

Seattle and the central Puget Sound

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Celebrated in movies and music, home of Boeing and Microsoft, Seattle has been underwritten as the potential “shock city” of the twenty-first century, much as Manchester was hailed as the prototypical city of the industrial revolution or Los Angeles as the embodiment of the modern city. On postcards and television clips, Seattle’s symbolic being takes the form of a typical, albeit glittering, high-rise downtown flanked by the city’s landmark, the Space Needle, amidst an attractive waterfront and a spectacular snow-topped volcano, Mount Rainier. In reality, the city of Seattle proper is the lone flagship of a sprawling region consisting of four counties (King County dominates, though Snohomish and Pierce are rapidly developing to the north and south, and with Kitsap County to the west), two additional central cities (Tacoma and Everett), and some 70 incorporated suburban cities. Like most US central cities with roots in the nineteenth

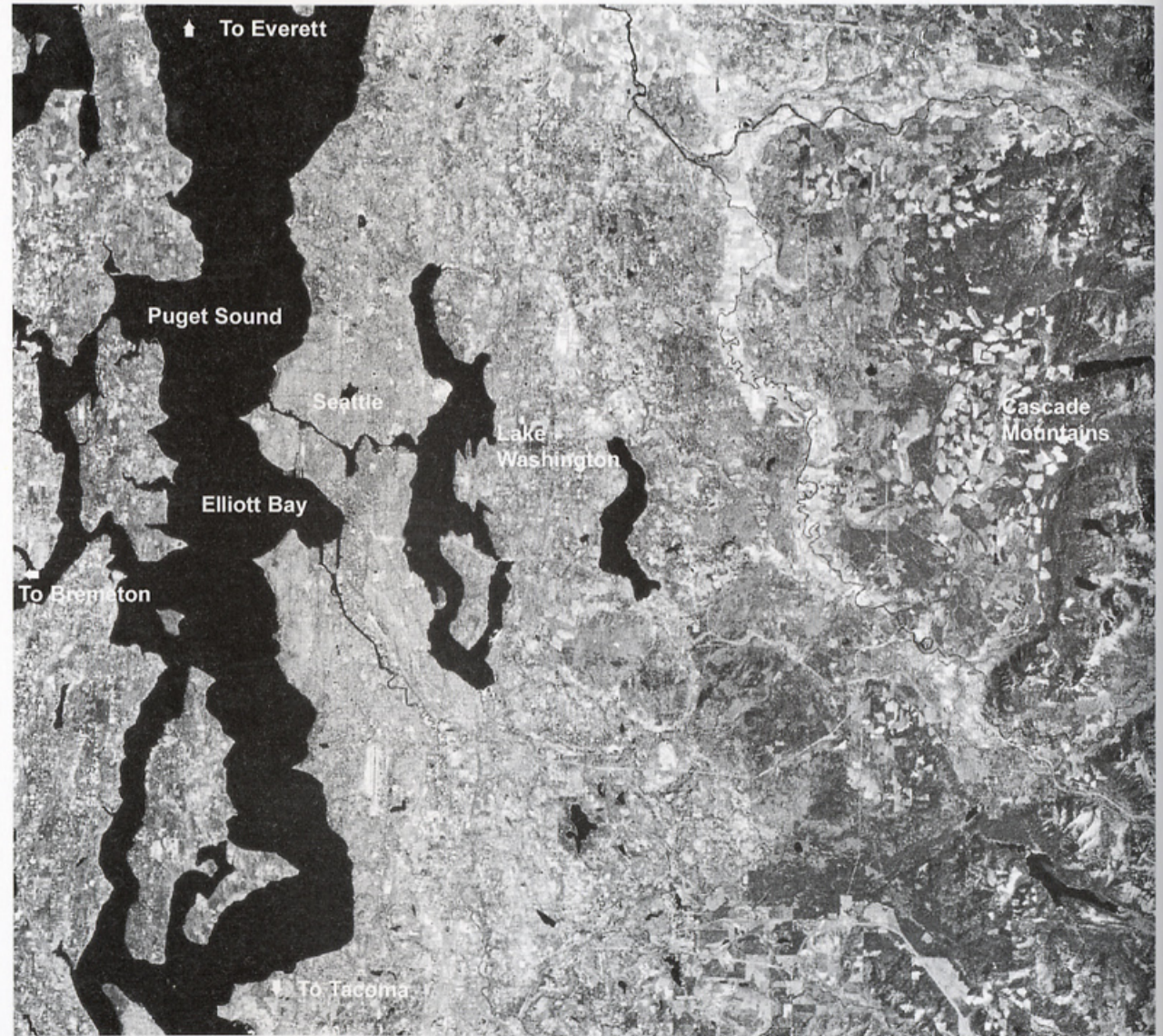


Figure 10.1 Seattle and Puget Sound from the air

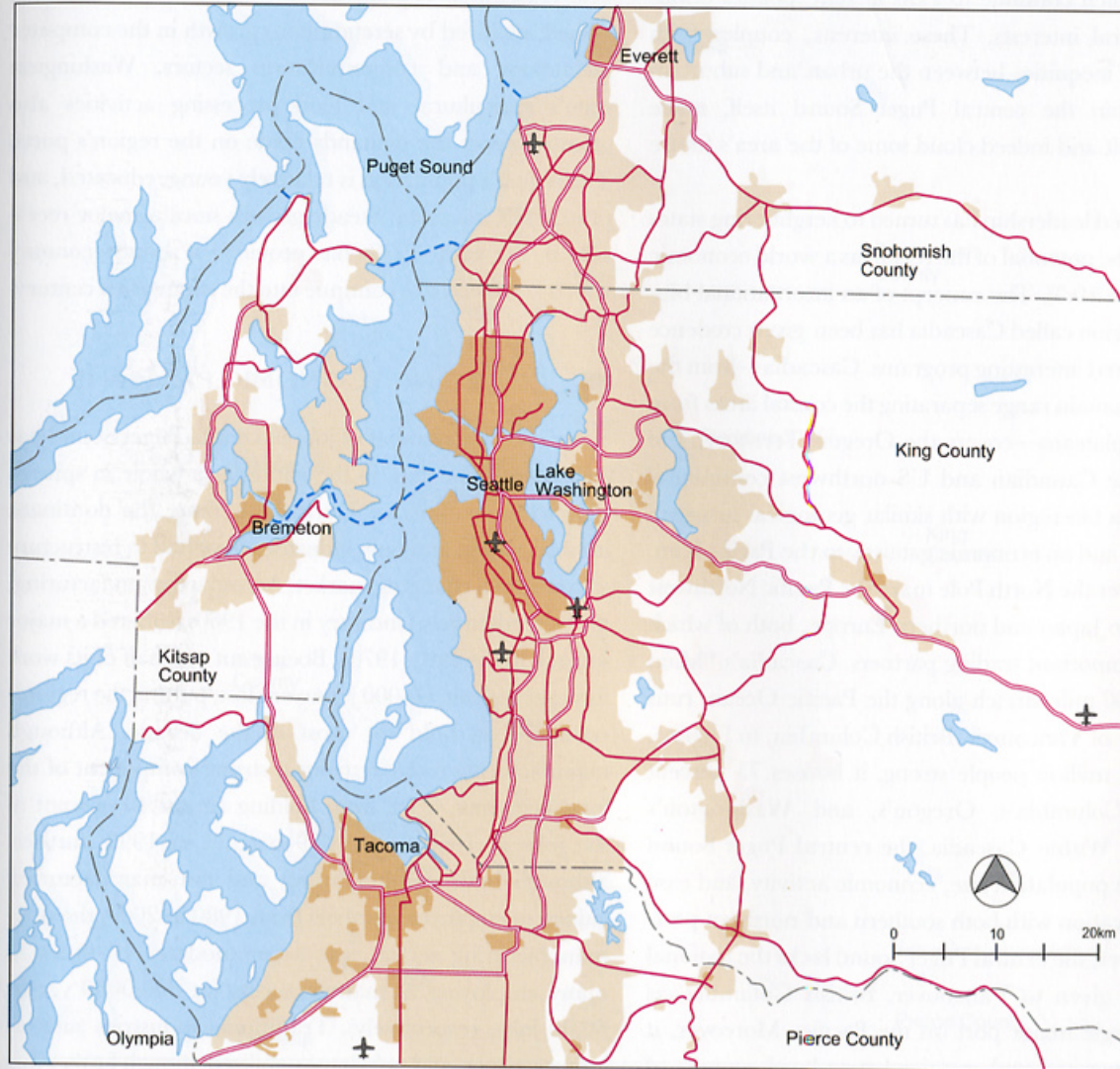


Figure 10.2 The Seattle and central Puget Sound region, 1960–1995

century, the city of Seattle has lost population since the 1950s, and today it houses less than one-fifth of the region's population on one-tenth of its land. Further, Seattleites, as they are called, differ greatly from their more conservative suburban counterparts, the former consistently clashing with the latter on issues such as the environment, transportation reform, equal rights for gays and lesbians, and gun control. Powerful industries such as Boeing have grown in many locations away from the city of Seattle. Bill Gates, the famed chairman of Microsoft, and himself a native Seattleite, moved both company and family outside of the city limits.

A representative name for the shock city of the twenty-first century has yet to be found. "Pugetopolis" was tagged as a potential descriptor in the 1960s as metropolitan growth away from the central city became obvious. The "City of Puget Sound" was proposed more recently before settling on the less urban, and hence more appropriate, "central Puget Sound" to describe the four-county planning region, framed by a boundary defining an "urban growth area." A word that even natives have difficulty pronouncing, "Puget" is the name of one of George Vancouver's lieutenants, which the captain selected to attach to the enormous area west of Seattle where water and land intermix before giving way to the Pacific Ocean. Though not much easier than "Puget" on the Asian or European tongue, Seattle remains, and probably will continue to remain in spite of local mistrust for the mother city, the region's key word to the outside world—much as San Francisco continues to represent the more anonymous Bay Area.

Central Puget Sound indeed resembles the San Francisco Bay Area as it was a few decades ago: some 3 million people spread in a large, low-density urbanized



Figure 10.3 The location of the Seattle and central Puget Sound region

region which emerged out of the conurbation of the two older port cities of Tacoma and Seattle, and of many small and even tiny towns around them (Figure 10.2). The analogy between the two regions stops in their position relative to their home state. While San Francisco continues to compete with the megalopolises of southern California, Seattle and the central Puget Sound constitute the only major metropolitan area in the state of Washington, with 60 percent of the state's population (3 million out of 5 million) and 60 percent of its employment base (1.5 million out of 2.5 million jobs). Virtually all of Washington state's connections with the nation and to the world take place in the central Puget Sound's air- and seaports. In a state which is highly dependent on international trade—total

exports *per capita* are twice the national average—these figures illustrate the primacy of the Seattle urbanized area. They do not, however, lessen the constant frictions and inequities which continue to exist in state politics dominated by rural interests. These interests, coupled with frictions and inequities between the urban and suburban factions within the central Puget Sound itself, make things difficult and indeed cloud some of the area's future prospects.

Enlightened leadership has turned to neighboring states to promote the potential of the region as a world economic power (Figure 10.3). The concept of an international bio-economic region called Cascadia has been given credence and has spurred interesting programs. Cascadia—from the Cascade Mountain range separating the coastal areas from the eastern plateaus—covers the Oregon Territory, and combines the Canadian and US northwest continental corner. It is a bio-region with similar geological structure and climate, and an economic gateway to the Pacific Rim. Air routes over the North Pole make the Pacific Northwest equidistant to Japan and northern Europe, both of which are indeed important trading partners. Cascadia's "Main Street," a 300 mile stretch along the Pacific Ocean, runs from the city of Vancouver, British Columbia, to Eugene, Oregon. Six million people strong, it houses 75 percent of British Columbia's, Oregon's, and Washington's populations. Within Cascadia, the central Puget Sound dominates in population size, economic activity, and ease of communication with both southern and northern partners. However, the central Puget Sound lacks the national prominence given to Vancouver, British Columbia, as Canada's single major port on the Pacific. Moreover, it lacks the concerted and sustained state-level support of the Portland metropolitan area.

Central Puget Sound is characterized by a continued strong dependence on national defense policy and on aerospace manufacturing production. The pre-World War II historical dependence on resource exploitation has waned, replaced by serendipitous growth in the computer technology and communication sectors. Washington state's agricultural and food processing activities also greatly impact the demands made on the region's ports. The region's population is relatively young, educated, and primarily Caucasian. Steady growth since a major recession in the early 1970s has provided a sound economy which is projected to continue into the twenty-first century.

■ CHANGING ECONOMIC PATTERNS

Since 1967 the number of jobs in central Puget Sound has expanded faster than in the nation as a whole in spite of significant roadblocks. During this time, the dominant lumber, paper, and pulp industries have had to restructure to confront a changing market. Aerospace manufacturing, the other dominant industry in the 1960s, suffered a major setback in the early 1970s. Boeing cut one-half of its work force; as a result, 60,000 jobs were lost, putting the region's economy on hold for most of the decade. Although manufacturing today remains a strong component of the local economy, it fell from holding almost 40 percent of the jobs in 1960 to only 19 percent in 1990; further, although both manufacturing and non-manufacturing gained in employee numbers from 1980 to 2000, the non-manufacturing sector now accommodates 10 times as many employees as manufacturing (at 600,000 versus 60,000 jobs, respectively). Traditional industries such as lumber, paper, and pulp have stabilized, though further loss in this sector's jobs is expected. The overdependence on

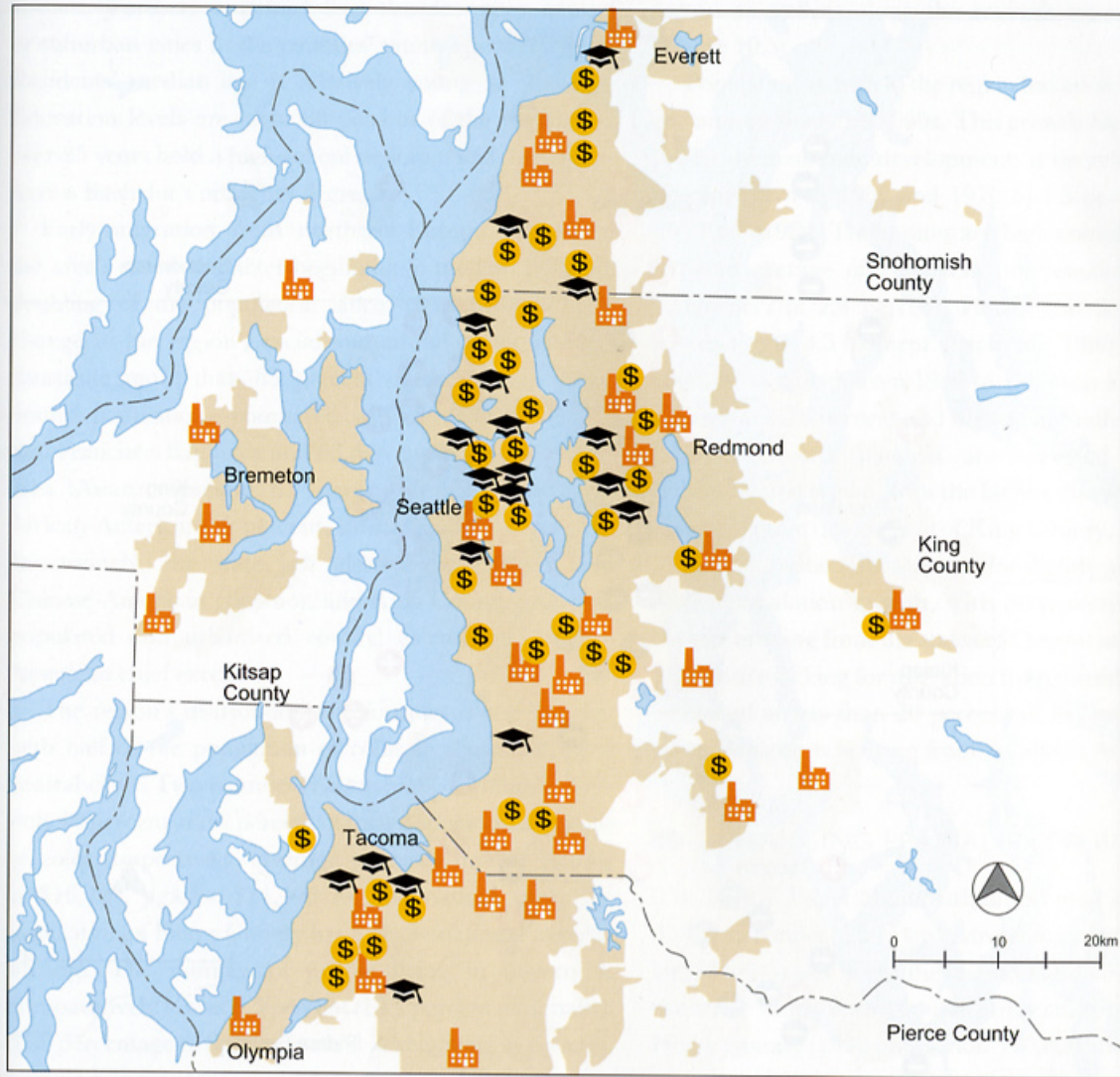


Figure 10.4 Economic patterns in the Seattle and central Puget Sound region

aerospace manufacturing which led to the 1970s recession has been remedied with further diversification in trade, transportation, communications, and utilities (Figure 10.4). Also, historically difficult labor relations have subsided, with union membership dropping to one-fifth of the manufacturing jobs.

Today, almost half of the employment in manufacturing (slightly more than 9 percent of all area jobs) is in aerospace industries, with Boeing accounting for more than 8 percent of the region's jobs. Boeing's strong international markets, and its merger with McDonnell-Douglas, offer an optimistic outlook for the region's future. The industry has a multiplier effect of 3.14 on jobs in the region. Other manufacturing activity includes ship and truck building (the former related to the US Navy), paper-related products, apparel, and bio-medical instrumentation.

Services accounted for 30 percent of the jobs in 1990, an increase from 19 percent in 1960. Growth has been experienced in producer services (finance, insurance, real estate, business and professional services) for which 36 percent of business is now conducted interregionally. Non-producer services are also strong, including health, consumer and social services, and tourism; the last is the fourth largest industry in the state, employing some 100,000 people.

Government accounts for almost 16 percent of the region's jobs. The two least populated counties in the region depend heavily on military activities—Washington being the fifth most military-dependent state in the nation. The University of Washington has 1.6 percent of the region's jobs, most concentrated in the city of Seattle. City and county governments also are a significant source of government jobs. (State government, located in Olympia, is outside the central Puget Sound Region.)

The remaining 30 percent of employment falls into the categories of transportation, communications, and utilities (6 percent of jobs), retail and wholesale trade (17 percent), resource-based industries (lumber, fishing, and food with 2 percent) and construction (5 percent).

Steady economic growth over the past 20 years has been particularly beneficial in a state which relies on sales, business, and property taxes for revenues. Businesses in Washington state pay a larger share of total taxes than in other states. Generally, the state is eleventh in the United States for *per capita* taxes, second for *per capita* sales tax, sixth for gasoline tax, and twenty-fifth on property taxes. This is against a state ranked ninth for *per capita* personal income. Top revenue-producing firms with more than US\$ 2 billion in the mid 1990s are Boeing, Price Costco (discount warehouse), Weyerhaeuser (lumber), Microsoft, Paccar (heavy equipment), Nordstrom (apparel retail), Safeco (insurance and finance), and McCaw Cellular, now part of AT&T. Other wealth-producing but comparatively lower-employment industries are Microsoft (15,000 employees), Paccar (11,800), Safeco (7,400), and McCaw (5,800).

Overall, one in five jobs in the state now depends on international trade. The two top-trading international partners of both Washington and the central Puget Sound are Japan and Great Britain. Generally, one-third of the region's exports go to Europe, and two-thirds to Asia.

■ CHANGING SOCIAL PATTERNS

Population is unevenly distributed in the central Puget Sound: King County houses 55 percent of the people, followed by Pierce at 18 percent, Snohomish at 12 percent, and Kitsap at only 5 percent. King County also holds 70 percent of the jobs, compared with 14 percent in Pierce

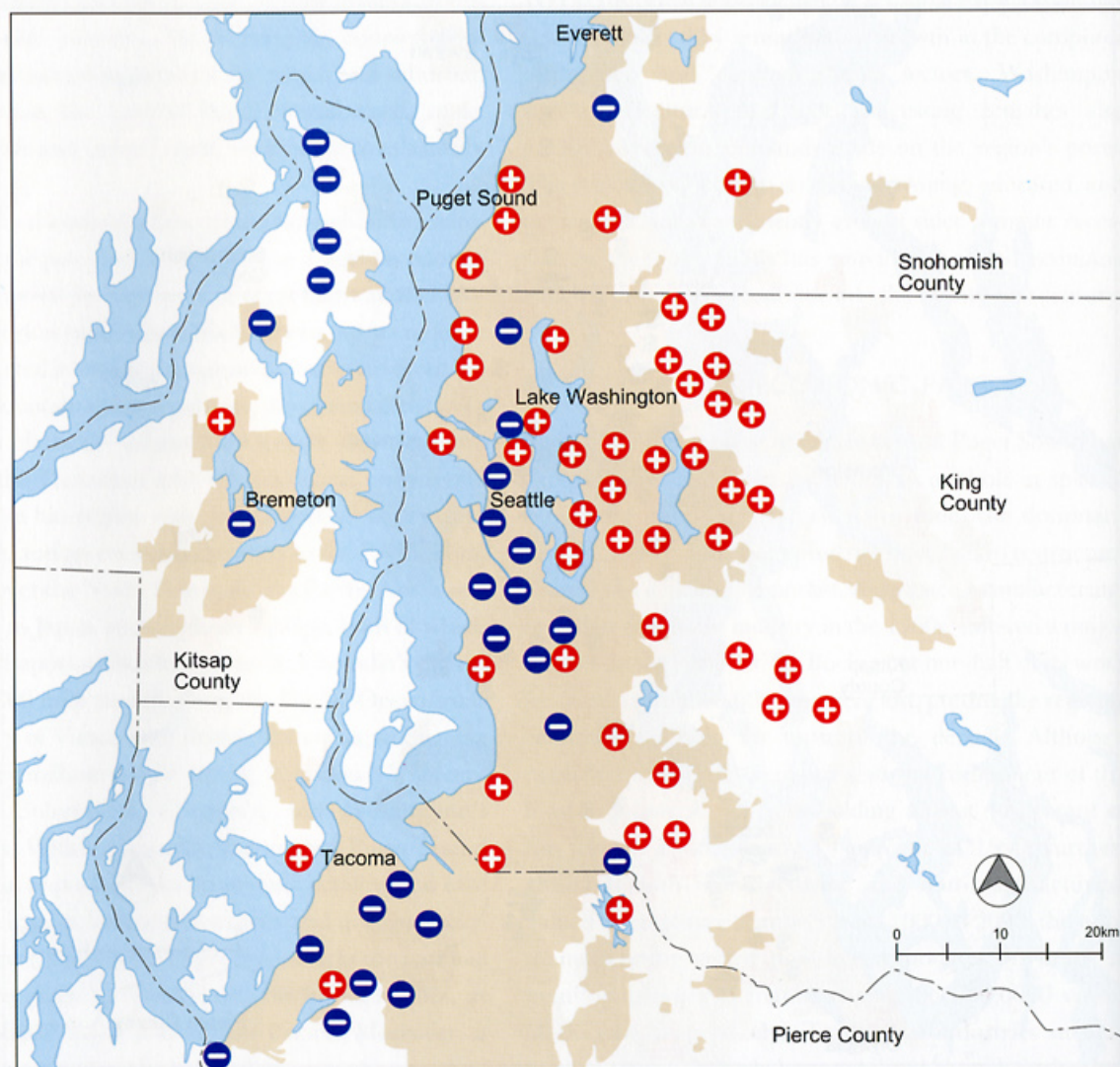


Figure 10.5 Residences of the wealthiest 20 percent and the poorest 20 percent

County, 12 percent in Snohomish, and 5 percent in Kitsap counties. Approximately 70 percent of the population live outside of the central cities of Seattle, Tacoma, and Everett. Further, one-third live outside either central or suburban cities in the counties' unincorporated areas. Residents' median age is relatively young at 33 years. Education levels are high: 88 percent of the population over 25 years hold a high-school diploma, and 33 percent have a Bachelor's or higher degree.

Early migration from northern Europe established the area's social character beginning in the late 1800s. A doubling of the population since 1960 brought little change to the region's racial and ethnic profile. Whites constitute more than 85 percent of the central Puget Sound population—compared with 55 percent in the San Francisco Bay Area and 63 percent in the San Diego area. Asians represent 6.7 percent of the population, African-Americans 5 percent, and Hispanics 3 percent. Interestingly, the state just elected the nation's first Chinese-American governor, and King County (the most populated and urbanized county) elected an African-American chief executive.

The region's distribution of minorities is also uneven, with half of the population of color living in the three central cities. Two counties, Kitsap and Snohomish, have only 10 percent and 7 percent of their population as people of color, respectively. Average *per capita* money income is \$16,700, against \$14,400 for the nation. Only the population of Pierce County has a below-national-average income. The number of people living in poverty is comparatively low at 8.5 percent (13.1 percent nationally). The percentage of families with children living in poverty, however, is substantially higher than the US average in Kitsap and Pierce counties. Pockets of poverty exist as well

in Seattle's, Tacoma's, and Everett's Asian and African communities. The more affluent households are now found in the newly developed suburbs east of Lake Washington as well as along the region's many waterfronts (Figure 10.5).

Population growth in the region has averaged 2 percent per annum since the 1960s. This growth has been closely related to economic development: it decreased from 2.5 percent between 1960 and 1970 to 1.5 percent between 1970 and 1980. These rates are high compared with the national average of 1 percent but remains lower than California's at 2.4 percent, Florida's at 3.1 percent, or Arizona's at 3.3 percent (each for 1980–90). Annual population growth from 1980 to 1990 was lowest in King County at 1.73 percent and highest in Snohomish at 3.26 percent. Growth patterns are expected to continue expanding the region, with the largest share of population increases occurring outside of King County.

Net migration now accounts for slightly more than half of the population growth, with 30 percent of the newcomers arriving from the states of Oregon and California. Figures are lacking for migration from outside the US, but estimated at less than 20 percent of net migration, with most immigrants arriving from Southeast Asia or China.

■ CHANGING SPATIAL PATTERNS

The central Puget Sound urbanized area covers almost 950 square miles (2,500 km²), stretching over 80 miles (130 km) north–south along the Sound's shore. Anchored by the three older, formally industrial cities of Tacoma in Pierce County (1990 population 170,000), Seattle in King County (520,000), and Everett in Snohomish County (80,000), the urbanized area more than tripled in size over

the four decades 1960–2000. The planning region delineated by the Urban Growth Boundary now includes approximately 22 percent of King (458 square miles), 12 percent of Pierce (186 square miles), 9 percent of Snohomish (180 square miles), and 30 percent of Kitsap (117 square miles).

Only during and after World War II did the construction of roads and bridges across Lake Washington facilitate eastward expansion and accommodate the wave of suburbanization which has swept this, as well as all US cities, since. Westward expansion across the Sound to Kitsap County continues to be discussed, though dreams of new bridges are likely to remain such for the foreseeable future.

With suburban development engulfing second-growth timber land and agricultural fields, regional population densities loom low, now around 3,000 people per square mile. As in other US cities, retail was first to follow residential suburbanization. Two large suburban shopping centers were built in the 1950s and 1960s north and south of downtown Seattle. Today, the region contains at least 16 regional malls and countless local shopping centers. Office development followed the retail trend by a decade, with some 30 clusters, most of which range between 1 million ft² and 5 million ft² of leasable space. One suburban city, Bellevue, has become the region's recognized "edge city," with 100,000 residents and 90,000 jobs, 24,000 of which are located in the downtown area. While additional edge cities are expected to emerge in the future, they are likely to exclude office skyscrapers and focus instead on becoming mixed live–work communities.

Fierce competition from suburban employment growth has been fought successfully by downtown Seattle, which, contrary to many other US central cities, remains

extremely healthy. With 165,000 jobs, the central business district holds 35 percent of Seattle's and 10 percent of the entire region's jobs. The loss of housing stock experienced in the 1960s and 1970s is being remedied: the 20,000 people now living in or near Seattle's downtown are expected to double by the first decade of the twenty-first century. With only a few glitches, downtown retail has continued to thrive, to include a preserved farmers' market, a renovated nineteenth century historic area, major department stores and formerly suburban chain stores moving in. In contrast, Tacoma's downtown has been struggling, with little if any retail, and only 30,000 jobs; much the same situation faces Everett. However, recent and continuing development of a branch campus of the University of Washington in Tacoma may herald a renaissance of this historically significant downtown.

Industrial land supply has increased along with population growth. While many of the flat lands close to the Port of Seattle are now brownfields (contaminated areas) under environmental litigation, industrial development has taken over most of the flat agricultural lands extending south of the port. Industry also followed development along new high-capacity roads to the north and the east sides of the region. Boeing's main plants in Renton (south) and Everett (north), as well as scattered office locations, have led the way to opening up a substantial supply of industrial and commercial land throughout the region. The rapid growth of suburban cities starved of revenues also has facilitated the process of converting land for industrial and commercial uses. Adequate servicing of new industrial land, however, remains in question.

■ INFRASTRUCTURE INVESTMENT

Regional transportation is the number one issue in the central Puget Sound. The current regional transportation infrastructure is largely the result of decisions and actions taken prior to the 1960s. Forty years later, regional systems operate at or above capacity—hardly a surprising situation, given the doubling of the population, compounded by a more than twofold increase in *per capita* miles traveled and the number of trips taken using automobiles.

The roots of the problem provide the best basis to consider options for the future. First, this region, as many others in the US, made the inherently risky decision to invest almost exclusively in private automobiles as a means of transport. By 1960, as streetcars and passenger rail had been replaced by personal automobile travel, public transit ridership had dropped by two-thirds, and to this date only 3 percent of transportation expenditures are directed at public transit—corresponding almost exactly to the share of persons using transit as an alternative mode of transport. Over the years, voters consistently rejected options presented by the region's leadership to develop a state-of-the-art transit system, even at times when it would have been heavily subsidized by the federal government.

Second, the region's habits in funding transportation can no longer work. Most large investments made since the 1960s relied on significant support from federal revenue sharing and grants for automobile travel. Since then, however, budgets for expenditures and capital improvement have dropped by as much as one-third owing to shifts in national priority funding. Further, new environmental regulations and community activism have severely limited infrastructure development. This bleak situation is rendered even worse by considering the region's suburban

land use patterns, which, perpetuated since their adoption in the 1960s, are characterized by very low densities and large areas in single use.

Less prominent than transportation in the public arena, yet no less problematic, is the region's supply of both water and electricity. Hydropower and water supply and treatment infrastructures are operating at capacity with, again, little relief in sight because of limited budgets, new environmental regulations, and public resistance. Agencies are responding with improved management of current resources, campaigns for conservation, and pricing increases.

I Roads

The physical and financial hardship of bridging over the Sound or over the deep alpine waters of Lake Washington historically posed regional transportation problems, limiting east-west regional linkages. In response, and to cater to the region's dependence on resource exploitation, especially the logging industry, waterways dominated transportation policies until the 1920s. Major engineering works were completed in the late 1910s connecting Lake Washington with Seattle's harbor in Elliott Bay via Lake Union, which required the lowering of waters by 17 ft on Lake Washington. Establishing the history of dependence on federal generosity, the Montlake Cut, Ship Canal, and Hiram-Chittenden Locks all benefited from support by the US Corps of Engineers. To date, these passages continue to serve the construction and fishing industries as well as the popular pleasure boating activities. The most used remnant of the focus on waterborne transport is the elaborate Washington state ferry network which connects Seattle with the islands in the Puget Sound, and the Kitsap

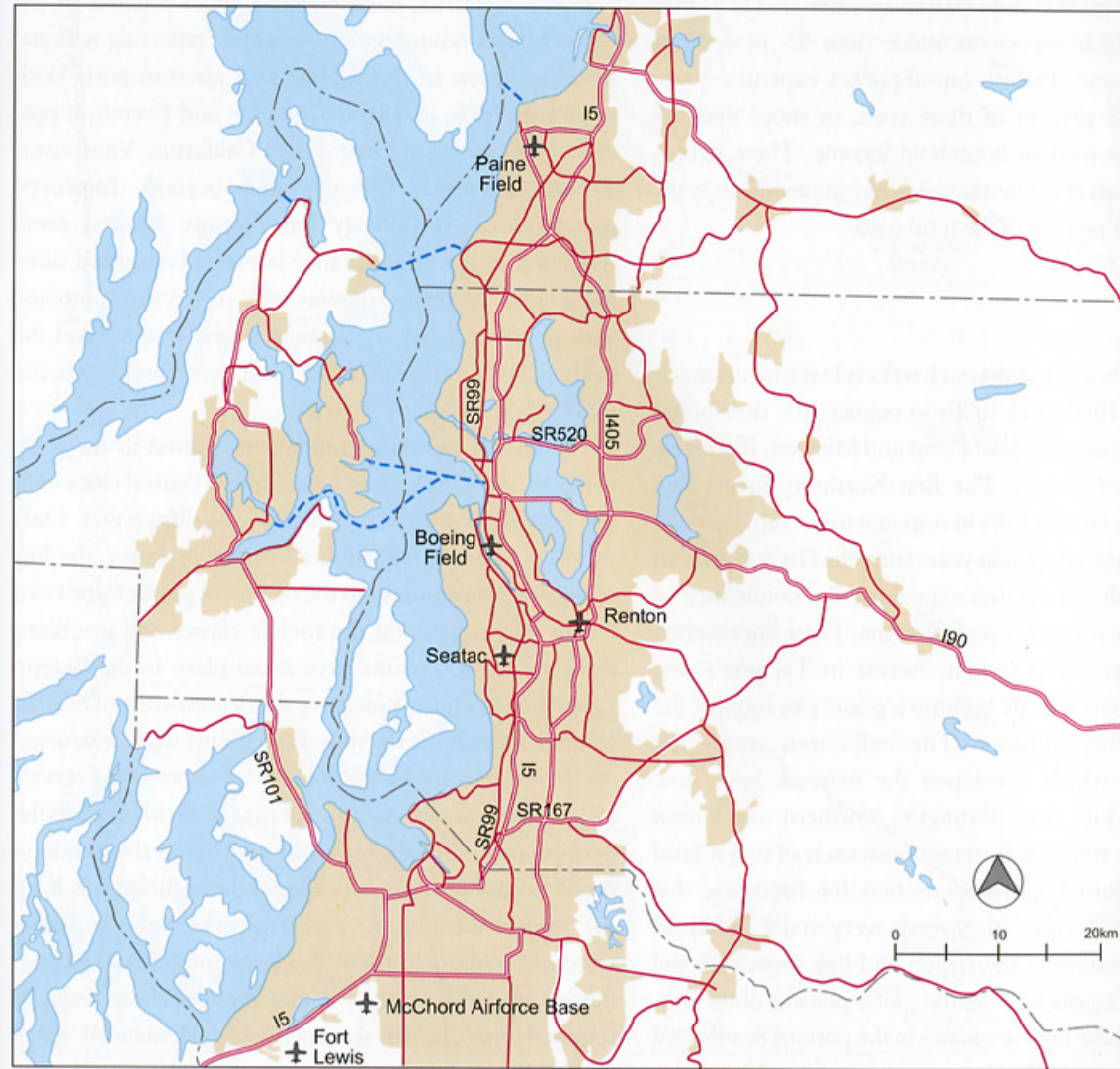


Figure 10.6 Main roads and airports in the Seattle and central Puget Sound region, 1997

County peninsula to the west and the northwest. As most of these are car ferries, this network now acts as an extension of the road system. The recent growth of the region and resulting increase in travel time make the ferries a viable daily transportation system for an increasing number of people who seek a semirural setting within reach of the city. Proposals to extend the waterborne transit system with water taxis or buses are made regularly, and may indeed become a viable way to diversify modes of transport in the region. Seaplanes are not only the privy of the rich but also the basis of a small commuter industry to the islands.

Regional road building began in earnest in the 1920s with the construction of a north-south parkway along Seattle's portion of the original Pacific Coast Highway. Part of the Federal Work Project Administration programs, the road retains a historical character with bridges and overpasses built in the parks design tradition. However, the original viaduct built along downtown Seattle's old seaport area constitutes today a serious barrier to waterfront redevelopment in the downtown area.

High-capacity "freeways" (their being "free" remains a serious public policy issue to date) replaced existing highways as part of the extensive post-war national program to improve the interstate road network. Several such freeways were completed in the late 1960s (Figure 10.6). Interstate 5 (I 5), serving the entire west coast from Mexico to Canada, more than doubled the north-south capacity. It runs on the eastern edge of Tacoma's downtown and carves through Seattle's center with a twelve lane structure with four reversible lanes to accommodate directional traffic. Interstate 405 (I 405) serves as a half ring road to the east of Lake Washington, linked to I 5 at both the southern and the northern edges of the lake.

The major east–west connection, Interstate 90 (I 90), was first built in the 1940s as a state-of-the art floating bridge crossing two deep channels of Lake Washington. It became a high-capacity freeway only in the 1990s. Flanked by an elaborate system of retaining walls, bridges, and tunnels, all with lavishly landscaped parks, I 90 is now touted as the nation’s most expensive highway stretch ever built, likely using some of the last federal subsidies for such roads. A second floating bridge and limited access road, State Road 520 (SR 520), was built in the 1960s, and funded locally through tolls charged over a period of some 20 years. Contentious debate continues to this date on whether or not to increase SR 520’s capacity or to build a third bridge over the lake.

As in other US metropolitan areas, public resistance to building additional freeways developed quickly after the 1960s. In downtown Seattle, mindful citizens immediately took steps to mitigate the impact of the gap created by I 5 between the downtown and its east side neighbors. Several bridges were built, one of them combined with a park, to reconnect the two sides with a continuous street network. Plans for secondary freeways within Seattle were shelved. Today, a few years after the completion of the I 90 multi-lane mammoth, some of the same citizens are working on the “Sound to Mountain” project to insure a green corridor along some of the freeway’s path.

Since the late 1970s Washington state road planning and building brought in secondary high-capacity roads which insured and continue to insure regional sprawl. The Valley Freeway (SR 167) doubled the north–south capacity along the southern industrial corridor and supported east side development. Several state roads have also been built in south King, Pierce, and Snohomish to support east–west development.

To date, the region has a total of 16,700 miles (26,720 km) of roadways, 3,000 of which are federally owned, 1,200 owned by the state, and 12,500 by cities or counties. The annual costs of transportation are estimated at \$7,000 *per capita*, which represents more than 25 percent of personal income. Private out-of-pocket expenses cover more than 85 percent of these costs, or more than 35 percent of the median household income. These figures include the costs of congestion and environmental impacts, estimated at 5 percent of the total costs.

■ Rail

The region’s heavy rail network reflects investments made between the 1880s and 1920s to connect the developing west with the country’s East Coast and Midwest. It remains a diesel fueled system. The first Northern Pacific line arrived in Tacoma in 1885 in response to the rapid growth of that industrial city. Eight years later, the Great Northern entered Seattle—a catalyst expediting the dominance of that city in the region for years to come. These lines carried both passengers and freight. Access to Tacoma’s and Seattle’s harbors quickly became a priority to support the region’s lumber industry. The half-dozen competing private lines which developed the network have now consolidated into two, Burlington Northern and Union Pacific. They continue to retain possession of major land holdings acquired in compensation for financing this infrastructure. To date, they serve every major industrial park concentration in the region and link them with the seaports of Tacoma and Seattle. (Fifty percent of the out-of-state rail traffic now originates in the ports of Seattle and Tacoma.) (Figure 10.7). However, some of the older routes have been abandoned as industry consolidates in suburban

locations and adapted to new uses such as bicycle and walking trails.

Interstate passenger service provided by the national company, Amtrak, handles but a small fraction of the central Puget Sound passenger travel, reflecting national priorities given to automobile and air transport. With service available in Tacoma, Seattle, and Everett, it provides connections to Oregon and California, Vancouver, British Columbia, Chicago, and beyond. Improved passenger car technology has recently allowed some reduction in the time distance between Cascadia’s three main cities. However, the low level of service, combined with poor inner-city connections to the stations and the stations’ own antiquated state, still severely restricts the market potential of the system.

A regional passenger rail system existed in the form of streetcars in and around the region’s central cities until the Second World War, when it was dismantled. Only partially replaced by “rubber” transit or buses, the loss of regional rail announced the demise of public transit as a means of transport for the middle classes and up. Since then few improvements have taken place in the system. Electric trolley buses now serve the densest areas of Seattle. In the 1980s a federally subsidized tunnel was constructed under downtown Seattle to facilitate express bus service to suburban areas. As an experiment in improving the performance of bus transit and addressing the pollution problems of the region’s primarily diesel-fueled bus fleet, the project introduced more expensive vehicles which were powered by electricity inside the tunnel and by diesel outside of it. The upshot is that these dual-fuel vehicles required fuel transfer stations—which demanded space and added travel time at both ends of the tunnel. The project’s ambiguous place in the region’s transit system is

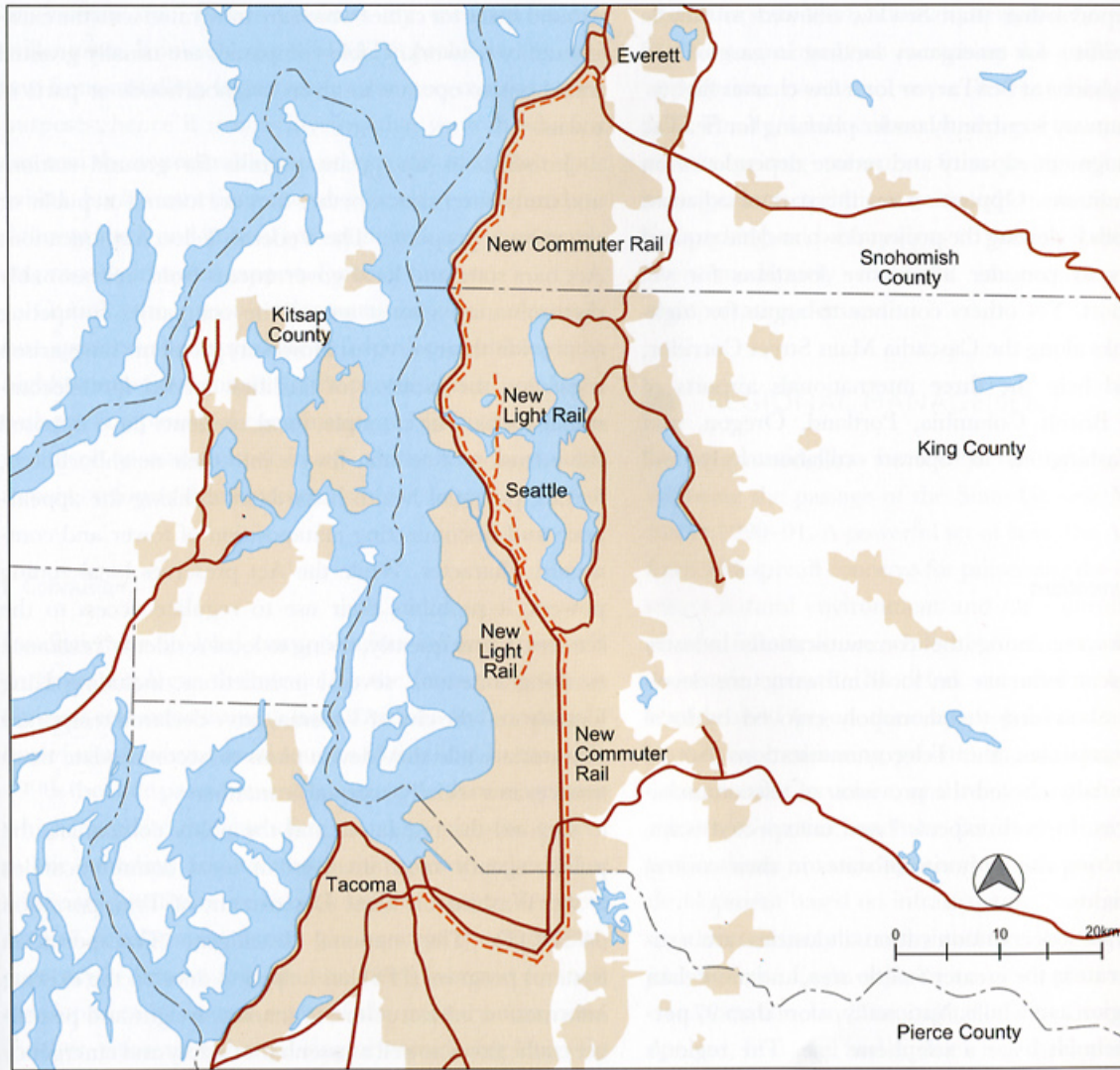


Figure 10.7 Railways in the Seattle and central Puget Sound region, 1997

best illustrated by the fact that, after much controversy, rails were installed in the tunnel in anticipation of a future regional rail system.

A short electric monorail route linking Seattle's downtown with a neighborhood two miles north was built as part of a 1962 World's Fair exhibit. Though of limited use, the train holds a special place in the heart of Seattle-lites. A recent initiative to extend this system throughout the city was passed easily. This initiative leaves Seattle's public officials in a quandary: not only does it lack any consideration for funding, but it lies outside the region's first comprehensive transit plan which was recently approved by voters.

A four-county Regional Transit Authority (RTA, recently renamed Sound Transit) was created in the early 1990s to prepare a regional transit plan. A \$3 billion scheme was finally approved in 1996 which includes several elements. It reinstates commuter rail from Lakewood (approximately 10 miles south of Tacoma) to downtown Everett; this commuter rail service is expected to use existing rail lines almost exclusively. Rush-hour service between major employment centers will rely heavily on bus connections and park-and-ride facilities. The plan also calls for a new light rail system to run from SeaTac Airport, south of Seattle, to the university district, a major employment center four miles north of downtown Seattle. With seven-day service at less than 10 minute intervals, the light rail will replace some of the best used bus service of the region. However, its connection with the airport through areas with good potential for development south of downtown Seattle promises to affect the city's future profile.

Rail and bus transit investments will be complemented by the completion of the regional high-occupancy-vehicle

(HOV) lane network. The network will stretch along I 5 from Tacoma in the south to Everett in the north, loop along I 405, and run some 15 miles eastward along I 90. The most promising aspects of the RTA plan lie in a single-fare, coordinated regional bus and rail transit, as well as in the integration of express bus services and HOV lanes.

■ Ports

Two large seaports serve the region, one in Tacoma and one in Seattle. Managed by two competing quasi-public authorities—the legacy of the historically intricate relationship between the ports and rail companies—they have none the less come together to share the region's main airport of SeaTac.

The seaports themselves were modernized in the 1960s to accommodate containerized cargo. A fully automated port-to-destination system was put in place in the mid 1980s, including a double-stacked container rail service. Containerized cargo business increased by 15 percent annually in the 1980s, and now handles nearly 85 percent of the region's \$32 billion annual import/export business. Indeed, the only competitors on the West Coast are the ports of Long Beach, California, and Vancouver, British Columbia.

SeaTac International Airport, the region's primary airport, currently handles 18 million passengers per year (triple the number in 1970, and these numbers are expected to triple again by 2020). Ten percent of this traffic is international; there are over 30 daily passenger and cargo flights leaving for foreign destinations. The region has four additional jet airports: Boeing Field (previously the city of Seattle's municipal airport, now used primarily by Boeing); Paine Field near Everett in the north and

Renton Field south of Seattle (both with modern navigational aids and owned and operated by Boeing); and the McCord Air Force base. Of the four, Paine Field is the only airport other than SeaTac allowed to handle passenger traffic—for emergency landing in case of bad weather conditions at SeaTac, or for a few charter flights.

A third runway is currently under planning for SeaTac Airport to augment capacity and reduce dependence on weather conditions. Opposition on the part of adjacent neighborhoods is slowing the project down and has pushed civic leaders to consider alternative locations for yet another airport. Yet others continue to argue for high-speed rail links along the Cascadia Main Street Corridor, which would help the three international airports of Vancouver, British Columbia, Portland, Oregon, and SeaTac, Washington, to operate collaboratively and efficiently.

■ Telecommunications

National laws regulating the communications industry exercise a great influence on local infrastructure development. By abolishing the monopoly enjoyed by local telephone companies, the Telecommunications Act of 1996 substantially altered the provision of telecommunication services. In both expected and unexpected ways, it is also affecting the authority of states in their control of highway rights.

Fifty private telecommunication industries are estimated to operate in the greater Seattle area, and more than 120 in the region as a whole. Nationally, more than 97 percent of households lease a telephone line. The region's urbanized area is also well served by cable television—with either airborne or underground cables, wireless cellular,

and satellite communication infrastructure. Fiber optic cables are also being installed by both telephone and cable television companies. Local jurisdictions lease air or ground space for cables which are integrated with the existing utility network. Cable companies are usually granted franchises to operate in given neighborhoods or parts of towns.

Jurisdictions also grant permits for ground stations and transmitter sites, whether they are located on public or on private property. The Federal Telecommunications Act bars state and local governments from unreasonably discriminating against any of the companies competing to provide these services. However, problems have arisen regarding the location of facilities needed for telecommunications. For example, local residents have opposed the intrusion of cellular towers into their neighborhoods, fearing potential health hazards or disliking the appearance and disconnecting juxtaposition of tower and community character. While the Act preserves local zoning powers, it prohibits their use to regulate access to the services. Consequently, owing to local residents' resistance to siting antennas, several jurisdictions, including King County and the city of Tacoma, have declared temporary moratoria while they devise plans to accommodate these services in a socially acceptable manner.

Beyond the regulators and the utility companies, the public agency most involved in local communications is the Washington State Department of Transportation (WSDOT). The national Intelligent Transportation Systems program (ITS) has helped to develop the existing information infrastructure to manage freight and passenger traffic flows as well as to enhance safety and emergency response systems. An innovative Surveillance, Control, and Driver Information (SC&DI) network was completed

in the mid 1990s, with fiber optic and analog video cables installed along most of King County's freeways. The SC&DI system will extend along the region's freeways into Snohomish and Pierce Counties by the end of the millennium. Ironically, the WSDOT is prohibited by state law from installing infrastructure for non-transportation purposes; hence it is now investigating ways in which it can rent the considerable unused capacity of its fiber optic cables. Such restrictions are now being reconsidered, as different levels and units of government do not want to rely on privately installed capacity for their own use.

Overall, the region's telecommunications infrastructure appears to be reasonably well developed, although the highly competitive climate in the private sector, combined with the complexity of coordinating public entities, makes it difficult to assess either its effectiveness or its possible impact on future development.

I Conclusion

Insufficiencies in land transportation infrastructure will continue to plague the region for the foreseeable future. Current economic strength has provided a few windows of hope for uncovering local sources of funding. In the early 1990s the state passed several laws on growth management which mandate that jurisdictions adopt plans to govern public spending and to insure that growth takes place where infrastructure exists or is built at least at the same time as development occurs (the concept is called "concurrency"). Impact fees are also being assessed for new development to assume some of the infrastructure costs. Further, cities are either passing or considering levies for needed road repairs. Also, the \$3 billion RTA plan is proof that a positive economic outlook, combined with readily

tangible congestion, are moving the electorate to raise local sales tax and motor vehicle excise tax to improve transportation.

At the state level, however, heated debates have failed to bring agreement on increasing the gasoline tax as an appropriate means to cover current budgetary shortfalls. Finally, while cultural and legal conditions prevent certain pricing measures from being effective, traffic management techniques, including increased charges for parking and campaigns to modify behaviors, have been moderately successful in changing aspects of transportation demand.

■ REGIONAL MANAGEMENT

Urban planning has been high on the region's agenda following the passage of the State Growth Management Act in 1990-91. A powerful set of laws, the Act emanated from widespread concerns for preserving the quality of the state's natural environment and for controlling the cost of new infrastructure while also accommodating robust economic growth. Modeled on similar legislation in Florida and Oregon, these laws call for restraining further sprawl by monitoring growth, maintaining the current urban service structure, and reinforcing existing activity centers. Counties, and the fastest-growing jurisdictions within them, are to adopt comprehensive plans for future development based on infrastructure "concurrency," and to address issues shared by and overlapping the different jurisdictions. Each city's or county's plan must address transportation, land use, capital facilities, economic development, housing, and utilities together, and in the way they affect each other. The plans must also be consistent with adjacent areas of neighboring jurisdictions. Finally,

the operating expenditures of a given jurisdiction must be consistent with its plan—part of a Strategic Capital Investment Plan.

As a result of the Act, the four counties and primary cities in the central Puget Sound adopted "Vision 2020," a growth and transportation "strategy," to guide the management of the region's future with the goals of conserving forests and farmland, keeping existing cities and centers vital, and facilitating more efficient provision of transportation and other services. An urban growth area (UGA) was agreed upon to establish limits on sprawl and to "bound" the land supply for development over the next 20 years. Urban Centers were also designated to serve as loci of concentrated future development. The 21 centers so identified represent the primary nodes of activity already existing in the region, and include the centers of many suburban jurisdictions. There are 12 Urban Centers in King County (five in Seattle alone), three in Snohomish (one in Everett), five in Pierce (two in Tacoma), and one in Bremerton, the major urban area in Kitsap County. Occupying less than 1 percent of the region's land area, the centers currently house almost 5 percent of the population and nearly 30 percent of all jobs. They are expected to incorporate 8 percent of the population growth and 32 percent of the employment growth projected between now and 2020.

The region's future clearly depends on successfully enforcing the mandates of the State Growth Management Act. In principle, the focus on existing multiple cores, together with the current freeway network, provides a strong and workable structure for further development. The RTA/Sound Transit plan further reinforces the region's growth strategy. The region's counties and most of its cities now have completed their jurisdictional plans, all

of which are reviewed and approved for compliance with the Act. This state of affairs is an important accomplishment in its own right and unique in the nation (with the exception of Portland, Oregon). Issues are emerging, however, regarding how these plans can or will actually affect eventual development.

First, the plans address long-term goals and projections for the region which are difficult to control in the short and medium terms. Generally, the long-term emphasis of the plans provides so many options in locating infrastructure and private development in the short term that regional imbalances are likely to occur. At this point, for example, only a few Urban Centers are experiencing high pressures for development (as is the city of Redmond, Microsoft's headquarters). Many are stagnating. Likewise, housing development pressures continue at the region's fringe, while only a few Urban Centers are successful in attracting residential facilities. Hence increasing differences in the relative importance of the designated Urban Centers raise new questions about infrastructure provision, with congestion in the successful centers and overcapacity in others. Further, institutional constraints and short-term political struggles tend to steer infrastructure development in areas which are not necessarily in tune with the logic of the plans. For example, while the RTA plan calls for the completion of the high-occupancy-vehicle lanes in King County as the core of the region, short-term WSDOT plans for the expansion of limited access highways now appear to equalize the distribution of resources between counties: current Capital Improvement budgets schedule Pierce County to receive as much as King County, even though it represents 20 percent of the land area within the UGA—versus 49 percent for King. Snohomish County to the north will receive about half of King County's

allocation. Hence state programs now work to "even out" the distribution of transportation infrastructure in the region at a rate which is faster than the one anticipated by the long-range plans, and, as a result, to support development away from the "core" of urbanized central Puget Sound earlier than planned.

Secondly, the proliferation of jurisdictions in the region greatly complicates regional management as intended by the plans. For example, water, sewers, and transportation continue to be administered at the county, multicounty, or state level, and, in theory, to remain somewhat immune to the numbers and types of jurisdictions within these units. In reality, however, managing these services entails collaborative arrangements which are very sensitive to the number of jurisdictions involved.

The number of new suburban cities incorporating has continued to rise since Seattle stopped annexing in the 1950s. Today counties and cities form almost 80 jurisdictions in the central Puget Sound. Over the past six years alone, eight suburban cities undertook incorporation, and 12 others performed large land annexations, for a total of 172 square miles and 380,000 people opting for autonomy from their county. Suburban incorporations and annexations often work to weaken the regional "good." While at the outset they aim to gain control over such services as police and fire, they also often discourage "unwanted growth" in the form of non-single family, medium density residential development, and to unduly increase their supply of revenue-producing commercial and industrial land. Indeed, the low densities of recently incorporated or annexed areas—2,000 people per square mile against 3,000 for the region—suggest that the Growth Management Act's goal of restraining sprawl will be harder to pursue in the future.

Finally, increases in the number of financially independent jurisdictions work to increase competitive forces in the region and eventually support short-term, market-driven development patterns. The growing supply of commercial land reinforces the propensity for small employment centers to emerge outside of the existing Urban Centers. Many small activity centers already exist, and are continuing to form beyond the designated centers. These small centers further diffuse travel patterns and therefore weaken the region's transportation framework.

■ CONCLUSION

Will the shock city of the twenty-first century retain its luster in the long run? Answers to this question are necessarily tainted by the excessive optimism generated by the economic boom at the turn of the millennium. In taking stock, the first step is to recognize that the region exhibits special, positive features which will remain relatively independent of the fluctuations of the economy.

- Overall population projections are comparatively low, even in the long run, and—unlike California's, for example—include a limited number of foreign immigrants.
- The region's employment base is serendipitously anchored in what are considered promising and non-polluting industries.
- Its vast, first-class natural environment is likely able to sustain some of the worst assaults of even unchecked urbanization.

These are the region's inherited "lucky charms." Beyond

them, however, two features emanating from local wisdom also help to paint a bright future.

First, the region's acceptance of and energetic response to the Growth Management Act clearly is an excellent and commendable first step in addressing growth in a coordinated fashion. Resistance to the Urban Growth Boundary remains relatively tamed and most jurisdictions have acquiesced and managed to develop comprehensive plans. A second and unique aspect lies in the strength of Seattle as the region's vibrant central city and in the leadership that the city has been able to provide in the arena of environmental and social responsibility. If these two attributes, a vigorous flagship city and the will to coordinate regional development, continue, then the central Puget Sound has a chance to retain its aura of being a good place.

Less positive prospects can be detected in the provision of infrastructure. The dependence on automobile travel, the increasingly limited budgets available for transportation infrastructure, and the public's reluctance to invest in the long term could significantly affect mobility and accessibility, which in turn will affect productivity and trade. State politics will play an important role in securing a brighter future in this regard, yet it is not clear that the tensions between rural, suburban, and urban interests can be sorted out.

Affordable, quality housing was an important part of the region's draw until the 1980s. The current geographic spread, combined with transportation congestion, demands innovative approaches to both urban and suburban housing. Yet only a few jurisdictions have been able or willing to promote such approaches. Housing affordability is becoming the second issue, after transportation, affecting employers' competitiveness. Regional approaches to

affordable housing are lacking, and public awareness among the general population is so low that this element could well become the region's greatest weakness as the twenty-first century progresses.

Similarly, a lack of funding for public education, combined with a lack of coordination between regional planning and education policy, may undermine the region's future. This aspect of infrastructure cannot be addressed in detail within the confines of this text—suffice it to note that the lack of attention will continue to plague residential location choice and quality of life.

In summary, we can safely predict that growth and densification will take place in the central Puget Sound, yet it is not possible to anticipate whether this growth will yield the planned integrated mixed-use cores and whether the Urban Growth Boundary will remain. Most likely, further "Los Angelization" of the urbanized region will take place, along with further consolidation of urbanized and urbanizing centers, principally in King County, and near Seattle. This mixed scenario can be influenced as well by whether or not the concept of Cascadia evolves into an economic and physical reality. Cascadia likely offers the greatest and yet untapped potential for the central Puget Sound to enter the twenty-first century. Geography, culture, trade, and travel patterns suggest that perhaps the most promising investment in infrastructure will be the provision of high-speed rail along the Cascadia Main Street corridor. The 300 mile stretch, with Seattle almost exactly half way between Portland, Oregon, and Vancouver, British Columbia, could be traversed in time distances of less than two hours between each of the three metro areas. Reaching out to neighboring urbanized regions in the Cascadia basin will help to address some of the issues facing international trade, to promote

tourism, and to provide access to a broader range of services—including sea- and airport facilities and higher education—without having to duplicate them.

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