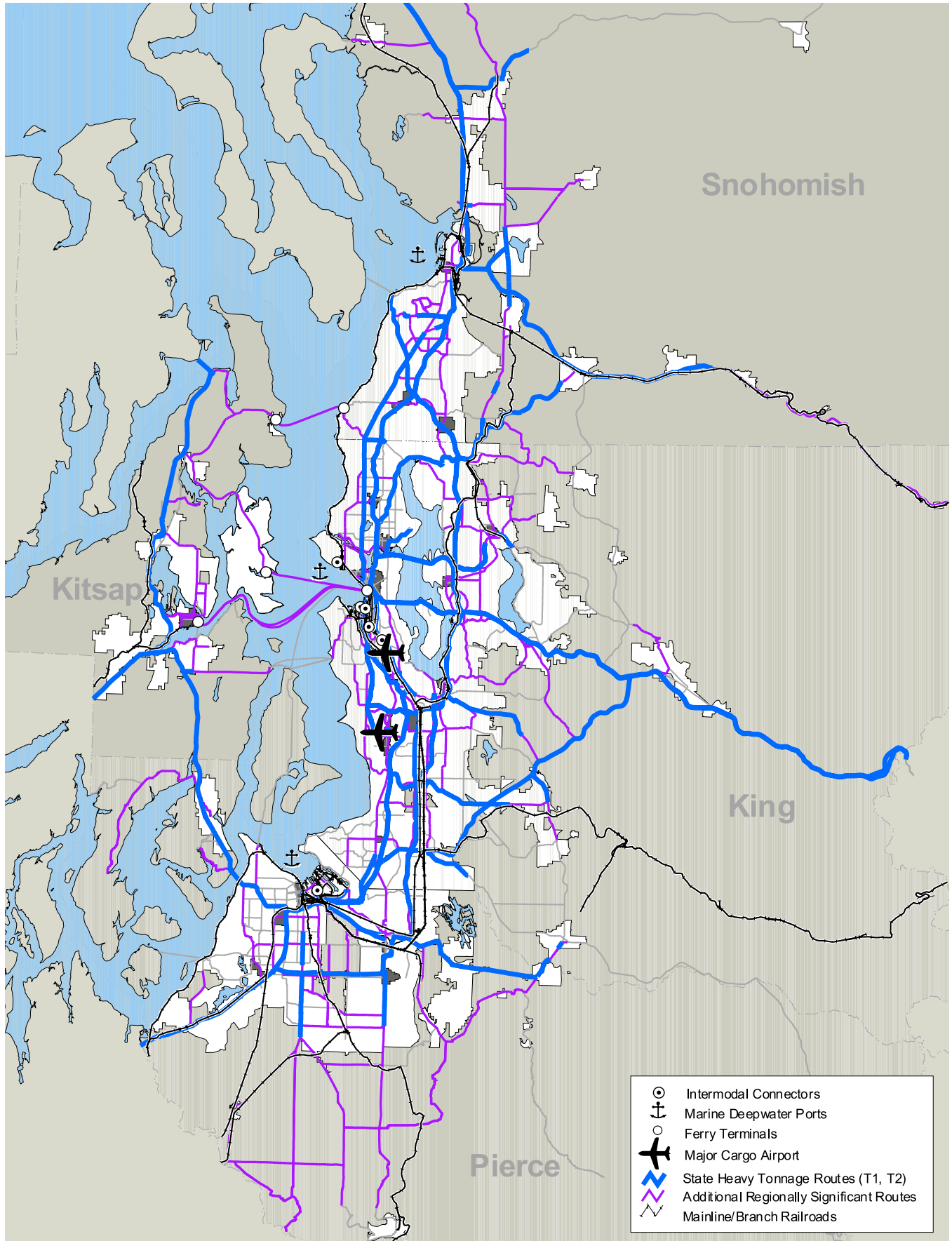
Adoption Date: May 24, 2001

MAP 4-4. MTS Non-Motorized Transportation Component

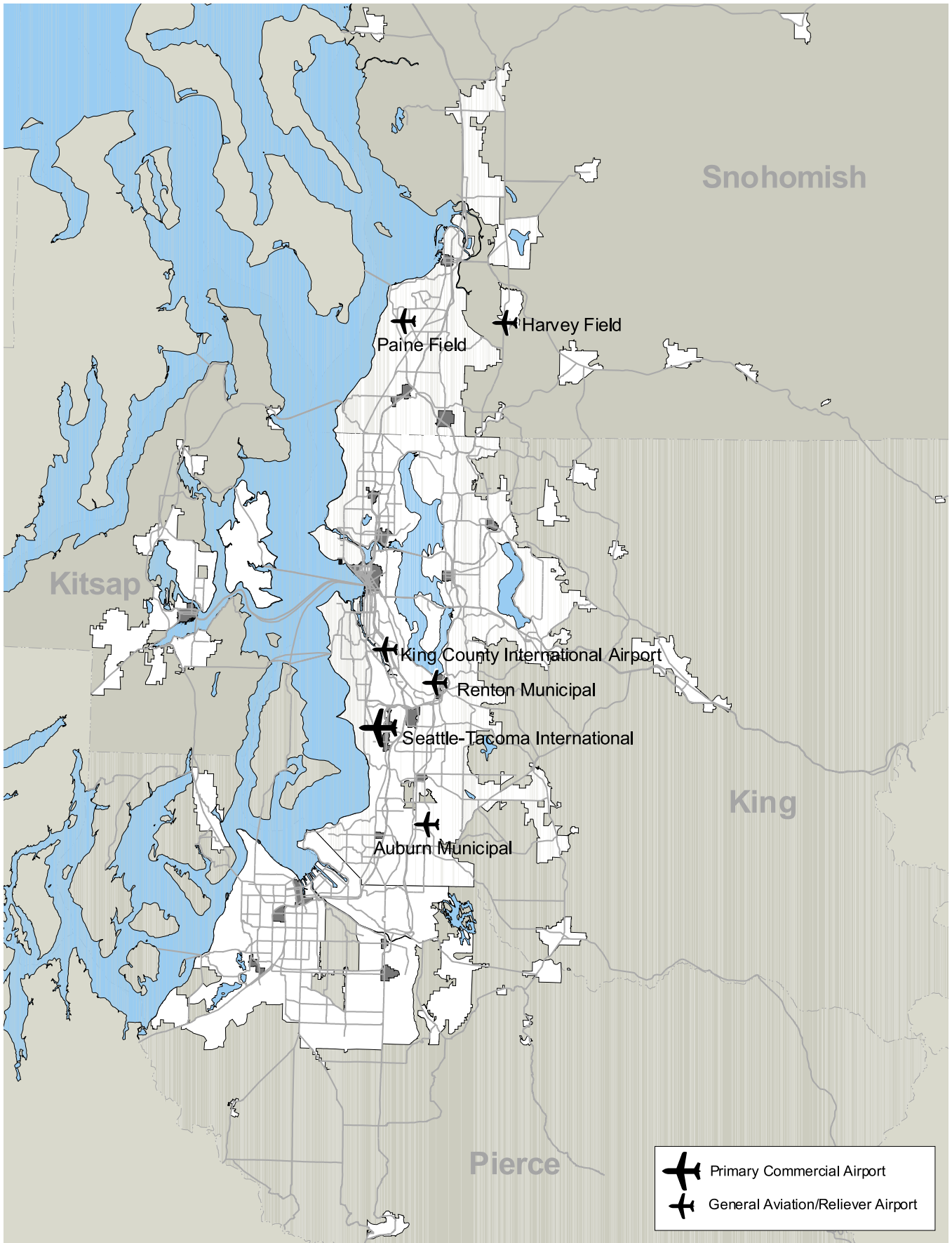


Adoption Date: May 24, 2001

MAP 4-5. MTS Freight Mobility Component



MAP 4-6. MTS Aviation Component



Adoption Date: May 24, 2001

APPENDIX 5

regional high occupancy vehicle system policies

Regional transportation policy aims to provide priority treatment for high occupancy vehicles. Higher vehicle occupancies mean that personal mobility is achieved at a greater level of system efficiency. Higher occupancies, in the form of transit, carpools and vanpools, result in lower traffic volumes, lower vehicle emissions, less costly investment in capacity over time, and less private resources dedicated to the maintenance of the region's private vehicle fleet.

The full regional High Occupancy Vehicle (HOV) system includes restricted lanes on freeways, regional arterials and local streets, limited access ramps to those facilities and designated by-pass lanes. High occupancy vehicles that use the HOV facilities include public transit, vanpools, and carpools that carry at least two or more passengers (three or more in one case). Since the adoption of the 1995 MTP, the Washington State Department of Transportation has adopted policies to direct the development and operation of the HOV system.

The region endorsed High Occupancy Vehicle System policies that were developed, reviewed, and established by the Regional HOV Policy Advisory Committee in 1998-1999. For a complete discussion of the background and development of the HOV Policy Committee and its recommendations, see the background report, *Regional HOV Policy Advisory Committee 1998-1999 Summary Report and Recommendations*, available from the Regional Council's Information Center, (206) 464-7532.

The policies recognize that strategic investments in the regional High Occupancy Vehicle system will, in part, be achieved through development of the following High Occupancy Vehicle facilities:

- Core HOV network on regional freeways, including HOV bottlenecks
- Direct access for more efficient use of HOV facilities
- Arterial HOV investments that directly link to the core HOV facilities
- HOV by-pass lanes and priority systems on arterials, corridors, and within centers

The following policies will guide development of the regional High Occupancy Vehicle System:

Support Full-Time Operation for Permanent Freeway HOV Lanes

HOURS OF OPERATION FOR REGIONAL HOV SYSTEM

- HOV lanes constructed for HOV purposes shall be reserved for buses, motorcycles, car pools and van pools meeting minimum occupancy requirements, 24-hours per day, seven days a week. This policy does not apply to HOV restrictions on ramps.
- Variable car pool definitions may be based on time of day.

Regional Approach to HOV Lane Development and HOV Lane Minimum Thresholds

RELEVANT APPLICATIONS AND CRITERIA FOR HOV LANES

HOV lanes are appropriate freeway facility improvements when current traffic volumes on existing freeway facilities or forecasts of future traffic volumes on existing or planned future freeway facilities meet certain criteria developed originally by the WSDOT and subsequently refined and clarified by the Regional HOV Policy Advisory Committee. Such criteria should be reviewed periodically to assure that they continue to address the evolving role of the freeway HOV system in supporting regional transportation system goals and policies.

CONDITIONS FOR GENERAL PURPOSE LANE CONVERSION TO HOV

When proposing freeway projects to address capacity deficiencies on existing freeway facilities in the central Puget Sound region, one of the alternatives to be considered shall be the conversion of a general purpose lane to an HOV lane. The WSDOT previously developed HOV lane conversion criteria that were further refined by the Regional HOV Policy Advisory Committee to clarify how they should be applied and to assure that freight interests of shippers and carriers are consulted prior to making recommendations regarding conversion of any general purpose lane to HOV use. In addition, due consideration for safety and incident management must be made before developing substandard freeway facilities.

Seek Refinements and Improved Financing to Support Regional Freeway HOV System Enforcement Program

The Regional Council should work with the State DOT, the legislature, and other interested parties to help achieve improved enforcement for effective freeway HOV operations through the following series of measures:

INCREASE FINES FOR HOV VIOLATIONS

Provide greater disincentive to illegally use freeway HOV lanes use by raising the existing fine for freeway HOV lane violation and establish a graduated scale to progressively increase fines for repeat offenders.

RESEARCH TECHNICAL OPPORTUNITIES FOR GREATER EFFICIENCY AND SAFETY IN ENFORCEMENT

Research and explore technical and legal aspects related to employing new electronic technologies to achieve greater efficiency and public safety in administration, monitoring and enforcement of freeway HOV lane use.

SEEK PROPORTIONAL INCREASES IN HOV ENFORCEMENT FUNDING TO MATCH SCALE OF REGIONAL HOV SYSTEM

As the regional HOV system expands, the regional interests, especially WSDOT and the Washington State Patrol, need to seek increased funding for HOV system enforcement commensurate with the expanding system.

STRENGTHEN COMMITMENTS TO FREEWAY HOV DESIGN & RETROFIT PROJECTS TO IMPROVE ENFORCEMENT

Request that WSDOT ensure enhanced attention to design and retrofitting features into new or existing freeway HOV facilities which improve opportunities for HOV lane enforcement with greater public safety (e.g., enforcement pockets and HOV lane shoulders).

Establish Sustainable Public Education Program to Support Regional Freeway HOV System

IDENTIFY APPROACH TO SUSTAINABLE FUNDING PARTNERSHIPS

The region should work with all partners having a vested interest in sustaining the regional HOV system to explore and recommend an enhanced program level of effort for a sustainable public education program. Such a program is to support on-going regional HOV public education/information elements as the HERO program, research and publication of public brochures/pamphlets, media information, and public and private sector promotional activities. This should also include identifying and recommending one or more options for proportional sharing of the funding for this enhanced program among all the parties to maintain and sustain the program as the regional HOV system expands. If the above “*enforcement*” recommendation for increasing HOV violation fines is implemented, such additional revenues could be one logical source for this program funding.

Regional Policy Endorsement of State HOV Policies to Achieve Freeway HOV Performance Objectives and Develop Policy Guidance for HOV System Monitoring and Annual Review

ENDORSE AND RETAIN THREE EXISTING STATE FREEWAY HOV POLICIES

The WSDOT’s three currently adopted State HOV operating policies entitled “*HOV System Performance*,” “*HOV Speed and Reliability*,” and “*Carpool Definition*” are endorsed by the Regional Council and recommended to be retained by the WSDOT.

DEVELOP DOCUMENT TO GUIDE POLICY ADMINISTRATION

The WSDOT, the Regional Council, and transit operators using the freeway HOV system should collaborate on development of a brief and clearly written (consumer-friendly) document to serve as a guideline which explains how the HOV system is routinely monitored throughout the year, how such data and information is evaluated by the state and region to see if the system is meeting technical and policy standards and expectations; and, if system performance is not meeting established standards and expectations, how such identified performance issues are to be further examined and addressed to determine if HOV system changes may be recommended.

ANNUAL REVIEW OF HOV SYSTEM PERFORMANCE BY REGIONAL HOV POLICY ADVISORY COMMITTEE

The annual HOV System Performance report prepared by the WSDOT should serve a broader public regional system role. The Regional HOV Policy Advisory Committee will continue to serve as a standing regional HOV system advisory committee to conduct an annual review in the fall of each year of the WSDOT's HOV system performance report and to advise the Regional Council and WSDOT on potential HOV operational policy issues which may periodically arise.

Destination 2030 note: The policy direction contained in the Regional HOV Policy Advisory Committee's 1998-1999 Summary Report may be used for system planning and modeling of system performance assumptions, but not for air quality conformity testing without stronger commitment language in state policies. The regional transportation plan assumptions used for air quality conformity analysis can only be based on strong commitments to future actions. During analysis of *Destination 2030* a 2 or more person carpool definition was assumed for air quality modeling purposes and 3-plus persons for policy and plan performance.

HOV Pricing Differential

There is evolving regional support for more user-based financing to support the regional transportation system. If such future financing employs user-based fees for specific roadways in the form of tolls or variable road pricing strategies, the Regional Council strongly endorses having a clear vehicular pricing differential and advantage as an incentive for HOV pricing (buses, carpools, vanpools) when compared to tolls or fees charged for single occupant vehicles (SOVs). While it is most desirable to have such preferential pricing structures offer "free" access for high occupancy vehicles, such pricing policies should at least incorporate reduced pricing for high occupancy vehicles.

APPENDIX 6

guidance for plan amendment

and capacity investment decisions

Plan Amendment Process

Destination 2030 is a long-range, 30-year planning document. It is prepared in a dynamic environment involving continuing change in regional population, housing, employment, land-use, and technology. Change in any environment is inevitable. Revenue sources may become available or may be discontinued. Cost assumptions may need to be adjusted. Therefore, periodic amendments to *Destination 2030* will be necessary.

Destination 2030 is prepared in accordance with state and federal requirements. Federal statutes require that the plan be reviewed every three years for effectiveness and viability, and that a new plan be prepared or the existing plan be updated.

The Clean Air Act Amendments of 1990 require that regional transportation plans be prepared in conformity with the State Implementation Plan for air quality planning and monitoring purposes. A new conformity statement must be prepared whenever *Destination 2030* (the region's metropolitan transportation plan) or the short-range Transportation Improvement Program is amended. If amendments to the Plan or Program do not affect air quality, a new conformity statement may not be required. However, this is not clearly stated in federal statutes, and it may be necessary to prepare a conformity statement no matter how minor the amendment to the Plan or Program may be.

Recognizing the need for amendments, the Regional Council is committing to a major amendment of *Destination 2030* every three years to coincide with federal requirements, including preparation of a conformity statement. In addition, depending on the scope and magnitude of the major amendment, the Regional Council may conduct environmental review as required by the State Environmental Policy Act (SEPA), in the form of a new Environmental Impact Statement, an Amendment or Addendum to the original Environmental Impact Statement, or a Declaration of Non Significance (DNS).

Minor amendments that clearly have no impact on regional air quality will be processed on an as-needed basis if Executive Board review of the proposed amendment results in a Declaration of Non Significance under SEPA.

Washington State legislation for regional transportation planning organizations requires that RTPOs review their regional transportation plans every two years, and forward the adopted plan, along with documentation of the biennial review, to the Washington State Department of Transportation (Chapter 47.80, Revised Code of Washington). To address both federal and state requirements for reviewing and updating the region's metropolitan transportation plan, the Puget Sound Regional Council will report to WSDOT on *Destination 2030* every two years. This reporting will then provide the basis for identifying issues to be addressed in the three-year update of *Destination 2030* required by federal law.

Guidance for Major Capacity Investments

Major capacity investments are needed on a number of regional facilities. Reaching agreement upon the type, design, and implementation of significant capacity investments is a challenging and important process. Where regional capacity needs have been identified, but where specific project or program details are not yet determined, the following framework establishes guidance for final investment decisions.

A CORRIDOR APPROACH

Transportation facilities do not exist in isolation, but are part of larger regional and state systems. Just as these corridors do not sit in geographic isolation, they also constitute elements of many different regional transportation modal systems. Multimodal analysis of corridor level investments is an essential part of making sure the regional system needs are fully identified. The long-term performance of these facilities is also heavily dependant upon surrounding land uses. As a result, evaluating transportation investments within the context of an entire transportation corridor may lead to a more comprehensive approach to problem solving. The objective of corridor-based analysis is to identify an effective mix of strategies, selected from a full range of capacity and system management approaches, that can demonstrate measurable results and that are consistent with the objectives of local and regional growth plans.

IDENTIFYING, MINIMIZING, AND MITIGATING IMPACTS

Destination 2030 incorporates previous Regional Council policy commitment to pursue and help achieve reasonable mitigation of impacts on communities resulting from major transportation facility and service investments/improvements that are either regionally significant or of statewide significance. Such projects should seek reasonable mitigation for impacts upon local communities that may result from project development. Implementation strategies to achieve this objective may include, but may not be limited to, priority programming of transportation investments that could help mitigate such community impacts, and pursuing state or federal legislative support for funding to help mitigate such community impacts.

MAJOR PROJECT RECORDS OF AGREEMENTS

Corridor level records of agreement should be encouraged, where appropriate, for large major corridor projects, whether they be freeway, transit or ferry. Records of agreement would document actions that will help successfully implement the preferred alternative that resulted from the environmental and public review process. Such agreements should be prepared by project sponsor leads at the conclusion of environmental decisions on selected major corridor projects, and should be regionally coordinated to help assure effective follow-up in regional performance monitoring of plan implementation activity.

EVALUATING BENEFITS AND COSTS

Regional Transportation Planning Organizations are required (RCW 47.80.030) to apply least-cost planning analysis to alternative transportation investment strategies. Within the Washington Administrative Code (WAC 468-86-030 and WAC 468-86-080) least-cost planning is defined as "a process of comparing direct and indirect costs of demand and supply options to meet transportation goals and/or policies where the intent of the process is to identify the most cost-effective mix of options." Least-cost planning attempts to consider all of the reasonably identifiable resource costs associated with alternative investments, and to provide relevant information as input to regional transportation plan investment selection and prioritization.

Destination 2030 utilized least-cost planning analysis as input to regional decision processes. In addition, all major "Candidate" projects (defined further below) must conduct and document an enhanced benefit-cost analysis (appropriate to the scale and complexity of the study) that considers reasonable full public and private costs of transportation in its environmental analysis leading to a decision on a preferred alternative or option. In combination, regional least-cost analysis at the programmatic level, and project or corridor level benefit-cost analysis constitute a least cost planning methodology for regional plan refinement and development.

FINANCING PLAN

Major transportation projects need to demonstrate that they can be reasonably funded. Large projects often require funding that spans many years and multiple funding sources. A project level financing plan describes the manner by which the entire project may be completed, ensuring that initial funding will eventually result in a fully implemented project. Consistent with the recommendations from the Transportation Pricing Task Force major investments in new capacity should evaluate a self-financing approach. Understanding the viability of self-financing through user fees is a reasonable test of whether benefits from investments are on the same scale as costs, even if self-financing is not pursued for other policy reasons.

CANDIDATE/APPROVED PROJECT STATUS

Destination 2030 includes a process to classify regional projects and programs as either "Candidate" or "Approved." Candidate major investments are projects or program components occurring on regionally significance facilities (on the Metropolitan Transportation System), but which have one or more planning requirements that must be satisfactorily addressed before they are eligible to be formally approved in the region's metropolitan transportation plan for implementation. All of the projects contained in Appendix 9 (Projects on MTS Facilities) have satisfied the Candidate Project Criteria (see below). A Candidate project must satisfactorily address Approved Project Criteria before it can be redesignated as Approved in *Destination 2030*, which then enables a project to be eligible for implementation. Projects designated in *Destination 2030* as Approved are then eligible to be included in the regional Transportation Improvement Program (TIP) for full project action/implementation phases such as final design, right-of-way acquisition and construction. Reclassifying a Candidate project as Approved occurs as a result of a majority vote of the Regional Council's Executive Board.

The Regional Council will respect the many complex requirements and due public processes that local, regional and state agencies must go through to enable their project to achieve Approved project status in the adopted regional transportation plan. Therefore, the Regional Council will only revisit or reconsider Approved status if a major project sponsor finds that significant conditions have conclusively changed, and which cause the project sponsor to be incapable of continuing implementation in the general manner by which it was originally approved.

Candidate Projects: This category of projects/programs identifies those transportation investments being proposed to respond to some identified transportation problem or deficiency where the specific design character or nature of the project or program solution is yet to be resolved. The development of a final resolution of how a project or program will be developed is achieved through formal state or federal planning and environmental review processes. Projects included in *Destination 2030* Appendix 9, unless they are designated as Approved, are only eligible for TIP funding to conduct planning, environmental or preliminary engineering phases which lead towards resolution of how it will be proposed to be developed in a final public decision process.

Candidate Project Criteria

The following three criteria have been met by all projects or programs included in *Destination 2030* Appendix 9. Any new project proposals must satisfy these Candidate Project Criteria in order to be included in future amendments to *Destination 2030*, and included in Appendix 9:

1. The proposed project/program is part of the Metropolitan Transportation System and falls under the definition of a regionally significant project/program as noted in state law under RCW 47.80.030.
2. The proposed project/program has been endorsed by its sponsor and forwarded to the Regional Council for inclusion in the *Destination 2030*.
3. The proposed project/program has been derived from one of the following types of comprehensive planning processes:
 - An approved local comprehensive plan developed under the state Growth Management Act (where a city or county is the project/program sponsor).
 - An approved public transit short- or long-range plan (where a transit agency/operator is the project/program sponsor).
 - WSDOT's approved State Transportation System Plan (where the state is the project/program sponsor).
 - An approved capital improvement plan or program of another agency not noted above (e.g., where a port or special purpose transportation agency is the project/program sponsor).
 - A regional planning process conducted as part of the region's unified planning work program that supports implementation of the region's policies for transportation, development and/or economic strategies (where the Regional Council is the sponsor).

Approved Projects: This category of projects/programs identifies regionally significant transportation investment proposals that have met all of the above-noted criteria, have completed their formal planning, environmental review and decision process, and have been found consistent with *Destination 2030* and/or its policies.

Approved Project Criteria

For projects to be designated as Approved, all of the following applicable criteria must all be met:

- The sponsoring agency has documented completion of appropriate public and environmental review processes and has made a decision on the final nature, character, components or design of the given project or program.
- Any other additionally required planning process requirements or conditions have been completed by the sponsor to conclude its candidate status.
- The proposed project/program, if involving measurable air quality impacts, has been successfully tested in the region's transportation and air quality models for systemwide mobility and found to comply with state and federal air quality conformity requirements.

- The proposed project/program has been found to be consistent with the policies of VISION 2020 and *Destination 2030*.
- The project or program has conducted and documented an enhanced benefit-cost analysis (appropriate to the scale and complexity of the study) that considers reasonable full public and private costs.
- A specific funding source has been identified and proposed for the project or program (naming at least the specific type of revenue source(s) and whether such revenues are projected to be coming from local, regional, state, federal, or private sources).

The Regional Council will develop administrative procedures to evaluate the manner in which projects satisfy the above criteria.

APPENDIX 7

regional aviation

This appendix provides background documentation related to Regional Council actions to address the region's long-term commercial air transportation capacity. This documentation consists of:

- Resolution A-93-03, adopted April 29, 1993, as amended by Resolution A-96-02, July 11, 1996
- Resolution A-96-02, adopted July 11, 1996
- Attachment A to Resolution A-96-02 (approved as Appendix G to the 1995 Metropolitan Transportation Plan)

Resolution A-93-03, originally adopted in 1993, outlined a process for examining alternatives to meet the region's long-range commercial air capacity needs. This resolution was amended by Resolution A-96-02 in 1996 to conclude that the region should pursue a third runway at Sea-Tac with additional noise reduction measures, and that small supplemental airports, including Paine Field, are not an alternative to meet commercial air capacity needs.

Resolution A-96-02 authorized plans for a third runway at Seattle-Tacoma International Airport (Sea-Tac), and Attachment A to the resolution identified additional noise reduction measures, implementation and monitoring steps, and agency responsibilities. Additionally, the attachment recommended that the State, in cooperation with local and regional planning agencies, implement a comprehensive process for evaluating all options to meet the State of Washington's long-term air travel and interregional ground transportation needs, including high-speed rail. This resolution and its attachment amended the 1995 Metropolitan Transportation Plan (MTP), and Attachment A became Appendix G of the 1995 MTP.

Destination 2030 maintains these prior regional actions related to long-range commercial air transportation.

RESOLUTION A-93-03

(as amended by General Assembly Resolution A-96-02 on July 11, 1996)

A RESOLUTION of the General Assembly of the Puget Sound Regional Council Amending the 1988 Interim Regional Airport System Plan (RASP) for Long-Term Commercial Air Transportation Capacity Needs of the Region

WHEREAS, the Puget Sound Regional Council, designated under federal and state laws as the Metropolitan Planning Organization and Regional Transportation Planning Organization for the central Puget Sound region, is responsible for adopting and maintaining regional growth management and transportation strategies for the region; and

WHEREAS, the Regional Council has adopted *VISION 2020: Growth and Transportation Strategy for the Central Puget Sound Region*, to guide growth management and transportation decisions and actions in King, Kitsap, Pierce and Snohomish counties; and

WHEREAS, *VISION 2020* seeks to assure that the people of this region continue to enjoy an outstanding and improving quality of life that includes a vibrant economy, a healthy environment, and livable communities connected by a multimodal, transit-oriented transportation system that emphasizes accessibility and enables the efficient movement of people, goods and freight; and

WHEREAS, with respect to assessments of commercial air transportation needs, the Regional Council acknowledges long term forecasting uncertainties, and the reduction on a day-to-day basis of current airport capacity at Sea-Tac Airport during bad weather conditions; and

WHEREAS, *VISION 2020*, as the Regional Transportation Plan for the region, includes the 1988 interim Regional Airport System Plan with language that called upon the region to "proceed expeditiously with the detailed evaluation and selection of a preferred regional air carrier system alternative," and which now needs to be amended to reflect the Regional Council's recent planning and deliberations regarding the long-term commercial air transportation capacity needs of the region; and

WHEREAS, jurisdictions in the region agree to site regional transportation facilities in a manner that reduces adverse societal, environmental and economic impacts; seeks equity and balance in siting and improving the region's transportation system; and addresses regional growth planning objectives; and

WHEREAS, the Regional Council, through the Flight Plan Project, has sought to address policy, environmental, and procedural concerns through a variety of products and processes, including the following:

- (a) The Regional Council, acting jointly with the Port of Seattle, completed a non-project Final Environmental Impact Statement evaluating various system alternatives for meeting projected demands and their noise and other environmental impacts, and
- (b) The Regional Council conducted a series of workshops, decision meetings, open houses, and a public hearing, to listen to the concerns and suggestions of community groups, individuals and interests that could be affected by a regional commercial air transportation capacity decision; and

WHEREAS, as a part of this effort, the Regional Council finds that commercial air transportation is important to the region's economy, and that additional commercial air transportation capacity needs to be identified and preserved, and implemented when needed at some point in the future; and

WHEREAS, the Regional Council finds that there is no perfect air transportation capacity solution, but that whatever solution is adopted must be part of an integrated transportation system that includes air and marine transportation as well as roadways and rail, that demand management and system management should be utilized to make the most efficient use of the existing system, and that any solution must not result in a decrease in safety and must address noise; and

WHEREAS, the Regional Council further finds that the adopted solution should be flexible, must be consistent with the growth management planning that is occurring in the region, and should be financially feasible; and

WHEREAS, the Regional Council Transportation Policy Board and Executive Board have developed and refined this recommendation to the Regional Council General Assembly; and

WHEREAS, this amendment to the interim Regional Airport System Plan is consistent with the VISION 2020 Final Environmental Impact Statement; and

WHEREAS, additional procedures employed in the process of amending this resolution in 1996 are reflected in a Regional Council document entitled *Summary of the Regional Council's Decision Process Related to Amending the Metropolitan Transportation Plan to Include a Third Runway With Additional Noise Reduction Measures*;

NOW, THEREFORE, BE IT RESOLVED that the Regional Council General Assembly adopts the following elements of a Regional Airport System Plan amendment:

1. That the region should pursue vigorously a third runway at Sea-Tac with additional noise reduction measures.
2. Eliminate small supplemental airports, including Paine Field, as a preferred alternative.

BE IT FURTHER RESOLVED that the Board is directed to:

1. Take all necessary steps to assure efficient, effective and economical implementation of this resolution.
2. Negotiate with the Port of Seattle, the Washington State Department of Transportation and other responsible agencies, as necessary, to assure the implementation of this resolution.
3. Assure that implementation of this resolution is at all times in compliance with the requirements of all applicable federal, state and local laws and regulations.
4. Report to the General Assembly on the results of its actions at the next regularly scheduled Assembly meeting or at such special meeting of the Assembly as the Board may call.

ADOPTED by the General Assembly this 29th day of April, 1993.

(original signed)

*Bill Brubaker, Councilmember
Snohomish County
President, Puget Sound Regional Council*

(original signed)

*Attest:
Mary McCumber, Executive Director*

RESOLUTION A-96-02

A Resolution of the General Assembly of the Puget Sound Regional Council Amending the 1995 Metropolitan Transportation Plan (MTP) and Related Planning Documents to Provide for the Long-Term Commercial Air Transportation Capacity Needs of the Central Puget Sound Region.

WHEREAS, the Puget Sound Regional Council, designated under federal and state laws as the Metropolitan Planning Organization and Regional Transportation Planning Organization for the central Puget Sound region, is responsible for adopting and maintaining regional growth management and transportation strategies and the Metropolitan Transportation Plan for the region; and

WHEREAS, the Metropolitan Transportation Plan includes an aviation component; and

WHEREAS, the region's air transportation needs have been studied and planned for years as chronicled in a *Summary of the Regional Council's Decision Process Related to Amending the Metropolitan Transportation Plan to Include a Third Runway with Additional Noise Reduction Measures*; and

WHEREAS, the region is again confronted with a need to plan for the expansion of air transportation capacity; and

WHEREAS, in determining whether to amend the 1995 Metropolitan Transportation Plan to include plans for a third runway at Seattle-Tacoma International Airport with additional noise reduction measures, the Regional Council considered a number of factors including:

1. the need for additional airport capacity or other actions to address the region's growing demand for commercial air transportation services;
2. the impact of poor weather on Sea-Tac Airport's current operating capabilities;
3. the alternatives for meeting air travel demand including the feasibility of a major supplemental airport and demand/system management actions;
4. the environmental impacts of the various alternatives as documented in the Flight Plan and Master Plan Update Environmental Impact Statements;
5. new information and analyses documented in an addendum to these EISs;
6. the conclusions of the Expert Arbitration Panel on Demand/System Management and Noise regarding demand/system management actions and noise reduction measures; and
7. the extensive public comment received throughout the process as a result of the EIS processes, workshops, decision meetings, open houses, a telephone hotline, and public hearings; and

WHEREAS, the Regional Council through its regional planning decision process has sought to address these factors and finds that commercial air transportation is important to the mobility needs of the region's populace and its economy, and that the solution to the increasing demand for commercial air transportation services needs to strike a balance between environmental impacts, quality of life factors, and the air transportation needs of the region; and

WHEREAS, the Regional Council has determined, on balance, that the adoption of an amendment to the Metropolitan Transportation Plan to plan for a third runway at Sea-Tac Airport with additional noise reduction measures is a reasonable and necessary decision for addressing the long-term commercial air transportation capacity needs of the central Puget Sound region; and

WHEREAS, the Regional Council's regional planning decision expressed in this resolution is distinct from the project-level decisions yet to be made by other agencies including the Port of Seattle and the Federal Aviation Administration;

NOW, THEREFORE, BE IT RESOLVED that the General Assembly hereby amends the 1995 Metropolitan Transportation Plan to include plans for a third runway at Seattle-Tacoma International Airport, with additional noise reduction measures and implementation and monitoring steps that are to be included as Appendix G of the MTP. The amendments are detailed in Attachment A, adopted as part of this resolution. This amendment is effective upon the Regional Council's receipt of the Port of Seattle resolution, described in Attachment A, Appendix G, Part I.

The Metropolitan Transportation Plan document also serves as the area's Regional Transportation Plan (RTP) as part of VISION 2020, the growth management, economic and transportation strategy for the central Puget Sound region, which includes King, Kitsap, Pierce and Snohomish counties. All references herein to amending the MTP necessarily also include amending the RTP and the 1988 Interim Regional Airport System Plan (RASP) which was amended by Resolution A-93-03.

ADOPTED by the General Assembly this 11th day of July, 1996.

(original signed)

*Executive Doug Sutherland
Pierce County
President, Puget Sound Regional Council*

(original signed)

*Attest:
Mary McCumber, Executive Director*

Attachment A to Resolution A-96-02

(approved as Appendix G to the 1995 Metropolitan Transportation Plan)

Appendix G – Air Transportation Noise Reduction Measures and Implementing and Monitoring Steps

The responsible parties as indicated will agree to pursue additional aircraft noise mitigation for communities surrounding Sea-Tac Airport by implementing the following package of noise reduction measures:

I. The Port of Seattle

The Port of Seattle will pass a Port Commission resolution affirming that it agrees to:

- A. Evaluate and upgrade its existing noise monitoring system to include the use of approximately 25 noise monitors, develop a schedule for completion by the end of 1998, and thereafter disseminate regular reports to the public using data from the new noise monitoring system to include DNL, SEL and Time Above metrics.
- B. Work with the FAA and/or airlines to:
 1. Analyze the potential for reducing the use of thrust reversers.
 2. Voluntarily minimize the number of flights in the middle of the night (1:30-5:30 a.m.).
 3. Continue to enforce Airport Rules and Regulations to minimize the number of variances for the Nighttime Limitations Program.
 4. Work with foreign air carriers to gain cooperation in ensuring that Stage 3 aircraft continue to be used for nighttime international flights.
 5. Work with the owners/operators of Stage 2 aircraft under 75,000 pounds to voluntarily limit or eliminate their use.
 6. Continue to work to enforce Airport Rules and Regulations to minimize nighttime engine run-ups.
- C. Modify its existing contract with noise experts to specifically include the need to review methods of mitigating the impacts of low frequency noise and vibration, and to supply such information to the Port.
- D. Design and implement a noise compatible land use plan for Port properties within its current acquisition zone.
- E. Complete the "sensitive use" public buildings insulation pilot studies.
- F. Seek a public commitment from FAA to evaluate actions needed to prevent apparent violations of the North Flow Nighttime Departure Noise Abatement Procedures to the extent that safety and efficiency allow.
- G. In carrying out the Part 150 Study:
 1. The Port of Seattle will invite the Regional Council, the FAA, and affected parties to participate, and ensure that they are able to participate actively and constructively, in the Port's upcoming Part 150 study, which will commence in the fall of 1996 and is expected to take two to three years.

2. Part 150 Study participants will be invited to take part in developing the scope of the study, consultant selection, and in all other milestones and products of the project, such as development of noise exposure maps; development of noise reduction and land use compatibility measures; and Port consideration and approval of the program.
 3. Items to be considered in developing the scope of the Part 150 Study will include but not necessarily be limited to:
 - a. Relocation of run-up areas where daytime engine run-ups occur, to reduce ground-related noise.
 - b. Evaluating the potential net benefits of preferential runway use during low activity periods.
 - c. Evaluating benefits and impacts of changes to departure climb profiles.
 - d. Analysis of need to adjust Noise Remedy Program boundaries to include those in 65 DNL by the year 2000, provided that the Port will not reduce its established Noise Remedy Program boundaries for currently eligible properties.
 - e. Evaluating scope, boundaries and funding for public use and multi-family buildings.
 4. If, as a result of the Part 150 Study, a proposed noise reduction strategy results in a net improvement but causes a transfer of noise impacts to other communities, the Port of Seattle, Regional Council, FAA and communities affected by airport noise will seek agreement on guidelines or other equitable procedures for dealing fairly with conflicting views and needs of different communities.
 5. The Port of Seattle will ask the FAA to include within its Record of Decision on the Master Plan Update Final Environmental Impact Statement the requirement to conduct a Part 150 Study with the goal of assessing needed additional noise abatement and mitigation.
- H. School Insulation
1. The Port of Seattle will commit up to \$50 million for school insulation.
 2. The Port of Seattle will meet with the Highline School District to try to reach agreement on a plan for insulating the District's schools. If direct talks between the District and Port fail to produce agreement on a noise insulation program for the District's schools, the Port may request that the PSRC assist the parties in selecting an independent mediator.
 3. The Port will initiate the Highline School District school insulation program consistent with an agreement reached by the District and Port.
 4. Once the Port of Seattle completes the sound insulation program for schools affected by aircraft noise exposure of 65 DNL from Sea-Tac International Airport, it will investigate feasibility and funding for insulating schools affected by then current 60-65 DNL aircraft noise exposure from Sea-Tac. Sound insulation must comply with FAA eligibility criteria to achieve measurable noise benefit.
- I. Deliver to the Regional Council on or before September 5, 1996, a detailed timetable for carrying out the steps specified in subsections A through H of this section, including (a) defined milestones against which the Port's progress toward completion of those steps may be measured, and (b) a schedule for progress on planning, design, and construction of a third runway at Sea-Tac Airport.

II. Highline School District

The Highline School District will:

- A. Meet with the Port of Seattle to try to reach agreement on a plan for insulating the District's schools. If direct talks between the District and the Port fail to produce agreement on a noise insulation program for the District's schools, the District may request that the PSRC assist the parties in selecting an independent mediator.
- B. Initiate its school insulation program, consistent with an agreement reached with the Port of Seattle.

III. Puget Sound Regional Council

The Puget Sound Regional Council will:

- A. Seek funding to (a) actively participate in the Port's upcoming Part 150 Study; (b) undertake a study to evaluate a financing mechanism for the acquisition of incompatible uses as noted in III-G, below; and conduct surveys as noted in the studies.
- B. As part of its Policy and Plan Review process, the PSRC will:
 - 1. Conduct an initial review of land use plans for areas that are within the 65 Ldn contour, and provide annual review of future changes;
 - 2. Offer assistance to jurisdictions in finding ways to minimize the introduction of incompatible land uses;
 - 3. Provide facilitation services, if requested by the Port of Seattle and jurisdictions in the vicinity of Sea-Tac Airport, to reach agreement on ways to redevelop currently incompatible land uses.
- C. Upon receipt of a Resolution approved by the Port of Seattle that contains all the items noted under Port of Seattle Resolution, above, the Executive Director of the PSRC will notify the Executive Board that the Metropolitan Transportation Plan amendment including a third runway at Sea-Tac Airport has taken effect.
- D. Encourage King County to continue its efforts to eliminate the two nighttime Alaska Airlines Stage 2 flights from Boeing Field.
- E. Seek support for state legislation for state policies regarding land use compatibility around commercial airports, and will seek support for federal legislation to allow use of federally approved funding for insulation and acquisition programs beyond the current federal constraints.
- F. Annually convene representatives of the Port of Seattle, FAA, communities affected by airport noise, and other interested parties, to coordinate efforts by all parties to alleviate issues that are undercutting the effectiveness of current noise reduction efforts and eliminate roadblocks to resolving issues, then report on progress to the Executive Board.
- G. Undertake a study which evaluates use of a state-financed revolving fund, or other financing mechanism (such as a public/private partnership) for the acquisition of incompatible uses within the 65 DNL to the 75 DNL contour, for conversion to noise compatible non-residential uses. Any such funding mechanism must demonstrate a balance between long-term costs and revenues. The results of the study should be presented to the Executive Board by June 30, 1997.

- H. The Regional Council will conduct statistically valid surveys, during and after construction of the third runway, to assess Sea-Tac Airport's effects on such items as noise, transportation/circulation, and land uses in the surrounding communities.

IV. Washington State Department of Transportation and Transportation Commission

The Washington State Department of Transportation and Transportation Commission will:

- A. Seek funding for acceleration of efforts to provide improved higher speed rail service in the I-5 Corridor.
- B. Seek legislation similar to what was approved for general aviation airports during the 1996 session, to provide state policies for land use compatibility around commercial airports.
- C. Recommend that the State, in cooperation with appropriate local jurisdictions and regional transportation planning organizations, implement a comprehensive process for evaluating all options to meet the State of Washington's long-term air travel and inter-regional ground transportation needs, including high speed rail.

V. Monitoring Compliance

To ensure that measures contained in this Appendix G to the 1995 Metropolitan Transportation Plan are implemented as described, several mechanisms for tracking success and assuring accountability will be implemented. They include:

- A. The Port of Seattle will report to the Regional Council twice yearly on progress toward all the efforts encompassed in this action, and
- B. King County will report to the Regional Council Executive Board every six months on progress toward eliminating nighttime Stage 2 flights at King County International Airport, and
- C. Regional Council staff will report annually to the Executive Board on its participation in the Part 150 Study and, based on its Policy and Plan Review Process, on progress toward minimizing the introduction of incompatible land uses within the 65 Ldn contour.

APPENDIX 8

destination 2030 system performance

As part of the preparation of *Destination 2030*, the Regional Council's travel demand model was used to examine the possible effects of improvements to the Metropolitan Transportation System. A summary of performance data from those analyses is contained in this appendix.

The Regional Council's travel demand model uses a few key economic and demographic variables, data from surveys of travel behavior, and planned changes in the transportation infrastructure to estimate how people will make choices about where to live, where to work, where to shop (etc), and how to travel. The model is also used to forecast performance measures such as transit ridership and highway congestion, and it is especially useful in comparing scenarios either for the same forecast year, or between different years.

As with any model that estimates potential future conditions, the regional travel demand model isn't a crystal ball; it can't predict the future. But the model does provide technical information which helps guide and support good decision-making. All computer modeling results contain elements of uncertainty. Transportation systems are complex systems, and current functional models designed to explain transportation systems are complex. No single model will completely capture all relevant interactions. Travel demand models are intended to aid decision-making by providing information about how transportation systems function under a variety of different circumstances and are not intended to predict exact characteristics. For these reasons modeled system performance data is only one of many pieces of information used in developing a regional transportation plan.

As with all models, there are some details of the transportation infrastructure that the Regional Council's travel demand model does not include. Additional improvements over the modeled results will be achieved through strategic management of investments and development that shapes the built environment, along with other factors affecting the travel environment. The Regional Council will develop periodic progress reports which update measures of transportation system performance. Continued monitoring of the plan will allow refinement of strategies which help to manage the transportation systems for greater efficiencies and benefits.

Data presented in this appendix represent the most recent effort to portray transportation system performance at a finer grain of resolution than has been provided for previous Regional Council planning processes. At this level of resolution, some of the summarized data may appear to be inconsistent. The Regional Council is committed to continued refinement of modeling programs and practices in order to be able to deliver better performance information. Performance measures are reported in this appendix for the five model runs listed below. (Further information about these model runs is available in the *Destination 2030* Final Environmental Impact Statement, May 2001.)

1998 Baseline. Includes all transit, ferry and roadways with model links current to December 1998.

2010 Current Law. Includes 1998 Baseline model links plus links added for projects expected to be complete prior to December 2010 using financing assumptions under the 2010 Current Law Revenue scenario. All cross-sound ferry routes are eliminated.

2010 Strategy. Includes 1998 Baseline model links plus links added for projects expected to be complete prior to December 2010 using financing assumptions under the 2010 Action Strategy scenario.

2030 Current Law. Includes 1998 Baseline and 2010 Current Law model links plus links added for projects expected to be complete prior to December 2030 using financing assumptions under the Current Law Revenue scenario. All cross-sound ferry routes are eliminated.

2030 Plan. Includes 1998 Baseline and 2010 Action Strategy model links plus links added for projects expected to be complete prior to December 2030 using financing assumptions under the *Destination 2030* preferred alternative scenario.

It should be further noted that the regional travel data displayed in this appendix do not include non-motorized travel by pedestrians and bicycles which, according to national personal travel survey data, could equate to about 10 percent of total daily travel in an urban region.

Selected 2010 Modeling Assumptions

TABLE 8-1. Population and Household Data

SUBAREA	1998		2010	
	POPULATION	HOUSEHOLDS	POPULATION	HOUSEHOLDS
Region	3,148,715	1,230,067	3,802,236	1,591,623
Northwest King County	607,188	275,773	684,036	340,528
East King County	478,736	174,690	550,998	229,203
South King County	579,681	228,174	695,604	292,384
King County	1,665,605	682,637	1,930,638	862,115
Kitsap County	229,009	84,423	289,247	112,808
Pierce County	686,874	254,038	837,610	325,536
Snohomish County	567,227	208,969	744,741	291,164

Subareas are county boundaries except in King County which is divided into three planning subareas.

TABLE 8-2. Lane Miles Assumed for Modeling – 1998 Baseline

SUBAREA	GP FREEWAY	GP ARTERIAL	GP TOTAL	HOV FREEWAY	HOV ARTERIAL	HOV TOTAL	TOTAL ROADWAY
Region	2,033	9,248	11,281	162	1	163	11,444
Northwest King County	303	1,483	1,786	35	0	35	1,821
East King County	349	1,161	1,510	47	0	47	1,558
South King County	501	1,552	2,053	56	1	57	2,109
King County	1,153	4,197	5,350	138	1	139	5,489
Kitsap County	167	885	1,052	0	0	0	1,052
Pierce County	369	2,454	2,823	0	0	0	2,823
Snohomish County	344	1,713	2,057	24	0	24	2,081

TABLE 8-3. New Lane Miles Assumed for Modeling – 2010 Strategy

SUBAREA	GP FREEWAY	GP ARTERIAL	GP TOTAL	HOV FREEWAY	HOV ARTERIAL	HOV TOTAL	TOTAL ROADWAY
Region	132	661	793	168	83	251	1,044
Northwest King County	0	19	19	15	6	21	40
East King County	32	157	189	34	8	42	231
South King County	53	138	191	31	41	72	263
King County	78	314	392	80	54	134	526
Kitsap County	0	49	49	4	1	5	54
Pierce County	12	188	200	62	0	62	262
Snohomish County	35	110	145	22	27	49	194

TABLE 8-4. New Lane Miles Assumed for Modeling – 2010 Current Law Revenue

SUBAREA	GP FREEWAY	GP ARTERIAL	GP TOTAL	HOV FREEWAY	HOV ARTERIAL	HOV TOTAL	TOTAL ROADWAY
Region	63	113	176	54	22	76	252
Northwest King County	0	1	1	4	0	4	5
East King County	25	15	40	17	0	17	57
South King County	23	23	46	14	8	21	67
King County	47	38	85	35	8	43	128
Kitsap County	0	4	4	0	0	0	4
Pierce County	0	35	35	9	0	9	44
Snohomish County	15	36	51	10	14	24	75

Lane Mile = Distance that a single lane of a road completes in 1 mile. A four-lane road, for example, would be equivalent to four lane miles for every mile of roadway length.

GP = General Purpose lanes

HOV = High Occupancy Vehicle lanes (occupancy requirement is 2+ per vehicle for 2010)

2010 Performance Data

TABLE 8-5. Daily Vehicle Miles Traveled on the Arterial and Freeway Network

SUBAREA	1998 BASELINE		2010 CURRENT LAW REVENUE		2010 STRATEGY	
	DAILY VMT	DAILY VMT PER CAPITA	DAILY VMT	DAILY VMT PER CAPITA	DAILY VMT	DAILY VMT PER CAPITA
Region	64,490,626	20.5	80,188,658	21.1	79,394,356	20.9
Northwest King County	11,958,359	19.7	13,605,074	19.9	13,377,546	19.6
East King County	10,542,720	22.0	13,264,330	24.1	13,497,226	24.5
South King County	14,567,719	25.1	17,751,789	25.5	17,344,633	24.9
King County	37,069,046	22.3	44,621,502	23.1	44,224,176	22.9
Kitsap County	3,193,155	13.9	4,500,761	15.6	4,095,874	14.2
Pierce County	12,602,705	18.3	16,333,723	19.5	15,995,417	19.1
Snohomish County	11,624,002	20.5	14,730,381	19.8	15,070,111	20.2

TABLE 8-6. Average Daily Vehicle Delay

SUBAREA	1998 BASELINE		2010 CURRENT LAW REVENUE		2010 STRATEGY	
	HOURS OF DELAY	MINUTES OF DELAY PER HOUSEHOLD	HOURS OF DELAY	MINUTES OF DELAY PER HOUSEHOLD	HOURS OF DELAY	MINUTES OF DELAY PER HOUSEHOLD
Region	130,176	6.4	272,508	10.3	181,194	6.8
Northwest King County	28,709	6.2	46,128	8.1	37,709	6.6
East King County	23,665	8.1	41,290	10.8	39,103	10.2
South King County	40,471	10.6	62,101	12.7	44,204	9.1
King County	92,844	8.2	149,519	10.4	121,015	8.4
Kitsap County	813	0.5	5,949	3.2	1,506	0.8
Pierce County	18,644	4.4	79,100	14.6	26,813	4.9
Snohomish County	17,874	5.1	37,940	7.8	31,859	6.6

Daily VMT = Vehicle miles traveled during an average 24-hour day

TABLE 8-7. Percent of Freeway Network Experiencing Congestion (PM Peak Period)

SUBAREA	2010 CURRENT LAW REVENUE			2010 STRATEGY		
	V/C > 0.9 STOP AND GO TRAFFIC	V/C > 1.0 SEVERE TRAFFIC	V/C > 1.2 GRIDLOCK	V/C > 0.9	V/C > 1.0	V/C > 1.2
Region						
Freeway GP	57.7	39.6	20.3	46.3	29.0	12.7
Freeway HOV	84.4	77.3	64.1	73.8	62.2	44.4
Northwest King County						
Freeway GP	84.2	62.3	31.9	79.9	55.2	24.7
Freeway HOV	80.6	76.8	64.4	74.9	70.8	52.6
East King County						
Freeway GP	43.6	27.1	14.3	43.4	28.1	12.0
Freeway HOV	63.2	50.4	42.6	65.3	56.9	44.8
South King County						
Freeway GP	60.6	38.4	18.3	43.1	27.6	16.1
Freeway HOV	99.2	99.2	88.2	91.1	86.3	67.1
King County						
Freeway GP	61.3	40.9	20.5	52.1	34.4	16.9
Freeway HOV	81.6	75.9	65.9	77.8	71.8	55.5
Kitsap County						
Freeway GP	40.6	33.9	18.1	0.0	0.0	0.0
Freeway HOV	NA	NA	NA	0.0	0.0	0.0
Pierce County						
Freeway GP	62.1	44.9	24.7	49.7	22.8	4.2
Freeway HOV	91.8	91.8	91.8	52.4	23.7	20.6
Snohomish County						
Freeway GP	49.3	32.1	16.3	44.5	30.5	13.2
Freeway HOV	97.0	80.5	47.6	90.4	74.3	27.6

PM Peak = Weekday 3 PM to 6 PM

v/c = Modeled volume of travel ("v") divided by the modeled capacity ("c") of the facility. Here the percentage of the facilities that exceed 0.9, 1.0, and 1.2 in a volume to capacity ratio are displayed

GP = General Purpose (all vehicle lanes)

HOV = High Occupancy Vehicle lanes (restricted to occupancy requirements of 2+ persons per vehicle in 2010 model runs)

TABLE 8-8. Mode Share – All Trips

SUBAREA	1998 BASELINE ORIGINS	%	1998 BASELINE DESTINATIONS	%	2010 STRATEGY ORIGINS	%	2010 STRATEGY DESTINATIONS	%
Region								
SOV	6,428,606	62.4	6,428,606	62.4	7,751,855	59.3	7,751,855	59.3
Carpool	3,591,423	34.9	3,591,423	34.9	4,880,144	37.4	4,880,144	37.4
Transit	284,616	2.8	284,616	2.8	431,596	3.3	431,596	3.3
Northwest King								
SOV	1,291,804	61.4	1,498,046	57.0	1,416,853	56.8	1,618,469	51.9
Carpool	623,886	29.6	880,630	33.5	787,080	31.6	1,136,423	36.4
Transit	189,870	9.0	248,629	9.5	290,379	11.6	366,055	11.7
East King County								
SOV	1,121,929	65.1	1,225,408	61.8	1,330,795	60.8	1,463,361	58.9
Carpool	586,402	34.0	751,586	37.9	828,044	37.9	1,006,143	40.5
Transit	14,906	0.9	5,999	0.3	28,904	1.3	16,386	0.7
South King								
SOV	1,282,658	64.0	1,270,363	64.7	1,521,868	60.8	1,505,443	60.6
Carpool	696,141	34.7	685,168	34.9	942,874	37.7	961,487	38.7
Transit	25,917	1.3	8,028	0.4	37,379	1.5	16,183	0.7
King County								
SOV	3,696,391	63.4	3,993,818	60.8	4,269,516	59.4	4,587,273	56.7
Carpool	1,906,428	32.7	2,317,385	35.3	2,557,997	35.6	3,104,053	38.4
Transit	230,694	4.0	262,656	4.0	356,663	5.0	398,624	4.9
Kitsap County								
SOV	399,652	58.3	397,375	62.8	508,671	56.7	499,998	62.6
Carpool	267,472	39.0	230,032	36.4	362,516	40.4	292,426	36.6
Transit	18,492	2.7	5,081	0.8	26,028	2.9	6,751	0.8
Pierce County								
SOV	1,226,906	61.8	1,083,066	67.3	1,556,364	60.8	1,453,000	65.1
Carpool	740,893	37.3	516,349	32.1	980,549	38.3	760,739	34.1
Transit	19,116	1.0	11,201	0.7	24,765	1.0	17,121	0.8
Snohomish County								
SOV	1,105,658	61.5	954,356	64.2	1,417,332	58.6	1,211,614	62.3
Carpool	676,630	37.6	527,655	35.5	979,081	40.5	722,927	37.2
Transit	16,315	0.9	5,679	0.4	24,141	1.0	9,100	0.5

Mode Share = Percentage of people choosing a travel mode to make a trip

SOV = Single Occupant Vehicle

Carpool = Two or more person non-transit vehicle

Transit = Public transit vehicle

TABLE 8-9. Mode Share – Work Trips

SUBAREA	1998 BASELINE ORIGINS	%	1998 BASELINE DESTINATIONS	%	2010 STRATEGY ORIGINS	%	2010 STRATEGY DESTINATIONS	%
Region								
SOV	1,600,196	71.5	1,600,196	71.5	1,782,431	63.1	1,782,431	63.1
Carpool	473,830	21.2	473,830	21.2	834,588	29.5	834,588	29.5
Transit	163,727	7.3	163,727	7.3	209,661	7.4	209,661	7.4
Northwest King								
SOV	274,618	61.8	415,587	57.1	259,491	49.9	380,912	44.7
Carpool	78,702	17.7	169,399	23.3	147,247	28.3	296,977	34.8
Transit	91,026	20.5	142,934	19.6	113,856	21.9	175,191	20.5
East King County								
SOV	277,454	76.7	279,837	76.7	289,531	62.8	303,776	65.3
Carpool	71,697	19.8	80,433	22.1	149,403	32.4	150,843	32.4
Transit	12,714	3.5	4,408	1.2	21,850	4.7	10,507	2.3
South King								
SOV	322,912	73.6	319,545	77.3	365,387	66.5	358,620	69.5
Carpool	92,926	21.8	89,779	21.7	162,241	28.9	151,030	29.3
Transit	20,096	4.6	3,888	0.9	25,111	4.6	6,347	1.2
King County								
SOV	874,983	70.3	1,014,969	67.4	914,408	59.7	1,043,309	56.9
Carpool	246,253	19.8	339,611	22.6	455,650	29.8	598,850	32.7
Transit	123,835	10.0	151,230	10.0	160,818	10.5	192,044	10.5
Kitsap County								
SOV	88,142	61.9	86,008	74.8	110,200	59.3	104,826	72.4
Carpool	38,502	27.1	26,080	22.7	56,032	30.2	36,232	25.0
Transit	15,706	11.0	2,976	2.6	19,619	10.6	3,746	2.6
Pierce County								
SOV	326,085	74.4	259,830	81.0	376,478	68.8	341,082	74.0
Carpool	101,393	23.1	54,918	17.1	159,087	29.1	111,230	24.1
Transit	11,074	2.5	6,174	1.9	11,822	2.2	8,771	1.9
Snohomish County								
SOV	310,986	75.5	239,389	80.9	381,342	67.8	293,214	75.9
Carpool	87,683	21.3	53,221	18.0	163,819	29.1	88,276	22.8
Transit	13,111	3.2	3,348	1.1	17,402	3.1	5,100	1.3

Mode Share = Percentage of people choosing a travel mode to make a trip

SOV = Single Occupant Vehicle

Carpool = Two or more person non-transit vehicle

Transit = Public transit vehicle

TABLE 8-10. Facility Travel Speeds by Mode (AM Peak Period)

FACILITY	2010 CURRENT LAW REVENUE			2010 STRATEGY		
	SOV	CARPOOL	TRANSIT	SOV	CARPOOL	TRANSIT
I-405: I-5 South to I-90	29	40	28	38	43	32
I-405: I-90 to I-5 North	36	33	20	35	34	24
I-5: Downtown Seattle north to I-405	35	35	31	36	37	35
I-5: I-405 to SR 2	36	37	33	39	43	39
I-5: SR 16 to Downtown Seattle	35	33	28	39	39	37
I-5: SR 2 to Snohomish/Skagit County Line	51	43	NA	51	43	38
I-5: Thurston County Line to SR 16	52	50	41	52	54	48
I-90: I-5 to SR 18	53	55	46	52	58	48
SR 16/SR 3: I-5 to Bremerton	20	16	33	39	44	35
SR 167: I-5 to I-405	36	36	27	40	41	31
SR 18: I-5 to I-90	42	40	21	43	42	22
SR 2: I-5 to SR 203	44	41	29	43	42	30
SR 520: I-5 to Downtown Redmond	34	39	30	38	45	36
SR 522: I-405 to SR 2	38	36	30	47	45	29
SR 522: I-5 to I-405	25	24	17	26	25	19
SR 525: I-405 to Mukilteo	31	32	26	38	40	31

AM Peak Period = Weekday 6 AM to 9 AM

SOV = Single Occupant Vehicle

Carpool = Two or more person non-transit vehicle

Transit = Public transit vehicle

**TABLE 8-11. 2010 Current Law Revenue
Travel Time and Speeds For Travel Between Regional Urban Centers (AM Peak Period)**

ORIGIN ▼	SEATTLE		BELLEVUE		TACOMA		EVERETT		BREMERTON	
	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.
Seattle										
SOV			19	35	52	38	49	36	102	38
Carpool			19	36	43	47	41	43	90	43
Transit			36	19	84	29	59	32	245	18
Bellevue										
SOV	21	33			65	34	46	38	114	36
Carpool	18	38			47	47	36	49	93	44
Transit	29	23			101	30	70	22	262	19
Tacoma										
SOV	63	32	73	30			108	34	54	37
Carpool	62	32	66	33			96	39	53	38
Transit	73	33	111	27			137	31	155	13
Everett										
SOV	55	32	52	34	103	36			152	37
Carpool	53	33	49	36	89	42			136	41
Transit	69	27	99	17	151	28			315	20
Bremerton										
SOV	160	24	170	24	98	20	205	27		
Carpool	159	25	163	25	98	20	192	29		
Transit	224	20	262	19	145	14	290	22		

There are 21 Designated Urban Centers in the region (see *Destination 2030* Chapter 2). These five refer to the Seattle CBD, Bellevue CBD, Tacoma CBD, Everett and Bremerton.

AM Peak Period = Weekday 6 AM to 9 AM

SOV = Single Occupant Vehicle

Carpool = Two or more person non-transit vehicle

Transit = Public transit vehicle

Note: With Current Law Revenues there are no ferry services operating across Puget Sound

TABLE 8-12. 2010 Strategy

Travel Time and Speeds For Travel Between Regional Urban Centers (AM Peak Period)

ORIGIN	DESTINATION	SEATTLE		BELLEVUE		TACOMA		EVERETT		BREMERTON	
		TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.
Seattle											
SOV				20	35	48	42	48	37	65	17
Carpool				16	41	38	53	39	45	65	17
Transit				37	18	51	40	57	33	47	24
Bellevue											
SOV	20	31				56	39	46	38	84	21
Carpool	16	36				38	52	39	52	65	23
Transit	29	23				76	34	71	23	82	22
Tacoma											
SOV	55	37	62	35				98	38	48	42
Carpool	54	37	58	38				85	43	44	45
Transit	68	30	98	27				125	33	125	25
Everett											
SOV	53	34	52	34	97	38				102	30
Carpool	51	35	48	37	83	45				100	30
Transit	57	35	89	21	115	35				119	27
Bremerton											
SOV	86	14	104	19	51	38	133	22			
Carpool	86	14	101	19	48	41	124	24			
Transit	35	32	77	23	91	34	101	30			

There are 21 Designated Urban Centers in the region (see *Destination 2030* Chapter 2). These five refer to the Seattle CBD, Bellevue CBD, Tacoma CBD, Everett and Bremerton.

AM Peak Period = Weekday 6 AM to 9 AM

SOV = Single Occupant Vehicle

Carpool = Two or more person non-transit vehicle

Transit = Public transit vehicle (including ferry)

TABLE 8-13. Person Trips at Selected Screenlines (AM Peak Period)

	SOV	%	CARPOOL	%	BUS	%	RAIL	%	WALK/FERRY	%	TOTAL
Screenline 5											
2010 CLR	53,626	72.5	17,671	23.9	2,090	2.8	594	0.8	NA	NA	73,981
2010 Strategy	56,719	70.6	21,048	26.2	2,214	2.8	357	0.4	NA	NA	80,337
Screenline 7											
2010 CLR	18,668	41.8	25,975	58.2	0	0.0	NA	NA	NA	NA	44,643
2010 Strategy	18,526	56.0	14,245	43.0	320	1.0	NA	NA	NA	NA	33,091
Screenline 10 and 11											
2010 CLR	66,493	54.9	52,450	43.3	196	0.2	2,039	1.7	NA	NA	121,178
2010 Strategy	66,422	60.0	41,407	37.4	1,944	1.8	1,015	0.9	NA	NA	110,789
Screenline 19 and 20											
2010 CLR	104,925	55.2	78,649	41.4	2,438	1.3	4,061	2.1	NA	NA	190,071
2010 Strategy	102,278	57.7	66,622	37.6	5,900	3.3	2,424	1.4	NA	NA	177,224
Screenline 23											
2010 CLR	7,640	72.1	1,911	18.0	1,045	9.9	NA	NA	NA	NA	10,596
2010 Strategy	8,211	74.9	1,796	16.4	954	8.7	NA	NA	NA	NA	10,961
Screenline 28											
2010 CLR	29,146	54.3	23,796	44.3	759	1.4	NA	NA	NA	NA	53,701
2010 Strategy	34,567	58.0	24,058	40.4	972	1.6	NA	NA	NA	NA	59,597
Screenline 30											
2010 CLR	50,164	54.6	38,800	42.3	2,851	3.1	NA	NA	NA	NA	91,815
2010 Strategy	50,843	57.9	34,714	39.6	2,185	2.5	NA	NA	NA	NA	87,742
Screenline 32											
2010 CLR	38,913	44.7	39,951	45.9	8,155	9.4	NA	NA	NA	NA	87,019
2010 Strategy	42,363	43.5	44,951	46.2	10,007	10.3	NA	NA	NA	NA	97,322
Screenline 35											
2010 CLR	85,089	45.9	68,223	36.8	21,390	11.5	10,837	5.8	NA	NA	185,539
2010 Strategy	84,679	45.4	65,529	35.1	24,648	13.2	11,851	6.3	NA	NA	186,707
Screenline 37											
2010 CLR	69,207	58.5	45,597	38.5	3,490	3.0	NA	NA	NA	NA	118,293
2010 Strategy	72,600	57.7	48,989	39.0	4,184	3.3	NA	NA	NA	NA	125,772
Screenline 38											
2010 CLR	69,804	51.7	50,706	37.5	12,008	8.9	2,594	1.9	NA	NA	135,112
2010 Strategy	68,765	50.7	48,326	35.6	15,978	11.8	2,596	1.9	NA	NA	135,665
Screenline 42											
2010 CLR	50,700	58.9	31,720	36.8	2,944	3.4	779	0.9	NA	NA	86,143
2010 Strategy	50,334	56.9	30,708	34.7	6,812	7.7	665	0.8	NA	NA	88,519
Screenline 43											
2010 CLR	43,277	62.4	25,623	37.0	438	0.6	NA	NA	NA	NA	69,338
2010 Strategy	45,359	63.8	24,312	34.2	1,422	2.0	NA	NA	NA	NA	71,092

TABLE 8-13. Person Trips at Selected Screenlines (AM Peak Period) . . . continued

	SOV	%	CARPOOL	%	BUS	%	RAIL	%	WALK/FERRY	%	TOTAL
Screenline 46											
2010 CLR	55,527	64.6	28,878	33.6	1,594	1.9	NA	NA	NA	NA	85,998
2010 Strategy	57,895	64.6	28,507	31.8	3,266	3.6	NA	NA	NA	NA	89,669
Screenline 48											
2010 CLR	15,355	63.2	8,791	36.2	162	0.7	NA	NA	NA	NA	24,308
2010 Strategy	14,512	61.9	8,804	37.6	116	0.5	NA	NA	NA	NA	23,432
Screenline 55											
2010 CLR	11,430	54.9	9,147	43.9	242	1.2	NA	NA	NA	NA	20,818
2010 Strategy	11,146	60.0	6,606	35.6	831	4.5	NA	NA	NA	NA	18,583
Screenline 57											
2010 CLR	10,632	55.1	8,565	44.4	103	0.5	NA	NA	NA	NA	19,300
2010 Strategy	10,634	70.3	4,349	28.8	135	0.9	NA	NA	NA	NA	15,118
Screenline 60											
2010 CLR	1,196	35.2	1,098	32.3	317	9.3	NA	NA	786	23.1	3,396
2010 Strategy	6,932	34.5	4,203	20.9	6	0.0	NA	NA	8,931	44.5	20,071
Screenline 71											
2010 CLR	20,905	64.3	11,629	35.7	0	0.0	NA	NA	NA	NA	32,534
2010 Strategy	21,821	64.4	11,929	35.2	134	0.4	NA	NA	NA	NA	33,883

Selected 2030 Modeling Assumptions

TABLE 8-14. Population and Household Data

SUBAREA	1998		2030	
	POPULATION	HOUSEHOLDS	POPULATION	HOUSEHOLDS
Region	3,148,715	1,230,067	4,695,276	2,012,345
Northwest King County	607,188	275,773	810,908	422,397
East King County	478,736	174,690	647,639	280,527
South King County	579,681	228,174	855,465	375,201
King County	1,665,605	682,637	2,314,012	1,078,125
Kitsap County	229,009	84,423	433,214	171,466
Pierce County	686,874	254,038	1,031,074	401,236
Snohomish County	567,227	208,969	916,976	361,518

Subareas are county boundaries except in King County which is divided into three planning subareas.

TABLE 8-15. Lane Miles Assumed for Modeling Purposes — 1998 Baseline

SUBAREA	GP FREEWAY	GP ARTERIAL	GP TOTAL	HOV FREEWAY	HOV ARTERIAL	HOV TOTAL	TOTAL ROADWAY
Region	2,033	9,248	11,281	162	1	163	11,444
Northwest King County	303	1,483	1,786	35	0	35	1,821
East King County	349	1,161	1,510	47	0	47	1,558
South King County	501	1,552	2,053	56	1	57	2,109
King County	1,153	4,197	5,350	138	1	139	5,489
Kitsap County	167	885	1,052	0	0	0	1,052
Pierce County	369	2,454	2,823	0	0	0	2,823
Snohomish County	344	1,713	2,057	24	0	24	2,081

TABLE 8-16. New Lane Miles Assumed for Modeling Purposes — 2030 Plan

SUBAREA	GP FREEWAY	GP ARTERIAL	GP TOTAL	HOV FREEWAY	HOV ARTERIAL	HOV TOTAL	TOTAL ROADWAY
Region	380	1,222	1,602	342	94	436	2,038
Northwest King County	0	19	19	22	6	28	47
East King County	139	264	403	54	16	70	473
South King County	70	226	296	49	41	90	386
King County	208	509	717	126	62	188	905
Kitsap County	23	138	161	58	1	59	220
Pierce County	29	310	339	122	0	122	461
Snohomish County	119	265	384	37	30	67	451

TABLE 8-17. New Lane Miles Assumed for Modeling — 2030 Current Law Revenue

SUBAREA	GP FREEWAY	GP ARTERIAL	GP TOTAL	HOV FREEWAY	HOV ARTERIAL	HOV TOTAL	TOTAL ROADWAY
Region	63	113	176	54	22	76	252
Northwest King County	0	1	1	4	0	4	5
East King County	25	15	40	17	0	17	57
South King County	23	23	46	14	8	21	67
King County	47	38	85	35	8	43	128
Kitsap County	0	4	4	0	0	0	4
Pierce County	0	35	35	9	0	9	44
Snohomish County	15	36	51	10	14	24	75

Lane Mile = The measure of lane distance that a single lane of a road completes in 1 mile. A four-lane road, for example, would be equivalent to four lane miles for every mile of roadway length.

GP = General Purpose lanes

HOV = High Occupancy Vehicle lanes (occupancy requirement is 3+ per vehicle for 2030)

2030 Performance Data

TABLE 8-18. Daily Vehicle Miles Traveled on the Arterial and Freeway Network

SUBAREA	1998 BASELINE		2010 CURRENT LAW REVENUE		2030 PLAN	
	DAILY VMT	DAILY VMT PER CAPITA	DAILY VMT	DAILY VMT PER CAPITA	DAILY VMT	DAILY VMT PER CAPITA
Region	64,490,626	20.5	97,968,509	20.9	93,562,322	19.9
Northwest King County	11,958,359	19.7	15,018,057	18.5	13,351,200	16.5
East King County	10,542,720	22.0	15,673,404	24.2	16,193,801	25.0
South King County	14,567,719	25.1	21,868,228	25.6	20,555,949	24.0
King County	37,069,046	22.3	52,560,112	22.7	50,106,431	21.7
Kitsap County	3,193,155	13.9	6,106,057	14.1	5,619,097	13.0
Pierce County	12,602,705	18.3	21,152,391	20.5	19,704,572	19.1
Snohomish County	11,624,002	20.5	18,092,378	19.7	18,116,154	19.8

TABLE 8-19. Average Daily Vehicle Delay

SUBAREA	1998 BASELINE		2010 CURRENT LAW REVENUE		2030 PLAN	
	HOURS OF DELAY	MINUTES OF DELAY PER HOUSEHOLD	HOURS OF DELAY	MINUTES OF DELAY PER HOUSEHOLD	HOURS OF DELAY	MINUTES OF DELAY PER HOUSEHOLD
Region	130,176	6.4	999,998	29.8	239,731	7.2
Northwest King County	28,709	6.2	65,407	9.3	31,640	4.5
East King County	23,665	8.1	69,032	14.8	41,912	9.0
South King County	40,471	10.6	122,091	19.5	63,929	10.2
King County	92,844	8.2	256,531	14.3	137,481	7.7
Kitsap County	813	0.5	23,649	8.3	3,827	1.3
Pierce County	18,644	4.4	650,514	97.2	54,145	8.1
Snohomish County	17,874	5.1	69,235	11.5	44,278	7.4

Daily VMT = Vehicle miles traveled during an average 24-hour day

TABLE 8-20. Percent of Freeway Network Experiencing Congestion (PM Peak Period)

SUBAREA	2030 CURRENT LAW REVENUE			2030 PLAN		
	V/C > 0.9	V/C > 1.0	V/C > 1.2	V/C > 0.9	V/C > 1.0	V/C > 1.2
Region						
Freeway GP	71.2	56.8	29.4	51.3	32.8	12.1
Freeway HOV	88.1	83.9	70.6	12.9	4.4	0.0
Northwest King County						
Freeway GP	88.1	72.6	39.7	65.1	44.9	10.9
Freeway HOV	80.6	79.2	72.7	14.7	7.2	0.0
East King County						
Freeway GP	54.8	33.6	20.7	51.6	29.8	13.4
Freeway HOV	75.1	62.4	44.6	6.3	1.2	0.0
South King County						
Freeway GP	69.4	61.4	28.2	57.4	34.8	18.6
Freeway HOV	99.6	99.2	96.3	31.2	1.6	0.0
King County						
Freeway GP	69.6	55.6	28.8	57.1	35.3	15.0
Freeway HOV	86.2	81.0	71.7	18.0	6.6	0.0
Kitsap County						
Freeway GP	70.4	58.6	29.8	8.2	2.0	0.0
Freeway HOV	NA	NA	NA	0.0	0.0	0.0
Pierce County						
Freeway GP	82.7	67.5	34.0	65.6	45.1	9.5
Freeway HOV	91.8	91.8	91.8	14.3	3.9	0.0
Snohomish County						
Freeway GP	65.4	48.9	26.6	39.6	27.8	10.6
Freeway HOV	97.0	97.0	59.1	0.0	0.0	0.0

PM Peak = Weekday 3 PM to 6 PM

v/c = Modeled volume divided by the modeled capacity. Here the percentage of the facilities that exceed 0.9, 1.0, and 1.2 in a volume to capacity ratio are displayed

GP = General Purpose (all vehicle lanes)

HOV = High Occupancy Vehicle lanes (restricted to occupancy requirements of 3+ persons per vehicle in 2030 model runs)

TABLE 8-21. Mode Share – All Trips

SUBAREA	1998 BASELINE ORIGINS	%	1998 BASELINE DESTINATIONS	%	2030 PLAN ORIGINS	%	2030 PLAN DESTINATIONS	%
Region								
SOV	6,428,606	62.4	6,428,606	62.4	9,088,504	55.5	9,088,504	55.5
Carpool	3,591,423	34.9	3,591,423	34.9	6,459,464	39.4	6,459,464	39.4
Transit	284,616	2.8	284,616	2.8	839,049	5.1	839,049	5.1
Northwest King								
SOV	1,291,804	61.4	1,498,046	57.0	1,477,347	49.2	1,642,644	44.6
Carpool	623,886	29.6	880,630	33.5	973,404	32.4	1,338,600	36.4
Transit	189,870	9.0	248,629	9.5	552,194	18.4	700,073	19.0
East King County								
SOV	1,121,929	65.1	1,225,408	61.8	1,502,902	57.0	1,666,262	55.5
Carpool	586,402	34.0	751,586	37.9	1,069,225	40.6	1,301,422	43.3
Transit	14,906	0.9	5,999	0.3	62,883	2.4	35,662	1.2
South King								
SOV	1,282,658	64.0	1,270,363	64.7	1,818,168	57.3	1,794,884	56.3
Carpool	696,141	34.7	685,168	34.9	1,278,793	40.3	1,354,539	42.5
Transit	25,917	1.3	8,028	0.4	73,682	2.3	40,240	1.3
King County								
SOV	3,696,391	63.4	3,993,818	60.8	4,798,417	54.5	5,103,790	51.7
Carpool	1,906,428	32.7	2,317,385	35.3	3,321,422	37.7	3,994,562	40.5
Transit	230,694	4.0	262,656	4.0	688,759	7.8	775,975	7.9
Kitsap County								
SOV	399,652	58.3	397,375	62.8	725,866	54.0	710,426	60.9
Carpool	267,472	39.0	230,032	36.4	564,092	42.0	441,861	37.9
Transit	18,492	2.7	5,081	0.8	53,573	4.0	14,012	1.2
Pierce County								
SOV	1,226,906	61.8	1,083,066	67.3	1,875,438	58.6	1,794,566	62.6
Carpool	740,893	37.3	516,349	32.1	1,279,754	40.0	1,037,215	36.2
Transit	19,116	1.0	11,201	0.7	46,558	1.5	34,303	1.2
Snohomish County								
SOV	1,105,658	61.5	954,356	64.2	1,688,791	55.7	1,479,740	59.7
Carpool	676,630	37.6	527,655	35.5	1,294,188	42.7	985,814	39.8
Transit	16,315	0.9	5,679	0.4	50,160	1.7	14,761	0.6

Mode Share = Percentage of people choosing a travel mode to make a trip

SOV = Single Occupant Vehicle

Carpool = Two or more person non-transit vehicle

Transit = Public transit vehicle

TABLE 8-22. Mode Share – Work Trips

SUBAREA	1998 BASELINE ORIGINS	%	1998 BASELINE DESTINATIONS	%	2030 PLAN ORIGINS	%	2030 PLAN DESTINATIONS	%
Region								
SOV	1,600,196	71.5	1,600,196	71.5	1,973,217	55.7	1,973,217	55.7
Carpool	473,830	21.2	473,830	21.2	1,153,245	32.5	1,153,245	32.5
Transit	163,727	7.3	163,727	7.3	418,351	11.8	418,351	11.8
Northwest King								
SOV	274,618	61.8	415,587	57.1	258,431	40.8	364,417	35.8
Carpool	78,702	17.7	169,399	23.3	155,550	24.6	309,752	30.4
Transit	91,026	20.5	142,934	19.6	219,111	34.6	343,669	33.8
East King County								
SOV	277,454	76.7	279,837	76.7	302,968	54.8	326,060	56.7
Carpool	71,697	19.8	80,433	22.1	199,365	36.0	221,849	38.6
Transit	12,714	3.5	4,408	1.2	50,381	9.1	27,332	4.8
South King								
SOV	322,912	73.6	319,545	77.3	426,406	60.8	414,848	63.9
Carpool	92,926	21.8	89,779	21.7	228,074	32.1	223,378	34.4
Transit	20,096	4.6	3,888	0.9	49,557	7.1	10,904	1.7
King County								
SOV	874,983	70.3	1,014,969	67.4	987,805	52.4	1,105,325	49.3
Carpool	246,253	19.8	339,611	22.6	580,001	30.7	754,979	33.7
Transit	123,835	10.0	151,230	10.0	319,050	16.9	381,905	17.0
Kitsap County								
SOV	88,142	61.9	86,008	74.8	142,912	51.6	133,446	65.7
Carpool	38,502	27.1	26,080	22.7	96,360	34.8	61,981	30.5
Transit	15,706	11.0	2,976	2.6	37,847	13.7	7,650	3.8
Pierce County								
SOV	326,085	74.4	259,830	81.0	419,745	62.3	396,318	66.4
Carpool	101,393	23.1	54,918	17.1	228,567	33.9	179,969	30.2
Transit	11,074	2.5	6,174	1.9	25,074	3.7	20,194	3.4
Snohomish County								
SOV	310,986	75.5	239,389	80.9	422,753	59.8	338,128	67.2
Carpool	87,683	21.3	53,221	18.0	248,316	35.1	156,313	31.0
Transit	13,111	3.2	3,348	1.1	36,380	5.1	8,603	1.7

Mode Share = Percentage of people choosing a travel mode to make a trip

SOV = Single Occupant Vehicle

Carpool = Two or more person non-transit vehicle

Transit = Public transit vehicle

TABLE 8-23. Facility Travel Speeds by Mode (AM Peak Period)

FACILITY	2030 CURRENT LAW REVENUE			2030 PLAN		
	SOV	CARPOOL	TRANSIT	SOV	CARPOOL	TRANSIT
I-405: I-5 South to I-90	25	32	24	37	55	41
I-405: I-90 to I-5 North	33	29	18	40	55	40
I-5: Downtown Seattle north to I-405	31	32	28	35	49	39
I-5: I-405 to SR 2	30	33	30	33	59	59
I-5: SR 16 to Downtown Seattle	28	26	24	34	45	47
I-5: SR 2 to Snohomish/Skagit County Line	45	37	NA	49	59	56
I-5: Thurston County Line to SR 16	46	44	36	43	60	50
I-90: I-5 to SR 18	52	53	43	53	61	56
SR 16/SR 3: I-5 to Bremerton	3	2	19	29	44	35
SR 167: I-5 to I-405	30	29	22	37	57	40
SR 18: I-5 to I-90	36	32	20	40	33	20
SR 2: I-5 to SR 203	39	34	27	49	54	31
SR 520: I-5 to Downtown Redmond	31	35	29	42	57	45
SR 522: I-405 to SR 2	37	35	29	42	41	27
SR 522: I-5 to I-405	23	22	15	26	27	19
SR 525: I-405 to Mukilteo	25	27	24	32	34	23

AM Peak Period = Weekday 6 AM to 9 AM

SOV = Single Occupant Vehicle

Carpool = Two or more person non-transit vehicle

Transit = Public transit vehicle

TABLE 8-24. 2030 Current Law Revenue

Travel Time and Speeds For Travel Between Regional Urban Centers (AM Peak Period)

ORIGIN	SEATTLE		BELLEVUE		TACOMA		EVERETT		BREMERTON	
	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.
Seattle										
SOV			20	33	61	33	56	30	132	30
Carpool			20	34	48	42	44	39	115	34
Transit			38	18	84	29	61	31	245	18
Bellevue										
SOV	21	32			74	30	51	34	145	28
Carpool	19	37			52	42	38	46	119	34
Transit	30	23			101	30	73	21	263	19
Tacoma										
SOV	79	25	90	25			130	28	73	27
Carpool	78	25	86	26			117	32	73	27
Transit	73	33	112	27			140	30	155	13
Everett										
SOV	62	29	58	30	119	31			190	30
Carpool	58	30	55	32	100	37			167	34
Transit	75	25	107	16	157	27			318	20
Bremerton										
SOV	567	7	579	7	490	4	619	9		
Carpool	567	7	574	7	490	4	605	9		
Transit	238	19	278	18	159	13	305	21		

There are 21 Designated Urban Centers in the region (see *Destination 2030* Chapter 2). These five refer to the Seattle CBD, Bellevue CBD, Tacoma CBD, Everett and Bremerton.

AM Peak Period = Weekday 6 AM to 9 AM

SOV = Single Occupant Vehicle

Carpool = Two or more person non-transit vehicle

Transit = Public transit vehicle

Note: With Current Law Revenues there are no ferry services operating between Bremerton and Seattle

TABLE 8-25. 2030 Plan

Travel Time and Speeds For Travel Between Regional Urban Centers (AM Peak Period)

ORIGIN	SEATTLE		BELLEVUE		TACOMA		EVERETT		BREMERTON	
	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.	TIME	M.P.H.
Seattle										
SOV			18	34	56	36	52	34	65	17
Carpool			16	40	36	55	49	46	65	17
Transit			31	20	73	27	54	32	47	24
Bellevue										
SOV	19	34			64	34	47	38	83	21
Carpool	15	41			34	56	34	52	76	23
Transit	31	20			88	25	73	24	88	20
Tacoma										
SOV	62	33	69	32			110	34	53	37
Carpool	48	42	49	45			76	49	44	45
Transit	73	28	88	25			128	29	132	15
Everett										
SOV	56	31	51	34	108	35			112	27
Carpool	39	45	35	50	68	55			103	29
Transit	54	32	73	24	127	29			117	26
Bremerton										
SOV	105	12	120	16	64	31	154	19		
Carpool	92	13	92	21	48	41	120	24		
Transit	35	34	68	29	113	17	99	29		

There are 21 Designated Urban Centers in the region (see *Destination 2030* Chapter 2). These five refer to the Seattle CBD, Bellevue CBD, Tacoma CBD, Everett and Bremerton.

AM Peak Period = Weekday 6 AM to 9 AM

SOV = Single Occupant Vehicle

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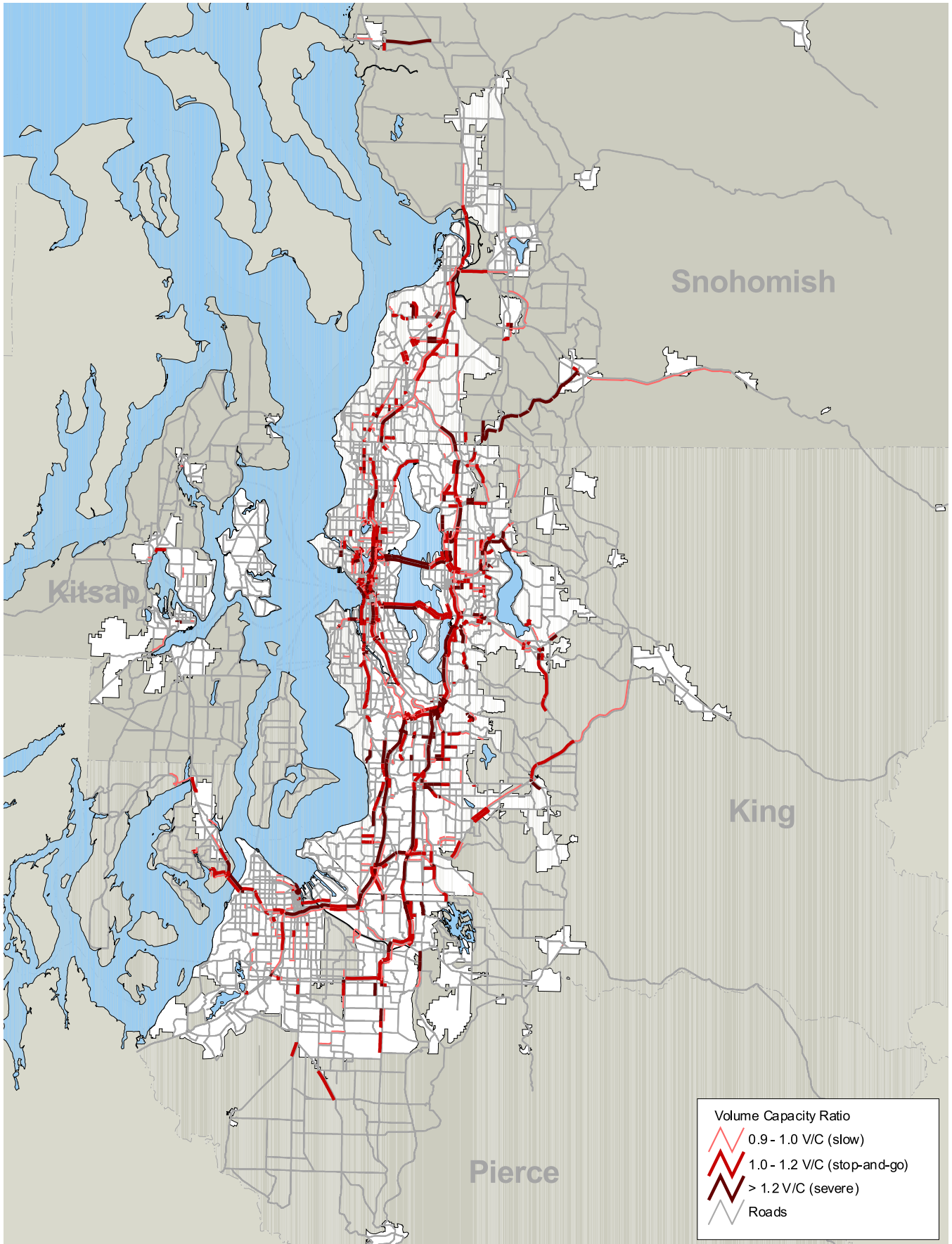
TABLE 8-26. Person Trips at Selected Screenlines (AM Peak Period)

	SOV	%	CARPOOL	%	BUS	%	RAIL	%	HCT	%	WALK/FERRY	%	TOTAL
Screenline 5													
2030 CLR	64,670	69.3	23,227	24.9	4,324	4.6	1,098	1.2	NA	NA	NA	NA	93,319
2030 Plan	57,723	60.0	34,113	35.4	3,572	3.7	827	0.9	NA	NA	NA	NA	96,235
Screenline 7													
2030 CLR	26,097	40.7	38,028	59.3	0	0.0	NA	NA	NA	NA	NA	NA	64,125
2030 Plan	17,025	38.3	26,544	59.7	926	2.1	NA	NA	NA	NA	NA	NA	44,495
Screenline 10 and 11													
2030 CLR	84,187	54.5	67,154	43.5	316	0.2	2,795	1.8	NA	NA	NA	NA	154,451
2030 Plan	68,254	50.7	62,086	46.1	465	0.3	3,780	2.8	NA	NA	NA	NA	134,585
Screenline 19 and 20													
2030 CLR	122,413	52.8	99,695	43.0	3,575	1.5	6,080	2.6	NA	NA	NA	NA	231,762
2030 Plan	103,220	50.4	89,404	43.7	2,070	1.0	9,998	4.9	NA	NA	NA	NA	204,671
Screenline 23													
2030 CLR	9,242	57.8	4,855	30.4	1,882	11.87	NA	NA	NA	NA	NA	NA	15,979
2030 Plan	8,534	53.3	4,848	30.3	2,627	16.4	NA	NA	NA	NA	NA	NA	16,009
Screenline 28													
2030 CLR	32,692	52.4	28,552	45.7	1,167	1.9	NA	NA	NA	NA	NA	NA	62,410
2030 Plan	39,589	50.2	36,314	46.1	910	1.2	NA	NA	1,973	2.5	NA	NA	78,786
Screenline 30													
2030 CLR	56,022	52.5	45,110	42.3	5,571	5.2	NA	NA	NA	NA	NA	NA	106,704
2030 Plan	54,670	48.8	49,525	44.2	840	0.7	NA	NA	7,049	6.3	NA	NA	112,083
Screenline 32													
2030 CLR	39,334	39.5	45,414	45.6	14,795	14.9	NA	NA	NA	NA	NA	NA	99,542
2030 Plan	39,873	40.8	38,650	39.5	9,758	10.0	NA	NA	9,537	9.7	NA	NA	97,818
Screenline 35													
2030 CLR	88,089	40.6	76,431	35.2	31,050	14.3	21,462	9.9	NA	NA	NA	NA	217,031
2030 Plan	72,618	35.4	63,672	31.0	30,576	14.9	38,216	18.6	NA	NA	NA	NA	205,081
Screenline 37													
2030 CLR	75,478	55.2	55,042	40.2	6,257	4.6	NA	NA	NA	NA	NA	NA	136,776
2030 Plan	80,267	51.9	65,226	42.2	4,406	2.9	NA	NA	4,678	3.0	NA	NA	154,577
Screenline 38													
2030 CLR	77,703	48.4	57,462	35.8	18,308	11.4	7,147	4.4	NA	NA	NA	NA	160,620
2030 Plan	62,115	42.5	48,700	33.4	14,802	10.1	20,284	14.0	NA	NA	NA	NA	146,000
Screenline 42													
2030 CLR	59,074	58.2	36,316	35.8	4,451	4.4	1,676	1.7	NA	NA	NA	NA	101,517
2030 Plan	44,857	48.6	33,872	36.7	2,189	2.4	11,343	12.3	NA	NA	NA	NA	92,260
Screenline 43													
2030 CLR	51,227	61.5	30,997	37.2	1,038	1.2	NA	NA	NA	NA	NA	NA	83,262
2030 Plan	53,046	56.3	37,441	39.8	1,913	2.0	NA	NA	1,762	1.9	NA	NA	94,162

TABLE 8-26. Person Trips at Selected Screenlines (AM Peak Period) continued . . .

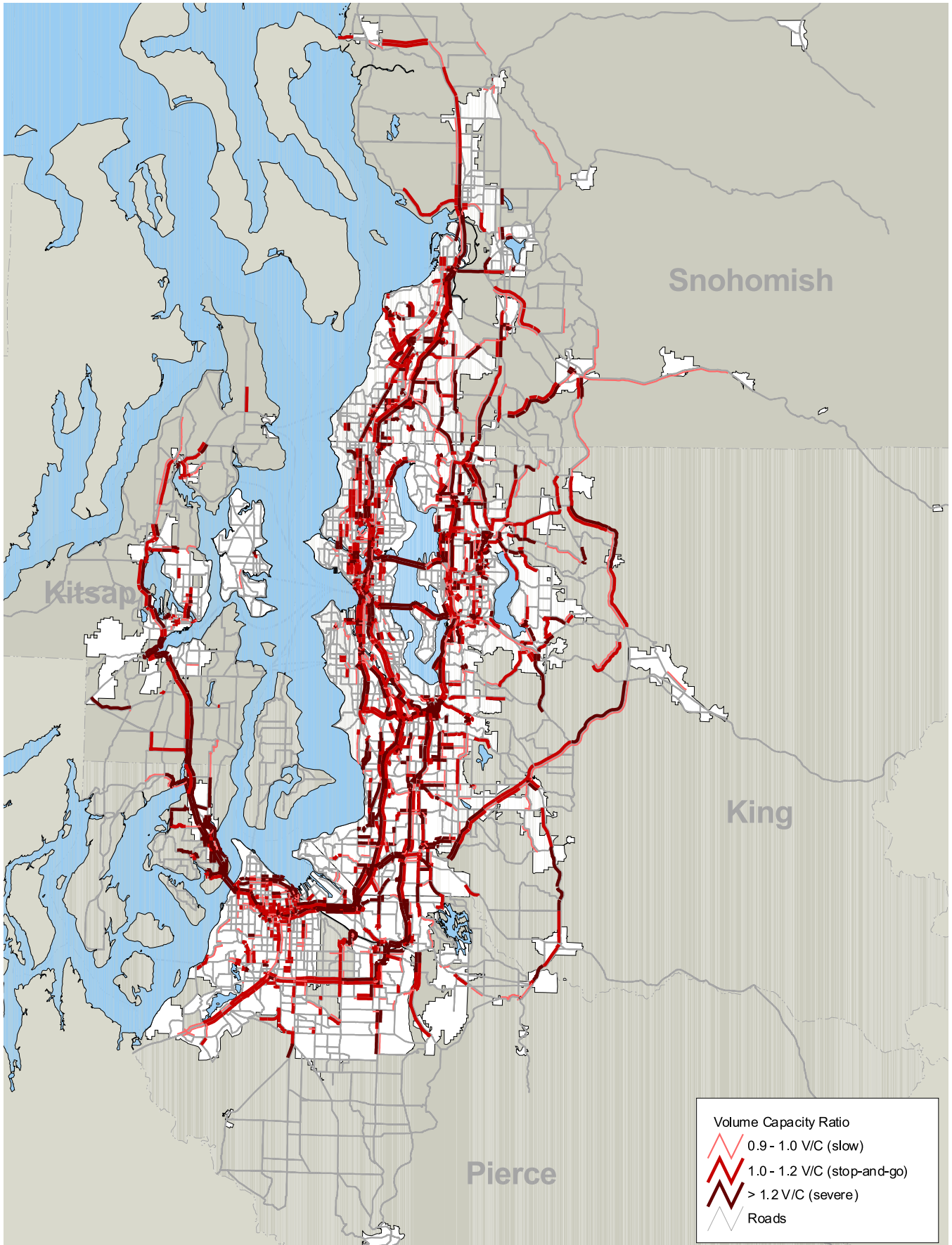
	SOV	%	CARPOOL	%	BUS	%	RAIL	%	HCT	%	WALK/FERRY	%	TOTAL
Screenline 46													
2030 CLR	68,306	65.9	33,077	31.9	2,204	2.1	NA	NA	NA	NA	NA	NA	103,587
2030 Plan	59,312	56.0	41,621	39.3	2,515	2.4	NA	NA	2,434	2.3	NA	NA	105,883
Screenline 48													
2030 CLR	15,907	60.8	10,146	38.8	129	0.5	NA	NA	NA	NA	NA	NA	26,181
2030 Plan	14,094	57.8	10,168	41.7	128	0.5	NA	NA	NA	NA	NA	NA	24,390
Screenline 55													
2030 CLR	12,637	49.5	12,676	49.7	210	0.8	NA	NA	NA	NA	NA	NA	25,523
2030 Plan	12,485	53.7	8,895	38.3	1,849	8.0	NA	NA	NA	NA	NA	NA	23,229
Screenline 57													
2030 CLR	14,524	55.6	11,552	44.3	26	0.1	NA	NA	NA	NA	NA	NA	26,101
2030 Plan	11,923	53.6	10,028	45.1	292	1.3	NA	NA	NA	NA	NA	NA	22,234
Screenline 60													
2030 CLR	1,316	36.4	1,157	32.0	322	8.9	NA	NA	NA	NA	822	22.7	3,618
2030 Plan	8,132	28.1	6,048	20.9	8	0.0	NA	NA	NA	NA	14,791	51.0	28,979
Screenline 71													
2030 CLR	25,133	64.6	13,771	35.4	0	0.0	NA	NA	NA	NA	NA	NA	38,904
2030 Plan	23,326	61.8	14,361	38.1	36	0.1	NA	NA	NA	NA	NA	NA	37,722

MAP 8-1. 1998 PM Congestion: General Purpose Lanes



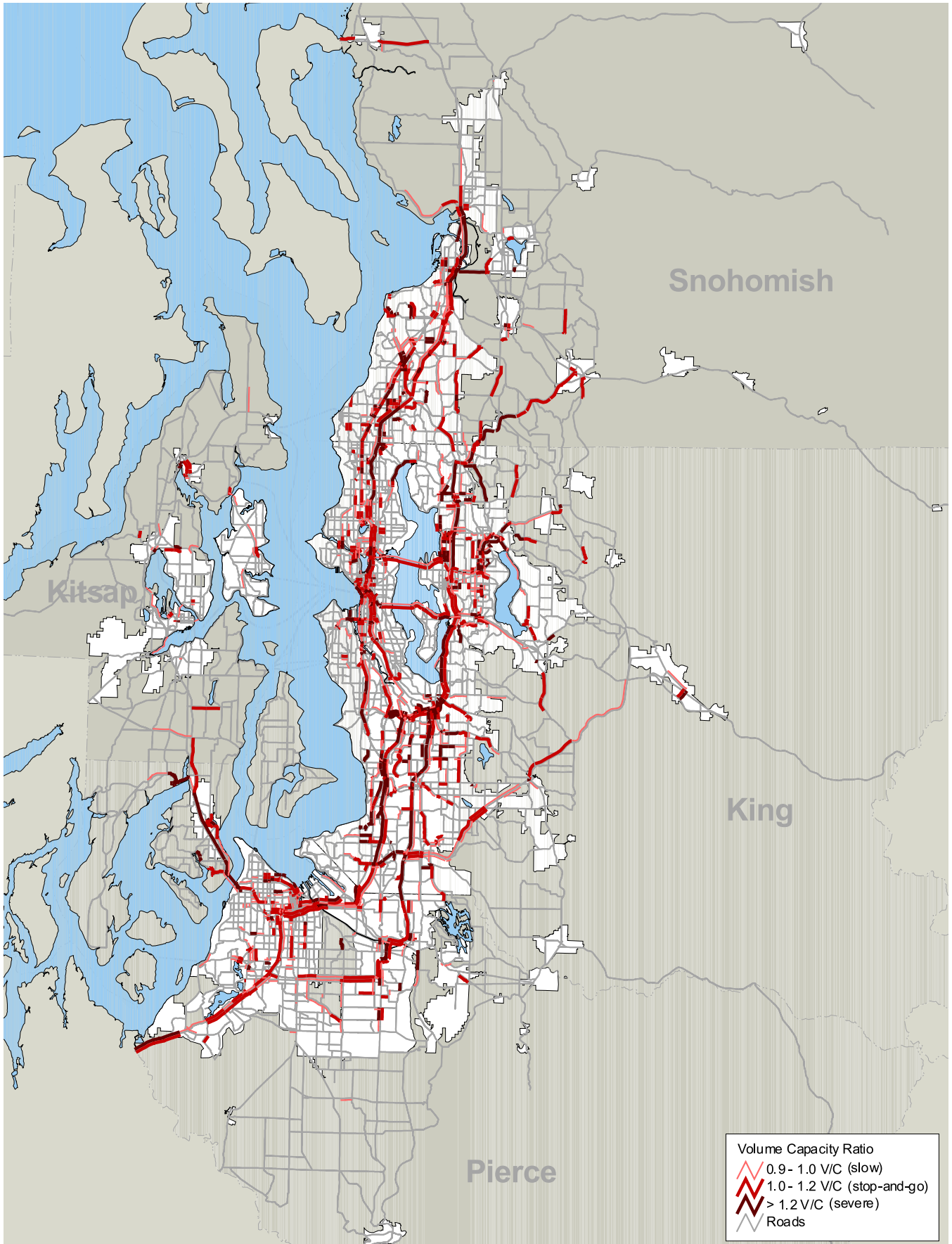
Adoption Date: May 24, 2001

MAP 8-2. 1998 PM Congestion: General Purpose Lanes with No Action



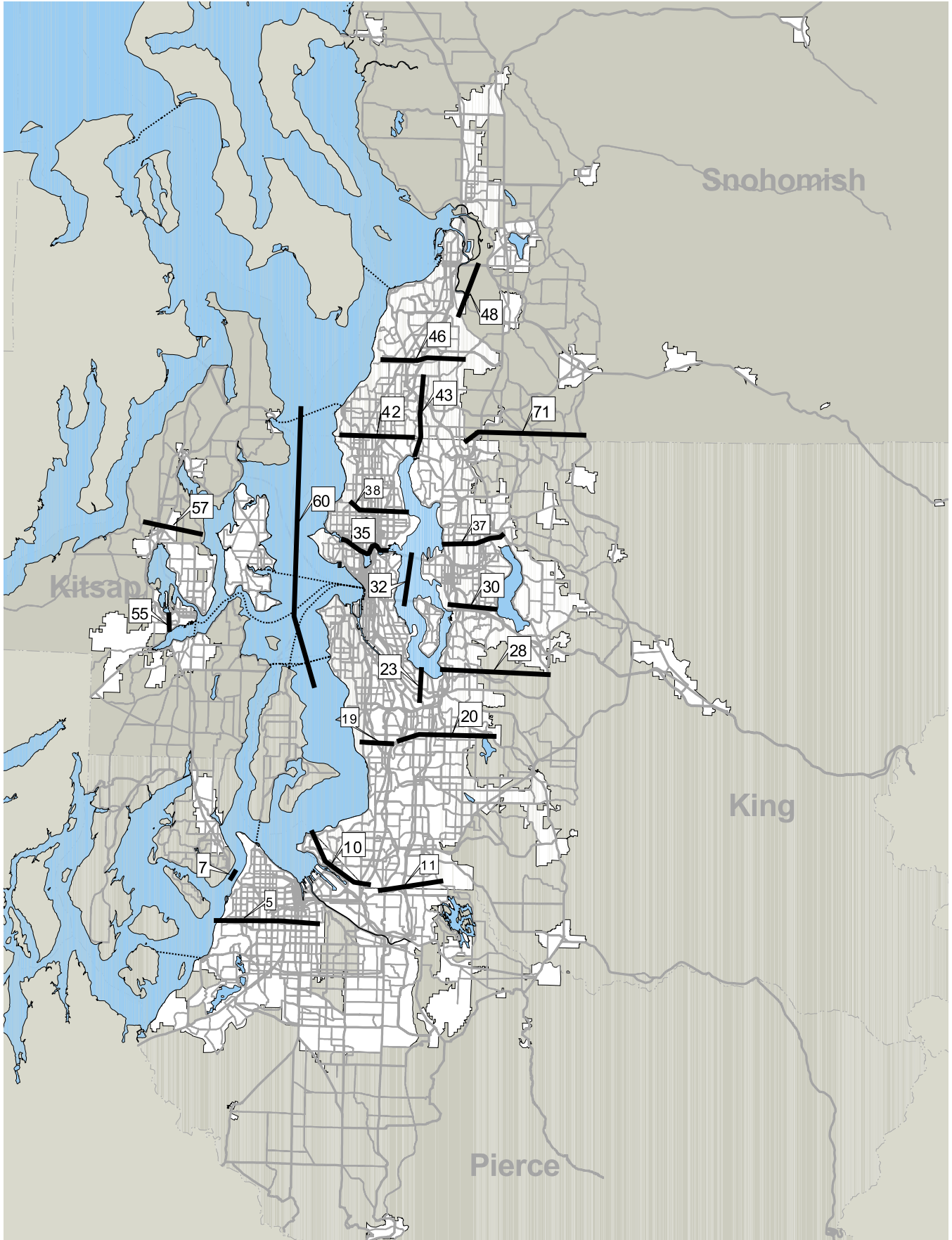
Adoption Date: May 24, 2001

MAP 8-3. 1998 PM Congestion: General Purpose Lanes with Destination 2030

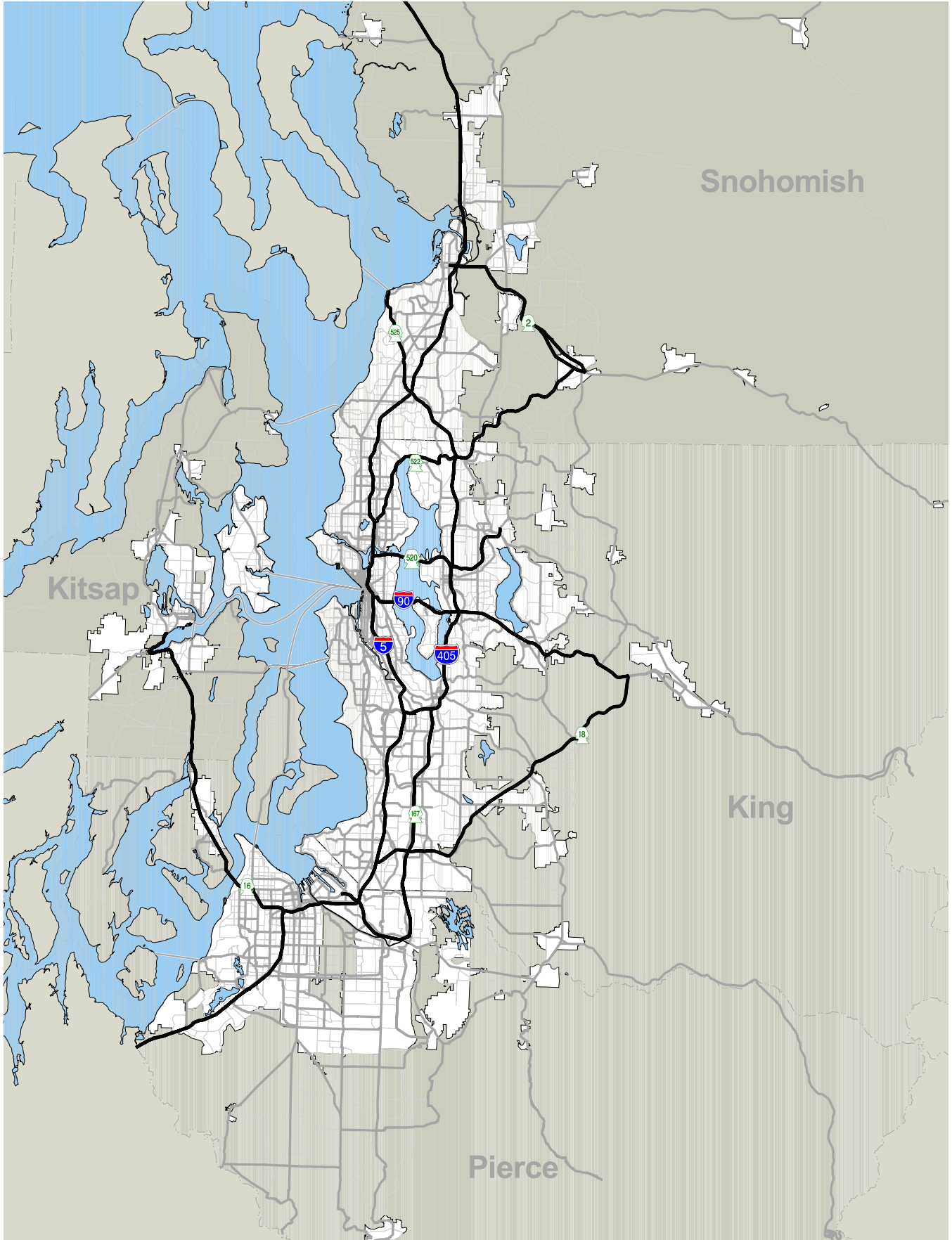


Adoption Date: May 24, 2001

MAP 8-4. Screenline Analysis Locations



MAP 8-5. Major Facilities Locations



Adoption Date: May 24, 2001

MAP 8-6. Regional Subareas



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