Public Services and Utilities

This chapter discusses potential impacts to public services and utilities under each of the growth distribution alternatives. Public services and utilities reviewed include: (1) solid waste collection and disposal, (2) sanitary sewer systems, (3) water supply, (4) fire protection and police services, (5) health and emergency medical services (including hospitals), and (6) schools.

Stormwater is discussed in Chapter 5.6 – Water Quality and Hydrology. Parks and recreation facilities are discussed in Chapter 5.8 – Parks and Recreation. Energy and electrical utilities are discussed in Chapter 5.10 – Energy.

5.7.1 Affected Environment

Under the Growth Management Act, cities and counties are required to develop and adopt comprehensive plans which include long range planning for future public service and utility needs. Among the required elements are a capital facilities plan element and a utilities element. The capital facility plan element is required to have an inventory of existing facilities showing locations and capacities, forecasts of future needs, proposed locations and capacities of new or expanded facilities, and a financing strategy (Revised Code of Washington 36.70A.070(3)). The utilities element is required to describe the existing and proposed locations of all utilities and their capacity (Revised Code of Washington 36.70A.070(4)).

5.7.1.1 SOLID WASTE

Revised Code of Washington Chapter 70.95.020, which relates to the protection of public health and the environment, requires that each county develop and implement a Comprehensive Solid Waste Management Plan. The purpose of the plan is to ensure that solid waste and disposal capacity is in place over a 20-year period. In order to achieve compliance, each county within the region has created a solid waste division.

There are four agencies that, together with the counties’ solid waste divisions, oversee all aspects of solid waste management. First, the Washington State Department of Ecology approves waste management plans, establishes solid waste rules, and provides financial and technical assistance. Second, the Washington Utilities and Transportation Commission regulates the rates and services of the private collection providers. Third, county departments of public health enforce solid waste rules, issue operating permits for local solid waste facilities and collection vehicles, monitor historic landfills, and screen waste for any special handling needs. Lastly, the county departments of construction and land development issue land use and building permits for solid waste facilities. The counties within the region have varying solid waste management systems in place, which are discussed in greater detail below.
King County

Garbage collection in King County — outside the City of Seattle and with the exception of Enumclaw and Skykomish which provide their own garbage collection — is provided by two private service companies: Rabanco and Waste Management, Inc. A third provider, Waste Connections, Inc., provides garbage collection services to Vashon Island only. The Seattle/King County Department of Public Health is the primary enforcement and planning agency for solid waste management. Their responsibilities include issuing permits for new local and regional solid waste facilities, and monitoring landfills within the county that are at capacity.

The City of Seattle is not included in King County’s service area and, because of this, its solid waste is managed independently from the rest of King County. Trash is picked up curbside by private providers and transported to county-owned transfer facilities. It is then transported to Waste Management Inc.’s landfill in Arlington, Oregon. For this reason, the Oregon State Department of Environmental Quality also monitors the manner in which Seattle’s waste is disposed.

Kitsap County

In Kitsap County, Waste Management Inc., under the Washington Utilities and Transportation Commission, provides solid waste collection within unincorporated areas. Cities within Kitsap County may choose to provide their own collection service, contract with private collection service providers, or have the Commission oversee the hauler. Approximately 40 percent of Kitsap County residents choose to haul their own waste to drop-box facilities. Solid waste is collected and brought to the Olympic View Transfer Facility, where it is then loaded and transferred to the Columbia Ridge Landfill in Arlington, Oregon. Waste Management Inc. operates the transfer facility under a 20-year contract with Kitsap County and, in 2004, received 850 tons of waste daily.

Military bases are not under the Commission’s purview and have the option of contracting out solid waste collection services or providing those services themselves. There are four military facilities in Kitsap County: Naval Station Bremerton, Puget Sound Naval Shipyard, Submarine Base Bangor, and Naval Undersea Warfare Center at Keyport. The Navy hauls its commercial and industrial solid waste to the Olympic View Transfer Facility for disposal. The operating support contractor at the base provides residential solid waste collection as an on-base benefit.

Pierce County

Three companies hold five solid waste permits within Pierce County: Murrey’s Disposal, Harold LeMay Enterprises, and University Place Refuse. The Washington Utilities and Transportation Commission issues all permits. In Pierce County, cities and towns have three options available to them for solid waste collection, which are similar to the options available in Kitsap County.

- **Municipal option:** Cities have the option of operating their own solid waste utilities. Currently, Tacoma and Ruston use this option.
- **Contract option:** Cities may contract with private haulers to provide both residential and commercial solid waste collection. Presently, 14 cities in Pierce County use this option.
- **Washington Utilities and Transportation Commission option:** If a city does not choose one of the two options above, the Commission assumes regulation responsibilities by default. Presently, five cities and all of the unincorporated areas in Pierce County use this option.

Snohomish County

Snohomish County has been exporting its garbage since 1990. Each weekday, about 1,200 tons of trash is transported to the Roosevelt landfill located in Klickitat County. Garbage is collected curbside or citizens may choose to haul their own trash to transfer stations or rural drop boxes. From there, garbage is brought to one of three transfer stations, located in Arlington, Everett, and Mountlake Terrace. Garbage is then compacted and trucked to the Rabanco Rail Loading Facility in Everett. The cubes are then shipped to the Roosevelt landfill for disposal.
5.7.1.2 SANITARY SEWER

Sanitary sewer service is an urban service that provides treatment of sewage to levels that comply with state and federal water quality standards. With very few exceptions, sewer service is allowed only in urban areas. Exceptions are generally provided only for schools or for specific health, safety, or environmental concerns. Service is provided by cities, counties, special purpose districts, and tribal nations. Each utility provider is required to prepare a comprehensive sewer plan, which documents current operations as well as predicted future demand. These plans are updated every six years and are required to forecast demand 20 years into the future; however, most plans analyze the needs of their system at ultimate capacity. All plans must be submitted to and approved by the Washington State Department of Ecology.

The purpose of a sanitary sewer system is to move wastewater from its source to a treatment facility. Gravity sewer systems are currently the preferred method of conveying wastewater. When topographic obstacles do not permit gravity sewer systems to function properly, a sewage pump station is needed. Treatment and discharge of wastewater is the final stage in the sewer system. Both secondary and tertiary treatment facilities are used with the region.

Portions of the designated urban growth area still rely on on-site septic systems. Soil properties, the age and type of the system, the size of the property and structure being served, and the cost of conversion from septic to sewer are factors influencing the decision to continue using a septic system. However, septic systems do not allow for urban levels of density or significant urban growth.

Sewer service areas are defined by the individual jurisdictions and provide the basis for the long-range facility plans (often 30-year plans). In the event of annexation, a city can coordinate with the existing local sewer provider. However, local sewer lines provided by a special district usually extend beyond the boundaries of potential annexation and therefore, historically, the provision of sewer service has not changed dramatically. Some special purpose districts are considered regional providers, with their service areas based on existing agreements with adjacent utilities and key service factors. Services can be extended into adjacent cities and other jurisdictions where services may not otherwise be available.

Sewer capacity, dimensions of sewer mains, and the schedule for capital improvements are based upon zoning data provided by the local planning jurisdiction, future growth forecasts, and historic sewer use patterns for existing service areas. Major issues taken into account when planning for sewer service include:

- Adjacent sewer service providers.
- Cost-effectiveness.
- Zoning.
- Existing soil conditions.
- Topographical limitations.
- Septic conversions.

Topography is often the most important factor in sewer design plans. If the urban growth area does not follow the natural drainage basin, it may be necessary for a facility to pass partially through a rural area, and more expensive conveyance systems will be needed. Facilities traversing rural areas are not allowed to provide direct service to rural property owners unless permits from local regulators have been granted.

Cost is also a major issue affecting the expansion of sewer services. A property owner within the urban growth area, but without sewer service, will likely be responsible for most or all costs associated with extending sewer service to his or her property. In addition, cities annexing new areas are also responsible for bringing an urban level of service to the area. As a result, increased costs may be shared by all system users to fund expansions. Conversion from septic to sewer service typically costs between $15,000 and $20,000 per connection.

The subsequent text describes the systems currently in place.
Sewer Districts and Major Facilities

**King County.** The King County service area for sewers is 420 square miles, including 250 acres on Vashon Island. The system serves about 1.4 million people, including most urban areas of King County and portions of Snohomish and Pierce counties. King County has three major treatment facilities, which are described below:

- **South Treatment Plant.** Located in Renton, the 94-acre South Treatment Plant includes facilities for biosolids handling, water reuse, and water treatment. The plant is a secondary treatment facility and, on average, treats 115 million gallons per day, but can treat up to 325 million gallons per day during peak storms.
- **West Point Treatment Plant.** Located near Discovery Park in Seattle, the 32-acre West Point Treatment Plant treats about 133 million gallons per day, but can treat up to 440 million gallons per day during peak storms. After multiple treatment stages, wastewater is discharged into Puget Sound through an outfall pipe and diffuser.
- **Vashon Treatment Plant.** The Vashon Treatment Plant serves the Vashon Sewer District and contracted with King County in 1999. The plant has recently undergone a number of operating changes and is now operating at capacity and without a backup system. The plant is currently slated for additional upgrades to its system.

**Kitsap County.** Kitsap County Public Works owns and operates four wastewater treatment plants, which serve central Kitsap, Manchester, Suquamish, and Kingston. The cities of Bainbridge Island, Bremerton, Poulso, and Port Orchard provide their own wastewater treatment. The four major wastewater treatment facilities are described below:

- **Kingston Wastewater Treatment Plant.** This 29-acre facility is located on the north end of the Kitsap Peninsula and treats an average of 292,000 gallons of wastewater per day. The treated wastewater is discharged into Puget Sound approximately 1 mile from the shoreline.
- **Suquamish Treatment Plant.** The Suquamish Treatment Plant is located near Port Madison Bay and treats an average of 0.40 million gallons per day. Residential and light commercial activities from the Suquamish area and the Clearwater Hotel and Casino are the primary sources of wastewater treated at this facility.
- **Central Kitsap Wastewater Treatment Plant.** This facility was completed in 1979 and provides wastewater treatment for the Silverdale area, Keyport area, Naval Submarine Base Bangor, and the Naval Undersea Warfare Engineering Station at Keyport. The facility treats an average of 6 million gallons per day and the treated wastewater is discharged into Port Orchard Bay in Puget Sound.
- **Manchester Wastewater Treatment Plant.** This facility is located near the south end of the Kitsap Peninsula and, on average, treats about 0.50 million gallons per day. The majority of wastewater arrives at this treatment facility from the town of Manchester, Manchester State Park, and includes wastewater from the Environmental Protection Agency (EPA) laboratory in Manchester.

**Pierce County.** The Pierce County Department of Utilities service area includes University Place, Lakewood, Parkland, Spanaway, Frederickson, South Hill, Puyallup, Brown’s Point, Midland, and the lower Hylebos area of northern Pierce County. Steilacoom, Federal Way, Tacoma, and Bonney Lake are served by a series of different interlocal service agreements.

- **Chambers Creek Waste Water Treatment Plant.** The Chambers Creek Waster Water Treatment Plant is the only major wastewater treatment facility in Pierce County. It is located on 44 acres in University Place and is designed to treat an average of 2.1 million gallons per day during normal conditions and 28.7 million gallons per day during peak storms. Residual solids from this treatment plant process are converted into biosolids, which are used as an agricultural fertilizer and for soil amendments.

**Snohomish County.** Wastewater treatment is primarily the responsibility of the cities and towns within Snohomish County. Sewer service is provided by the following districts and municipalities: Alderwood Water and Wastewater District, City of Arlington, City of Bothell, City of Brier, Cross Valley Water District, City of Edmonds, City of Everett, City of Granite Falls, Jordan Village Sewer District, King County, Lake Stevens Sewer District, City of Lynnwood, City of Marysville, City of Monroe, City of Mountlake Terrace, City of Mukilteo, Olympic View Water and Sewer District, Olympus Terrace Sewer District, Silver Lake Water District, City of Snohomish, City of Stanwood, City of Sultan, and the Tulalip Tribes. Major treatment facilities are described below:
- **Everett Wastewater Treatment Plant.** The Everett Wastewater Treatment Plant is located on Smith Island in north Everett and is currently undergoing a four-phase expansion, which is slated for completion by the year 2040. Currently, the plant treats an average of 5 million gallons per day but after the expansion is complete, it will treat an average of 21 million gallons per day. The facility serves about 130,000 customers.

- **City of Snohomish Wastewater Treatment Plant.** This facility treats an average of 1 million gallons per day under normal conditions and 10 million gallons per day during peak storms.

- **City of Sultan Wastewater Treatment Plant.** This facility treats an average of 0.72 million gallons per day and treated water is discharged into the Skykomish River.

**Regional Treatment Facilities.** Wastewater systems are becoming increasingly regionalized due to more stringent environmental controls, population growth, and the need to separate combined sewer and stormwater facilities.

- **Brightwater Treatment Plant.** The plant is a large project that will expand regional capacity in King, Pierce, and Snohomish counties. The plant will be constructed in south Snohomish County with a marine outfall to discharge treated wastewater off Point Wells into the Puget Sound. The facility will consist of two secondary treatment plants and will service north King County and south Snohomish County. The plant is expected to serve these areas until at least 2050.

  Construction is slated to begin in 2006 and the plant is expected to be operational by 2010. The plant is expected to treat an average of 36 million gallons per day under normal conditions and 130 million gallons per day during peak storms in 2010. By 2040, it will increase to 54 million gallons per day under normal conditions and 170 million gallons per day during peak storms.

**Regulatory Status**

Water quality is regulated by the Department of Ecology, under authority delegated by the Environmental Protection Agency, pursuant to the Clean Water Act. In the past 10 years, 30 communities statewide have been required to ban sewer connections for a period of time due to improper treatment or contamination. Communities with on-site septic systems are currently experiencing the problems associated with higher levels of density and failures of these septic systems have contributed to contamination of local water bodies as well as the groundwater. The sewer industry has reacted to higher standards of water quality and in most cases, communities served by sewers have been able to comply with these new standards. However, major investments and upgrades have been needed and utility rates have increased for users.

Existing sewer plans will provide adequate service, but should be extended to plan for growth beyond current estimates. Updates to city and county comprehensive plans will need to take into account where growth is likely to occur and plan accordingly. Smaller communities, many of which rely on septic systems, will not have adequate means of treating wastewater in the future if the existing infrastructure is not expanded. Septic systems fail through homeowner misuse, poor design, or when the treatment system is exhausted.

### 5.7.1.3 WATER SUPPLY

**Primary Water Sources and Water Supply**

Section 246-290, Washington Administrative Code, defines a public water system as “[a]ny system of water supply intended or used for human consumption or other domestic uses, including source (surface water and/or groundwater), treatment, storage, transmission, and distribution facilities where water is being furnished to any community, collection, or number of individuals, but excluding a water system serving one single family residence.” Public water systems are further classified as either Group A or Group B systems. Group A systems typically serve 15 or more connections and Group B systems serve two to 14 connections. Citizens living within rural areas who wish to obtain water from a private source must have at least five acres of property located outside the urban growth area. A private water system is only allowed within the urban growth area if a public water system cannot deliver water in a timely and cost effective manner. Permits for private wells, in both cases, are issued by the county Department of Public Health.
Water service areas are defined by individual jurisdictions and provide the basis for long-range plans. In the event of annexations, a city can coordinate service with local water providers. However, local water lines provided by special purpose districts can extend beyond annexations areas. In some cases, special service districts are also considered regional providers, with service areas based on coordinated water supply plans, existing agreements, and other service factors.

Based on United States Geological Survey data for the year 2000 in King and Snohomish counties, most of the water supply was provided by surface water, with production constituting 76 percent and 90 percent of the total in each county, respectively. In contrast, most of the supply in Kitsap County in 2000 was provided by groundwater (75 percent), while in Pierce County, supply was provided fairly equally by both, with surface water providing slightly more at 55 percent. These data are summarized in Figure 5-7-1.

**FIGURE 5-7-1: PUBLIC WATER SUPPLY IN 2000 FOR KITSAP, KING, PIERCE, AND SNOHOMISH COUNTIES BY SOURCE OF SUPPLY**

<table>
<thead>
<tr>
<th>County</th>
<th>Year</th>
<th>Total Population Served**</th>
<th>% Groundwater Production</th>
<th>% Surface Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitsap</td>
<td>2000</td>
<td>190,560</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>King</td>
<td>2000</td>
<td>1,593,060</td>
<td>24</td>
<td>76</td>
</tr>
<tr>
<td>Pierce</td>
<td>2000</td>
<td>674,850</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>Snohomish</td>
<td>2000</td>
<td>503,370</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>Total</td>
<td>2000</td>
<td>2,961,840</td>
<td>38</td>
<td>62</td>
</tr>
</tbody>
</table>

* Data on population served in 2000 was compiled by the United States Geological Survey, and may not be the same as the population data for 2000 provided by the Puget Sound Regional Council.


Using United States Geological Survey data on water usage by county, it is noted that between 1995 and 2000, the population served in each of the counties increased (King – 6 percent, Kitsap – 15 percent, Pierce – 16 percent, and Snohomish – 17 percent). Over the same time, the ratio of surface water production to groundwater production in King County changed slightly with surface water production increasing by 5 percent (from 71 to 76 percent of the total) and groundwater supply decreasing by 5 percent (from 29 to 24 percent of the total).

In Kitsap County, groundwater was the predominant source of supply in 1995 as well as in 2000 (77 and 75 percent, respectively). It is noted that in the 2005 updated Kitsap County Coordinated Water System Plan (CWSP), groundwater is believed to provide around 80 percent of the potable water for the county. The City of Bremerton’s Union River is the only significant source of surface water. In Pierce County, by contrast, groundwater provided 66 percent of the supply in 1995 but only 45 percent of the supply in 2000. Snohomish County demonstrated a trend similar to King County, with the proportion of surface water production increasing from 84 to 90 percent and the proportion of groundwater production decreasing from 16 to 10 percent of the total.

In a 2001 “Outlook” report on water supply in the central Puget Sound region (Central Puget Sound Water Suppliers’ Forum, 2001), a survey conducted by the Forum on 158 of the largest utilities in King, Pierce, and Snohomish counties showed that much of region’s population is served by a few major sources (large rivers and reservoirs in the Cascades and a few large groundwater sources). The three largest purveyors of these in King, Pierce, and Snohomish counties include Everett, Seattle, and Tacoma as shown in Figure 5-7-2, on the subsequent page.

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• **Everett:** The Spada Reservoir on the Sultan River constitutes the only source of water to Everett. Water supply and storage of the reservoir are jointly owned and operated by Everett and Snohomish County Public Utilities District.

• **Seattle:** Seattle has two surface water sources — the Cedar River System and the South Fork Tolt Reservoir, and a small groundwater source — the Highline Well Field. On average, the Cedar River system provides 70 percent of Seattle’s supply, the South Fork Tolt 29 percent, and the Highline Well Field 1 percent (primarily used during peak summer periods). The Cedar River Habitat Conservation Plan (HCP), which was adopted in 2000, governs operation of the Cedar River System. According to the 2001 Outlook report (Central Puget Sound Water Suppliers’ Forum, 2001), Seattle intends to develop a legal mechanism to reserve 100 million gallons per day of its annual water right claim to benefit fish.

• **Tacoma:** Tacoma has two main sources, one surface — the Green River — and one groundwater — the South Tacoma wells. With the Second Supply Pipeline now on-line, previous limitations on Tacoma’s peak supply should be alleviated.

The reservoirs are used to store winter snowmelt runoff not only to prevent flooding, but to also provide dry season water supply, hydropower, and water for fish habitat. Figure 5-7-2 also shows the major, and some minor, water transmission lines from the sources to their respective service areas. In addition to the transmission lines shown, some utilities have interties with adjacent purveyors.

As a subset of the Forum, the Cascade Water Alliance (Cascade) was formed by a group eight water systems in King County to “jointly plan, develop, and operate a water supply system for its Members” (CWA, 2005). The eight members include the City of Bellevue, Covington Water District, the City of Issaquah, the City of Kirkland, the City of Redmond, Sammamish Plateau Water and Sewer District, the City of Tukwila, and the Skyway Water and Sewer District and are identified in Figure 5-7-2. Most of the Cascade water service area is contained within the contiguous urban growth area of King County covering approximately 376 square miles. Exceptions include the Sammamish Plateau’s Cascade View Zone and portions of the Covington water service area, which are both designated as rural areas.

Members of Cascade Water Alliance have entered into an interlocal agreement to supply water to their respective service areas and the region by developing, owning, and operating regional water supply assets. Cascade is a non-profit organization and provides certain governmental functions on behalf of its members. A board of directors governs the organization with one representative from each of the members. Cascade currently has three standing committees — Finance, Membership, and Resource Planning, as well as a Conservation Work Group. If needed, Cascade also enters into contract arrangements with other entities, such as Seattle Public Utilities or Tacoma Public Utilities. Cascade has been providing water to its members since January 1, 2004. Figure 5-7-3 shows the different sources of supply for each of the Cascade members as of 2003.
Source: Central Puget Sound Regional Water Supply Outlook, 2001. Updated Based on Cascade Water Alliance, 2005. Note: Bryn Mawr and Skyway are now consolidated.
FIGURE 5-7-3: CASCADE MEMBER SOURCES OF SUPPLY IN 2003

<table>
<thead>
<tr>
<th>Cascade Member</th>
<th>Seattle Public Utilities Supply (%)</th>
<th>Groundwater Supply (%)</th>
<th>Other Sources of Supply (%)</th>
<th>Reclaimed Water Supply (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Bellevue</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Covington Water District</td>
<td>0</td>
<td>70</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>City of Issaquah</td>
<td>0</td>
<td>93</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>City of Kirkland</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>City of Redmond</td>
<td>66</td>
<td>34</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sammamish Plateau Water and Sewer District</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Skyway Water and Sewer District</td>
<td>73</td>
<td>8</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>City of Tukwila</td>
<td>&gt;99</td>
<td>0</td>
<td>0</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

Source: Cascade Water Alliance, 2004 Transmission and Supply Plan

In addition to those listed above, there are about 10 smaller Group A and 100 smaller Group B water systems (wells and springs) located within the Cascade service area. However, Cascade is not obliged to supply water to any member whose planning is out of compliance with the Growth Management Act. It is also not obliged to provide water to service area expansions unless the board agrees to such expansions.

In Kitsap County, a survey conducted by the Water Utility Coordinating Committee for the 1992 Coordinated Water System Plan gathered information from each utility on its existing and future service area boundaries — the combination of the two is referred to as the utility’s service area. These are shown in Figure 5-7-2. The service areas are based on county land use policies and applicable ordinances, topography, readiness and ability to serve, local franchise areas, legal water systems, sewer service areas, and future population projections made at the time. Areas outside the retail service areas claimed by existing utilities are designated as Satellite Management Areas. Kitsap County Coordinated Water System Plan of 2005 says some water purveyors may provide wholesale water to other water systems in the future. Some may overlap to provide flexibility. Wholesale water sales will be conducted based on individual agreements among the parties.

5.7.1.4 FIRE PROTECTION AND POLICE SERVICES

Emergency services include fire, safety, and police services, which are provided by cities, counties and special purpose districts throughout the four-county region, and by the state highway patrol. Individual jurisdictions may have their own police and fire departments or may contract with other jurisdictions, such as adjacent cities or their county, to provide the services. Other public services, such as courts, justice, corrections, and other social services are also provided throughout the region.

Fire protection is provided either by departments within municipal government or by special districts set up independently of local governments. District or city taxes provide the basic support for fire protection services. Voter-approved levies and private donations also provide support. Many fire districts rely on volunteer firefighters to supplement the work of professional firefighters. Presently, there is no limit to the number of volunteer firefighters allowed per district, and there are no thresholds at which a volunteer force is required to convert to a professional force.

The following figure displays the number of fire departments within each county:

FIGURE 5-7-4: FIRE DEPARTMENTS IN THE REGION

<table>
<thead>
<tr>
<th>Number of Fire Departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>King County</td>
</tr>
<tr>
<td>Kitsap County</td>
</tr>
<tr>
<td>Pierce County</td>
</tr>
<tr>
<td>Snohomish County</td>
</tr>
</tbody>
</table>

Source: All information gathered from www.firedepartments.net.
**Police Services.** Jurisdictions in the region rely on both county sheriffs and municipal police departments for police services. County sheriff departments serve unincorporated areas, while local municipal police departments typically serve incorporated cities and towns. Sometimes cities contract with the county to provide this service locally. Many local fire and police agencies now have mutual response agreements, which allow public safety responsibilities to be shared across jurisdictional boundaries. This is especially helpful in emergency situations when sheriff departments are unable to respond in a timely manner, particularly in unincorporated “islands” where city departments may be closer.

5.7.1.5 **HEALTH AND EMERGENCY MEDICAL SERVICES (INCLUDING HOSPITALS)**

Major hospitals within the region are listed in Figure 5-7-5 and shown in Figure 5-7-6 (schools are also shown in this figure, but discussed in the next section). As stated in the Revised Code of Washington Chapter 70.168, the Washington State Department of Health contracts with eight Emergency Medical Services and trauma care councils. Districts are determined based on efficiency of delivered emergency medical services and trauma care, and each county within the region falls under a different district. King County is in the Central District, Kitsap County is in the Northwest District, Pierce County is in the West District, and Snohomish County is in the North District.²

**FIGURE 5-7-5: HOSPITALS BY COUNTY**

<table>
<thead>
<tr>
<th>King County</th>
<th>Snoqualmie Valley Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn General Hospital</td>
<td>St. Francis Community Hospital</td>
</tr>
<tr>
<td>Children's Hospital and Medical Center</td>
<td>Swedish Medical Center – Ballard</td>
</tr>
<tr>
<td>Community Memorial Hospital</td>
<td>Swedish Medical Center – Providence</td>
</tr>
<tr>
<td>Evergreen Hospital</td>
<td>Swedish Medical Center – Seattle</td>
</tr>
<tr>
<td>Group Health Central</td>
<td>THC Seattle Hospital</td>
</tr>
<tr>
<td>Group Health Eastside</td>
<td>University of Washington Medical Center</td>
</tr>
<tr>
<td>Harborview Medical Center</td>
<td>Valley Medical Center</td>
</tr>
<tr>
<td>Highline Community Hospital</td>
<td>Veteran's Affairs Medical Center</td>
</tr>
<tr>
<td>Northwest Hospital</td>
<td>Virginia Mason Medical Center</td>
</tr>
<tr>
<td>Overlake Hospital and Medical Center</td>
<td>Naval Hospital – Bremerton</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Kitsap County</th>
<th>Harrison Memorial Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harrison Memorial Hospital</td>
<td>Naval Hospital – Bremerton</td>
</tr>
<tr>
<td>Harrison Memorial Hospital – Silverdale</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pierce County</th>
<th>Allenmore Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Samaritan Hospital</td>
<td>St. Joseph's Medical Center</td>
</tr>
<tr>
<td>Madigan Army Medical Center</td>
<td>Tacoma General Hospital</td>
</tr>
<tr>
<td>Mary Bridge Children’s Hospital</td>
<td>Veteran's Affairs Medical Center (Hospital at American Lake)</td>
</tr>
<tr>
<td>Northwest Hospital</td>
<td>Snohomish County Public Hospital</td>
</tr>
<tr>
<td>Overlake Hospital and Medical Center</td>
<td>Stevens Memorial Hospital</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Snohomish County</th>
<th>Everett General Medical Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Health Medical Center</td>
<td>Snohomish Family Medical Center</td>
</tr>
<tr>
<td>Providence Hospital</td>
<td>Stevems Memorial Hospital</td>
</tr>
<tr>
<td>Quilceda Medical Center</td>
<td>Valley General Hospital</td>
</tr>
</tbody>
</table>

Source: Parametrix, Inc.

Each county in the region also provides a variety of non-hospital social services and health care facilities.

- **King County.** King County Department of Community and Human Services provides community services, mental health care and chemical abuse and dependency services, services related to developmental disabilities, and also houses the Office of the Public Defender.

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² Major hospitals are developed in accordance with Washington Administrative Code, Chapter 246-310-210. The need for new or substantially expanded health care facilities is determined using the following criteria:

- All residents of the service area, including low-income persons, racial and ethnic minorities, handicapped persons, and other underserved groups and the elderly are likely to have adequate access to the proposed health service or services.
- The applicant has substantiated any special needs and circumstances.
- The project will not have an adverse effect on health professional schools.
- The project is needed to meet the special needs and circumstances of new and enrolled members of health maintenance organizations in a reasonable and cost-effective manner consistent with the basic methods of operation of the health maintenance organization.
- Nursing facilities must be approved according to Revised Code of Washington Chapter 70.41.
- **Kitsap County.** Kitsap County Health Department’s office of Community Health provides clinical services, a parent and child health program, HIV/AIDS programs, health promotion, and jail and juvenile detention programs.

- **Pierce County.** The Pierce County Department of Community Services and the Department of Human Services provide aging care services, developmental disabilities services, chemical dependency treatment and prevention services, mental health services, housing services, and a variety of other services.

- **Snohomish County.** Snohomish County Department of Human Services provides mental health services, long-term care and aging services, homeless services, alcohol and chemical dependency services, and other important services.

**FIGURE 5-7-6: HEALTH CARE FACILITIES, SCHOOLS, AND SCHOOL DISTRICTS IN THE REGION**
### 5.7.1.6 SCHOOLS

The capital facilities plan required of each county, city, and town under the Growth Management Act requires an inventory of existing facilities owned by public entities, projected needs, including location of new facilities and the expansion of existing facilities, and a six-year financing plan to fund all construction. Educational facilities, including schools, are frequently included in the capital facilities plans. When analyzing potential sites for new facilities or expansions of existing facilities, the following criteria are considered by school districts:

- Inventory of similar and existing public facilities.
- Forecast of the future needs for the facility.
- Potential social and economic impacts and benefits to jurisdictions receiving or surrounding the facility.
- Facility consistency with existing legislation.
- Alternatives to the facility.
- Analysis of economic and environmental impacts, including mitigation.
- Public involvement.
- Consideration of any applicable prior review conducted by a public agency, local government, or citizens’ group.

Schools and school districts within the region were displayed previously in Figure 5-7-6. As stated in the Washington Administrative Code (180-22-140), school districts are to be organized to accommodate the changing regional economic and educational goals of the state and to provide more equal and equitable educational opportunities. Topography and climate also play a part in the establishment of school district boundaries.

The superintendent of public instruction coordinates with the school district to conduct a review and evaluation of potential sites for new or existing school facilities. As found in the Washington Administrative Code (180-26-020), the following criteria are used when selecting a site:

- The property is generally clear of all encumbrances that would impede construction, operation, and useful life of the facility.
- The site is of a size to meet the needs of the facility. The minimum acreage of the site should be five usable acres and one additional usable acre for each 100 students plus an additional five usable acres if the school contains any grade above grade six. Health and safety of students, impacts to the surrounding neighborhood, and physical education requirements are all taken into account during the review process.
- A thorough code review with local agencies.
- A subsurface investigation by a geotechnical engineer has been conducted.

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

This section discusses the possible impacts to public services and utilities for the regional growth alternatives under consideration. Public services and utilities reviewed include: (1) solid waste collection and disposal, (2) sanitary sewer systems, (3) water supply, (4) fire protection and police services, (5) health and emergency medical services (including hospitals), and (6) schools. Stormwater is discussed in *Chapter 5.6 – Water Quality and Hydrology*. Parks and recreation facilities are discussed in *Chapter 5.8 – Parks and Recreation*. Energy and electrical utilities are discussed in *Chapter 5.10 – Energy*.
5.7.2.1 IMPACTS TO SOLID WASTE

Impacts Common to All Alternatives

Due to increased population, solid waste generation will increase over time, and related impacts are expected to be generally similar under all alternatives. Under all alternatives, the possibility and potential need for expansion of existing facilities is present. However, existing facilities can be difficult to expand, due to typical public concerns about noise, trucking, odors, and safety. Alternatively, transfer station use could be limited to haulers only, rather than open to the public, and collection services could be expanded from typical curbside collections, although costs for services have the potential to increase. Finally, if current trends continue, the composition of waste that is generated could change slightly based on the distribution of population.

Higher density areas tend to generate less yard waste and have higher rates of recycling, while more suburban and rural areas generate more yard waste and debris, and have lower rates of recycling. Impacts to regional landfills may be minimal since most trash today is exported from all counties within the region and few other impacts to solid waste services beyond this would be expected. Increased quantities of recycled solid waste have the potential to decrease the percentage of overall solid waste deposited in landfills for all alternatives.

Analysis of Each Alternative

- **Preferred Growth Alternative.** Due to increased population, solid waste generation will increase over time, and related impacts are expected to be generally similar under all alternatives. Under the Preferred Growth Alternative, since growth is concentrated in metropolitan and core cities, the need to expand or construct new transfer facilities in urban areas is expected in these cities. Additionally, the level of growth in the unincorporated urban growth area may require additional facilities in these areas. Larger cities, small cities, and rural areas will likely not experience a sharp rise in demand for solid waste services and infrastructure under this alternative. Compared to current plans (Growth Targets Extended), this alternative distributes slightly higher levels of employment growth to counties outside of King and therefore non-residential collections could be slightly higher.

- **Growth Targets Extended Alternative.** Increased demand for new or expanded transfer stations is expected as a result of this alternative. Under Growth Targets Extended, rural, unincorporated portions of the urban growth area, and small cities would experience increased growth and could likely require new facilities to meet the demand from population and employment growth. Demand for solid waste infrastructure is expected to increase in all four counties, but Kitsap and Snohomish counties could experience the highest increase in demand under Growth Targets Extended.

  Kitsap County could experience the greatest amount of impact to residential solid waste management under the Growth Targets Extended or the Smaller Cities Alternatives since currently 40 percent of residents haul their own trash to drop box facilities. With a substantial increase in population, the need for expanded systems of curbside collection could increase, as could the need for more drop box facilities.

- **Metropolitan Cities Alternative.** Since growth is concentrated in metropolitan cities under this alternative, the need to expand or construct new transfer facilities in urban areas is expected in cities such as Everett, Seattle, and Tacoma. Conversely, smaller cities will likely not experience a sharp rise in demand for solid waste services and infrastructure under this alternative.

- **Larger Cities Alternative.** The impacts to solid waste associated with the Larger Cities Alternative are similar to the impacts expected under the Metropolitan Cities Alternative. Growth is slightly more dispersed within the urban area under the Larger Cities Alternative than in the Metropolitan Cities Alternative but the impacts are expected to be similar. The counties oversee solid waste management, and solid waste management plans are periodically updated to account for changes in demand for waste management services.

- **Smaller Cities Alternative.** The impacts to solid waste under the Smaller Cities Alternative are expected to be similar to the impacts expected under Growth Targets Extended. Smaller cities, rural, and unincorporated areas would experience the largest increase in population and employment and could therefore also experience an increase in demand for solid waste management. New or expanded transfer facilities in these areas could likely be necessary. Solid waste collection and management methods could also need to be updated to reflect the increased demand. Metropolitan cities and core cities could likely not experience a great increase in demand for solid waste management. Improvements to existing facilities would likely be needed, but this is the case under all alternatives.
Kitsap County could experience the greatest amount of impact to residential (and perhaps commercial) solid waste management under the Growth Targets Extended or the Smaller Cities Alternatives since currently 40 percent of residents haul their own trash to drop box facilities. With a substantial increase in population and employment, the need for expanded systems of curbside collection could increase, as could the need for more drop box facilities.

5.7.2.2 IMPACTS TO SANITARY SEWER

Impacts Common to All Alternatives

Typical impacts to wastewater treatment systems could include the need to expand or replace conveyance (pipeline), facilities, and treatment, which may lack the capacity to handle increased demands caused by growth. Some aging systems may also need repair or replacement. Pockets of unincorporated areas within the urban growth area lack sewer systems and rely on septic systems. For additional growth to occur in these areas, at typical urban densities, expanded collection, conveyance, and treatment facilities could be needed.

Currently, the region has its largest interconnected systems in King and Pierce counties, and in the cities of Tacoma, Bremerton and Everett. Smaller to mid-size cities in Pierce, south King, Snohomish and Kitsap counties have their own conveyance and treatment systems. Pockets of unincorporated areas, many with septic but also featuring residential and commercial development, are near these cities. Cities annexing these areas would need to upgrade their systems. Increased growth within the cities on the edge of the urban area could place greater impacts on their systems, which may not have been designed or sited to accommodate high rates of expansion or larger service areas. Expanding such facilities may require a change in technology and more stringent discharge standards, often resulting in higher costs.

Smaller cities, which in some cases lack treatment facilities and where growth in some cases is already constrained, might need to develop conveyance and treatment systems to meet current standards and the increased growth forecasts under any of the alternatives. Alternatively, they could contract with regional or adjacent city systems to meet demand. In general, larger facilities have the advantage of efficiency over smaller systems, but engineering solutions might be available to meet the increased needs of growth; the primary differentiator would be user cost and affordability.

Current levels of sanitary sewer service capacity will not meet long-term demand and will require substantial expansion under all alternatives. If smaller jurisdictions choose to connect to larger urban systems in order to accommodate growth, overall costs per capita for increasing sanitary sewer capacity could be higher in small cities and unincorporated urban growth areas if longer pipelines were needed to connect more dispersed land development patterns to core urban systems. This could possibly result in higher per capita sanitary sewer costs for the Growth Targets Extended or the Smaller Cities Alternatives compared to the Metropolitan Cities, Preferred Growth, and Larger Cities Alternatives.

Other regional solutions and systems such as new or expanded treatment plants could also serve increased growth that is more distant from existing facilities, but could be a challenge to implement.

Analysis of Each Alternative

- **Preferred Growth Alternative.** Current levels of sanitary sewer service capacity will not meet long-term demand and will require expansion under all alternatives. The Preferred Growth Alternative could require improvements to current sewer systems in metropolitan cities, and perhaps core cities, to increase their capacity and useful life in order to accommodate the growth under this alternative. It is possible that the lower levels of small city growth envisioned in the Preferred Growth Alternative might not increase demand for new or expanded wastewater treatment facilities, especially for cities bordering counties outside the region, in the same way that the Smaller Cities Alternative could. As such, small cities could, in general, take a less aggressive approach when deciding whether or not to expand sewer lines or continue the use of septic systems.

Since sewer systems are already in place in metropolitan and larger cities, expansion of existing sewer lines could be necessary to meet increased demand and maintenance of existing systems. The high levels of metropolitan and core city growth in this alternative could place substantial strain on existing sewer capacity in metropolitan and core cities, well beyond that currently anticipated in current long range system plans. New sites and facilities to serve these geographies may be needed under this alternative. For the unincorporated urban growth areas, this alternative assigns less growth than under current plans (Growth Targets Extended),
and therefore could require less expansion of sewer lines and treatment capacity into currently unserved areas, thereby saving resources and being more easily served by utilities and others that are already implementing long-range system plans within their service areas. By law, sewer service cannot be extended into rural areas except in limited circumstances; therefore, the population growth in rural areas (which is less than in Growth Targets Extended) under this alternative would have to be served by septic systems.

- **Growth Targets Extended Alternative.** Growth Targets Extended, which includes relatively high amounts of growth in unincorporated urban growth areas, could possibly require expansion of sewer lines and treatment capacity into currently unserved areas, which could be costly. In terms of growth in incorporated urban areas, levels of growth in Growth Targets Extended are consistent with the typical costs of growth that many of the major systems have assumed: King County, City of Tacoma and others are implementing long-range system plans that could accommodate similar growth rates within their service areas. By law, sewer service cannot be extended into rural areas except in limited circumstances; therefore, the substantial amount of population growth in rural areas under this alternative would have to be served by septic systems.

- **Metropolitan Cities Alternative.** This alternative could require improvements to current sewer systems to increase their capacity and useful life in order to accommodate the growth expected within metropolitan and core cities under this alternative. It is possible that the lower levels of small city growth depicted in the Metropolitan Cities Alternative might not increase demand for new or expanded wastewater treatment facilities, especially for cities bordering counties outside the region, in the same way that the Growth Targets Extended and the Smaller Cities Alternatives could. As such, small cities could take a much less aggressive approach when deciding whether or not to expand sewer lines or continue the use septic systems. Since sewer systems are already in place in metropolitan and larger cities, expansion of existing sewer lines could be necessary to meet increased demand and maintenance of existing systems. The high levels of metropolitan and core city growth in this alternative could place substantial strain on existing sewer capacity in metropolitan and core cities, well beyond that currently anticipated in current long range system plans. New sites and facilities to serve these geographies may be needed under this alternative.

- **Larger Cities Alternative.** The Larger Cities Alternative, which increases growth in core and larger cities at a higher level than identified in their current plans, could create more pressure than under the other alternatives to expand current suburban sewer systems. In some cases, expansion of current systems may not fully accommodate the amount of growth expected in cities and the smaller cities that are nearby. New sites and facilities to serve these geographies could be needed under this alternative. Under the Larger Cities Alternative, unincorporated urban growth area population and employment growth and associated impacts could likely be less than described for these cities and areas under the Growth Targets Extended alternative.

- **Smaller Cities Alternative.** The Smaller Cities Alternative, which places the most development in smaller cities and unincorporated urban growth areas, could have significant impacts on existing small-scale sanitary sewer systems in these geographies. Rural and unincorporated areas rely heavily on septic systems and many have underdeveloped conveyance and treatment facilities. The Smaller Cities Alternative might require the extension of sewer lines out from more densely populated areas, which could be expensive.

Currently, sewer extensions are not allowed outside the urban growth area, except in limited circumstances. If an adjustment of the urban growth area were to occur, the new area would be eligible for sewer service extension. A substantial amount of growth in close proximity to urban growth area boundaries, as well as in the rural area, might put added pressure to adjust urban growth area boundaries, and extend sewer services into newly designated urban areas. Such a situation could be more likely under the Growth Targets Extended and the Smaller Cities alternatives, which have a substantial amount of growth in unincorporated urban growth areas and rural areas, than in the Metropolitan Cities, Preferred Growth, and Larger Cities alternatives, where growth is more concentrated in core urban areas.
5.7.2.3 IMPACTS TO WATER SUPPLY

Regional Future Municipal Water Demand

Current water supply plans address meeting future water demand in many of the urban growth areas throughout the region through additional transmission lines, larger pipes, interlocal agreements, and conservation programs already underway. However, it is estimated that under Growth Targets Extended, there could still be shortfalls in a number of cities and towns if new supplies cannot be found and/or demand cannot be reduced by implementation of conservation and/or water re-use. Furthermore, shortfalls could be more severe in smaller cities and towns outside the contiguous urban growth areas since additional transmission lines are less feasible to these locations because of the need to traverse long distances through rural areas, and they are removed from larger treatment plants for which re-use might be an option. Additional factors such as climate changes and reduced snowpack, and low rates of recharge for aquifers can also alter long-range forecasts and introduce more levels of uncertainty for service providers.

Conservation

In addition to conventional supply options, conservation is an important option for reducing the demand for potable water. Past conservation programs and the 1993 plumbing code have succeeded in deferring a need for major new regional supplies so far (Central Puget Sound Water Suppliers’ Forum, 2001). In May 2004, the Cascade Transition Water Conservation Program was adopted so that members could begin working together to develop regional conservation strategies. These would supplement conservation programs that are already in place or are planned.

The use of reclaimed water in the region is not yet highly developed. As with conservation, the use of reclaimed water would offset the demand for potable water. Potential uses include landscape irrigation and industrial cooling. To be used on a large scale, there is a need to overcome public health or environmental issues, as well the current lack of a distribution system from place of treatment to place of use. For all utilities, reuse options may become more feasible if suppliers and users are committed to promoting the environmental and sustainability aspects of reuse, as well as overcoming concerns associated with reusing water.

Future Water Demand in King, Pierce, and Snohomish Counties

Based on data from the individual utilities surveyed in King, Pierce, and Snohomish counties, the Central Puget Sound Water Suppliers’ Forum (Forum) forecast future water demand for the years 2020 and 2050 using two scenarios:

- A baseline demand forecast that included water conservation achieved to date (but not existing or planned conservation programs).
- A forecast in demand using existing and planned conservation programs.

Using the baseline scenario, the regional average daily demand (ADD) is projected to increase by 14 percent between 2000 and 2020, and by 39 percent between 2000 and 2050. In comparison, using the forecast in demand with existing conservation programs, the average daily demand is projected to increase by only 4.4 percent from 2000 to 2020 (no projection was made beyond 2020 under this scenario). (Central Puget Sound Water Suppliers’ Forum, 2001)

The Cascade Water Alliance (Cascade) has also projected future water demand through 2050 based on individual demand forecasts for each of its eight members. Using 10 years of data, and including annual water savings from conservation, the overall average daily demand for Cascade members is projected to increase by 48 percent from 2004 to 2023, and by 81 percent from 2004 to 2050. While the Forum and Cascade used different methods to calculate the average daily demand, the higher

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3 For King, Pierce, and Snohomish counties, information on the predicted demand for water in the future is summarized in a document called 2001 Central Puget Sound Regional Water Supply Outlook (Central Puget Sound Water Suppliers’ Forum, 2001), the Cascade Water Alliance 2004 Transmission and Supply Plan (Cascade Water Alliance, 2005), and Seattle Public Utilities’ 2001 Water System Plan Update (SPU, 2001). For Kitsap County, the 2005 revision to the Kitsap County Coordinated Water System Plan was used as the primary source of information on planning for future water demand in the county (Kitsap County, 2005). Given the manner in which this information is currently presented, it should be noted that the following discussion of impacts on future water supply for Growth Targets Extended and all other alternatives, is presented by county rather than by regional geographies and then by county.

4 To date, the primary source of reclaimed water is the King County Wastewater Treatment Division at its South Treatment Plant in Renton. Tukwila uses a portion of this supply and plans to use more in the future. Because of the difficulties associated with reusing water, in Kitsap County reuse options are included as Tier 6 in a seven-tiered water supply implementation strategy.
increases in demand forecast by Cascade reflect the overall higher rates of population change currently anticipated in King County when compared with Pierce and Snohomish counties. (Cascade Water Alliance, 2005)

For King, Pierce, and Snohomish counties, the Forum and Cascade predict that by about 2020 to 2023, additional supplies will be needed to meet the forecast average daily demand. The areas where demand is predicted to exceed supply by 2020 are shown in Figure 5-7-7.

Most of the shortfall occurs in the fringe of the urban growth areas of King County (e.g., Sammamish Plateau, Issaquah, Black Diamond, North Bend, Kent, and Covington) and throughout Pierce County (e.g., Tacoma, Sumner, Southwood, and Buckley). Other utilities may not run out of available supplies by 2020, but must plan for supplies needed after 2020. Existing conservation programs may provide adequate water supplies for other localities. When shortfalls occur, the extent to which demand can be mitigated by other sources of supply such as conservation will depend upon which of the alternatives is considered and the location of the predicted growth areas to future supply options already proposed in individual utility water supply plans.

Cascade plans to satisfy its members’ (Bellevue, Covington, Issaquah, Kirkland, Redmond, Sammamish Plateau, Tukwila, and Skyway) demands through 2023 from a combination of its own self-supplied sources as well as regional sources. Proposed new regional water sources are shown in Figure 5-7-8.

Self-supplied sources include local groundwater and water purchased from nearby systems. They may also include reclaimed water purchased from King County Wastewater Treatment Division. Since Covington is a partner in the Tacoma Second Supply Project, it will have access to a portion of that supply in the future.

Beyond 2023, Cascade anticipates being able to use Lake Tapps as an additional long-term regional water supply source. Use of this source will depend on the Washington State Department of Ecology’s approval of water rights to use Lake Tapps. While Puget Sound Energy did receive approval from Ecology in 2003 in a Report of Examination, it was appealed and has been remanded back to Ecology. It is anticipated that, as the Lake Tapps supply comes on-line, Cascade will be able to decrease its reliance on Seattle Public Utilities water. As discussed with Seattle Public Utilities, it is possible that demand will decrease because of changes in who will be providing the water. Since publication of its Water System Plan Update, Seattle Public Utilities is currently in the process of updating its future demand forecasts.5 The utility anticipates finalizing its forecasts around the middle of 2006.

For those locations outside the contiguous urban growth areas, there are fewer supply options available. For these areas, the feasibility of additional transmission lines and/or increased use of groundwater and conservation measures will have to be evaluated on a case-by-case basis (e.g., depending upon water rights and weighing the needs of water for municipal use versus water for farming or restoration purposes).

**Future Water Demand in Kitsap County**

In Kitsap County, future water demand is estimated to increase 43 percent by 2020 and 61 percent by 2030 on a per household basis. If it is assumed that conservation will result in a 1 percent reduction per year in water supply requirements for 2001 to 2010, then projected supply forecasts are lower, at 31 percent and 49 percent, respectively, for 2020 and 2030. For planning purposes, Kitsap County selected a third scenario that included conservation as well as additional industrial requirements resulting in projected increases of 42 percent and 61 percent, respectively, for the years 2020 and 2030.

In its Coordinated Water System Plan, Kitsap County concluded that for those water systems projected to serve the current urban growth area (Group A systems — see section 5.7.1.3), water rights appear to be adequate to meet demand beyond 2030. However, it is predicted that there will be some isolated areas where demand will exceed local area water rights prior to 2030 and the extension of transmission lines to connect to other areas with excess water supply could be cost-prohibitive. This could be of particular concern in Kitsap County under alternatives where growth is allocated to the rural areas.

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FIGURE 5-7-7: AREAS WHERE DEMAND IS EXPECTED TO EXCEED SUPPLY BY 2020

Source: Central Puget Sound Regional Water Supply Outlook, 2001. Notes: (1) The Regional Water Supply Outlook Project did not include Kitsap County. (2) Bryn Mawr and Skyway are now consolidated. (3) the status of King County's Water District 111 has changed, and they are not anticipated to appear on an update version of this graphic.
FIGURE 5-7-8: EXISTING AND PROPOSED WATER SOURCES IN KING, PIERCE, AND SNOHOMISH COUNTIES

Note: (1) Projections not shown. (2) The Regional Water Supply Outlook Project did not include Kitsap County. (3) Bryn Mawr and Skyway are now consolidated.
Since development of the Coordinated Water System Plan, an additional requirement is that water service areas support the intent of the Growth Management Act. Indeed, a stated philosophy of the Coordinated Water System Plan is that “water utility service should not dictate growth patterns.” To that end, each utility’s plan must address the water system facilities required to accommodate growth.

The Water Utility Coordinating Committee has proposed several procedures to improve coordination of new growth and restrict the proliferation of small public water systems. These include the development of future service area boundaries and the Satellite System Management Agency. Furthermore, Kitsap County has developed a Utility Service Review Procedure to identify purveyors who are willing and capable of providing water service to new development and expansions. If a purveyor is not able to provide “timely and reasonable” service, or if the area is a satellite management area, the closest adjacent utility (with an approved Water System Plan) becomes the preferred provider. If not available, a new utility may be formed according to specifications in the Coordinated Water System Plan once its financial viability can be demonstrated.

For Kitsap County, the preferred future supply option is continued reliance on groundwater at regional or local well fields. Initial Basin Assessments for Kitsap County and Water Resource Inventory Area #15 found that the availability of groundwater varies throughout the county. The Basin Assessments and a 1991 Ground Water Management Plan project that water is available for near-term growth — but recognize a need for more data and more analyses. Given this, the Kitsap County Coordinated Water System Plan recognizes the need to develop a focused and coordinated plan. To that end, Kitsap County has developed a tiered implementation strategy that relies on conventional supply options as well as alternative options such as conservation and possibly reuse. The Kitsap County Coordinated Water System Plan discusses the Water Purveyors Association of Kitsap County (WATERPAK), which has established a task force on conservation that will evaluate joint utility-based regional water conservation programs.

**Impacts Common to All Alternatives**

Regardless of which growth alternative is considered, additional supply and/or reduced demand (e.g., conservation) will be needed to meet projected demand throughout the region by 2020 (if not before for some areas) and through 2040. In addition, the growth alternatives will need varying degrees of distribution and water movement across service areas to meet future demand in some locations.

Seattle Public Utilities is currently in the process of updating the future demand forecasts published in its 2001 Water System Plan Update. While overall demand projections are expected to be about the same, it is possible that Seattle Public Utilities’ demand will decrease because of changes in who will be providing the water. Seattle Public Utilities anticipates finalizing its forecasts around the middle of 2006.

Closer examination of the population growth allocated for the different alternatives reveals some differences between them that need to be considered from a water supply perspective. In general, growth occurring in existing large-population service areas has more options to meet future supply needs (due to the ability to transmit water from more sources using existing transmission corridors) and meet future demand (due to greater potential for conservation and economical reuse). However, increased population and employment in the service areas of existing urban systems could

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6. Continued drilling is taking place to evaluate long-term regional supplies, but to date, a few new wells in the southern part of the county have not identified significant new sources. This and the uncertainty of processing water right applications, surface/ground water continuity issues, as well as Endangered Species Act (ESA) issues, cause considerable concern about the feasibility of groundwater development plans even if significant resources are found.

7. It will be the responsibility of Kitsap County Public Utility District (KPUD) to work closely with the utilities and other government agencies to encourage resource development to obtain adequate water supplies and water rights throughout the county. The Coordinated Water System Plan tiered approach starts with: (Tier 1) lower cost options with greater ease of implementation such as local development of new groundwater sources, (Tier 2) continued application of effective water conservation and water system efficiency measures, (Tier 3) interties between adjacent utilities, (Tier 4) followed by more expensive and complex activities that may be required to address long-term needs such as interties between adjacent utilities requiring substantial adjustments, (Tier 5) regional source, storage, and transmission network, (Tier 6) reuse, and (Tier 7) desalination. Because of cost, desalination is an unlikely option at this time.

8. These programs are being included in the preparation or update of individual water system plans. Kitsap County Public Utility District is assigned lead responsibility for coordinating implementation of a regional program. In projecting future water supply, the Coordinated Water System Plan assumed a 1 percent reduction in water supply requirements due to conservation for 2001 through 2010. Reductions beyond 2010 were not included based on the assumption that the majority of the conservation gains, using current technology, will likely be realized by that time.

also require expensive retrofitting and expansion to accommodate additional demand. In contrast, a small population center in an isolated area with a single supply and no economical transmission corridor or source could have fewer options to meet increased demand, and could face considerable expense to accommodate growth due to longer pipeline lengths or the development of new supplies needed to connect more dispersed land development patterns.

Regardless of which growth alternative is considered, there will be impacts on meeting future demand in the region including:

- The challenges associated with identifying truly new sources and/or obtaining water rights to meet future demands at a regional level.
- The impact of climate change on future demand for water in the region. Research conducted at the University of Washington forecasts an increase in regional temperature by 2020 of 1.5° Centigrade (2.7° Fahrenheit) and by 2040 of 2.3° Centigrade (4.1° Fahrenheit) over the average annual temperatures in 2000 (Mote, 2003). These increases are significant since they are almost double those previously forecast for the region in the last 100 years. However, at this time, it is uncertain how these changes will affect the future demand for water in the region since the predictions do not agree on whether this will result in an increase or decrease in precipitation or change the seasonal timing and form (e.g., snow to rain) of precipitation.
- A need to develop and implement a sustainable water resource program that considers both the needs of people and fish. While the need to balance both of these is recognized, there is still a lack of complete data on the needs of fish for most of the region. It is uncertain when those data will be available and how they will impact the supply/demand forecasts.
- A need for a collaborative water resources management process at the regional level rather than individual utilities developing their own plans at just the local level. Through such a program, larger issues such as climate change effects, watershed management, and aquifer recharge can be better integrated into supply planning.
- Challenges associated with meeting future water demand in the more isolated, rural, and unincorporated areas.
- More stringent water quality compliance standards may make it more difficult to use reclaimed water in the future.
- Supply limitations can substantially impact the costs and the amount of infrastructure need for individual jurisdictions.

Analysis of Each Alternative

- **Preferred Growth Alternative.** Regardless of which growth alternative is considered, additional supply and/or reduced demand (e.g., conservation) will be needed to meet projected demand throughout the region by 2020 (if not before for some areas) and through 2040. In addition, the growth alternatives will need varying degrees of distribution and water movement across service areas to meet future demand in some locations. The Preferred Growth Alternative shifts growth from the small cities, unincorporated urban and rural areas (that have fewer potential supply options) to metropolitan, core, and larger cities (that have greater options). Areas where the greatest increases occur as compared to current plans (Growth Targets Extended) are in the 5 metropolitan cities (an additional 88,000 in population but 34,000 less in employment growth), in the 14 core cities (an additional 77,000 population and 5,000 in employment), and 13 larger cities (and additional 29,000 population and 31,000 employment). The other regional geographies all have less growth than under Growth Targets Extended, and therefore it can be assumed that future regional demand for municipal water for these geographies could be within the range of demand predicted under existing water system plans; however, additional planning will need to be conducted even for these areas given the 2040 planning horizon which may go beyond some service providers’ planning horizons.

With growth focused in the metropolitan and core cities (and to a lesser extent to larger cities) under the Preferred Growth Alternative, it could be even more imperative that current plans for additional transmission lines and larger pipes feeding these locations be implemented to reduce the severity of impacts on water supply shortfalls. Without the ability to offset increasing demand through reuse and/or conservation, it is possible that planned system improvements could need to be updated to increase their capacity to meet future supply under this alternative.
• **Growth Targets Extended Alternative.** For the purposes of this Final Environmental Impact Statement, it is assumed that overall future regional demand for municipal water under Growth Targets Extended could be equivalent to demand predicted under existing water system plans. However, the 2040 planning horizon goes beyond many of the service providers’ planning horizons, which means that some have not yet begun to address needs in these later years; this will cause some to have to revisit their existing plans given the additional pressure from the new growth. (See previous discussion under the heading “Regional Future Municipal Water Demand” that begins this subsection.) For Kitsap County, under this alternative, there could be concern over proliferation of shallow wells associated with Group B systems (discussed in section 5.7.1.3 above) and the possible impact on stream flows as well as with the difficulty of managing such a dispersed group of small water systems.

• **Metropolitan Cities Alternative.** With growth focused in the metropolitan and core cities under the Metropolitan Cities Alternative, it could be even more imperative that current plans for additional transmission lines and larger pipes feeding these locations be implemented to reduce the severity of impacts on water supply shortfalls. Without the ability to offset increasing demand through reuse and/or conservation, it is possible that planned system improvements could need to be updated to increase their capacity to meet future supply under this alternative.

  — **King County.** With population increases in urban King County, particularly in Seattle and Bellevue, it is possible that proposed supply improvements as currently planned might not meet future demands without modification. These modifications might include additional transmission lines or larger pipes to accommodate increased demand, as well as increased use of reclaimed water to decrease demand for potable water. For example, while King County’s wastewater treatment plant currently supplies reclaimed water to Tukwila, it may be feasible to increase the treatment capacity of the plant and to add additional transmission lines so that this facility can supply reclaimed water to additional areas. Bellevue, Renton, Kent, and Covington are possible areas to consider since future growth could be focused in these areas in this alternative, and it is possible that transmission lines could be located cost effectively. However, it should be noted that even if these options were feasible, there could be an additional impact associated with the underground placement of the pipelines in such an urban environment.

  — **Kitsap County.** For Kitsap County, it is anticipated that the Metropolitan Cities Alternative could have less of an impact on future water demand than in King, Pierce, or Snohomish counties because overall population and employment growth is lower. Furthermore, with growth focused in Bremerton and Silverdale, it is possible that this might alleviate concerns over the potential increase in the number of shallow wells outside the urban growth area in the county.

  — **Pierce County.** Like Snohomish County, it is possible that the impacts of the Metropolitan Cities Alternative on the future demand for water could be less severe in Pierce County than in King County. This is especially true given completion of the Tacoma Second Supply Pipeline.

  — **Snohomish County.** Overall, it is possible that the impacts of the Metropolitan Cities Alternative in Snohomish County could be less severe than in King County. Under the Metropolitan Cities Alternative, Everett, Bothell and Lynnwood would experience significant demand for new water supply in Snohomish County. Currently, the Spada Reservoir on the Sultan River meets Everett’s demand. However, without development of possible future supply options such as the Weyerhaeuser Water Right or the French Creek Aquifer Storage and Recovery project, future demand in these metropolitan areas of Snohomish County might not be met. Overall county growth, however, is the lowest in this alternative, offering a possibility of the reallocation of planned water supplies within the county. Accordingly, local impacts of this alternative could be fewer than the impacts under Growth Targets Extended — due to the possible expense of reallocation of planned water supplies.

• **Larger Cities Alternative.** Since the change in population for larger cities under the Larger Cities Alternative is notably higher than under Growth Targets Extended, it is likely that future demand for water under this alternative might not be met in many locations throughout the region based on current water system plans. In comparison to the Metropolitan Cities Alternative, estimated growth in the unincorporated urban growth areas for King, Kitsap, Pierce, and Snohomish counties is almost double under the Larger Cities Alternative. As a result, the increased use of reclaimed water is probably less feasible in these areas because treatment plants are generally located farther away and the installation of reuse transmission becomes less economical. Under such circumstances, the installation of additional interties between adjacent service areas and a continuation of existing conservation plans may be the most cost effective approaches.

  — **King County.** With the estimated population increase in King County, it is possible that the proposed supply options as planned may not meet future demands without modification. As described for the Metropolitan Cities Alternative, these modifications might include additional transmission lines or larger pipes to accommodate the allocated future growth patterns. However, in contrast to the Metropolitan Cities Alternative, there could be fewer options available for the use of reclaimed water to offset demand. Thus, it is possible that in King County, this alternative could have a greater impact than either Growth Targets Extended or the Metropolitan Cities Alternative. Furthermore, without the development of additional system interties than are planned for under Growth Targets Extended, the impacts of this alternative on the larger cities in King County could be even greater.

  — **Kitsap County.** While overall growth in Kitsap County in this alternative is less than that under Growth Targets Extended, the lower growth allocated in rural areas may alleviate concerns over the installation of shallow wells and the
impacts this might have on stream flow. Furthermore, since the difference in population increase between the Larger Cities Alternative and Growth Targets Extended is not as large as in King, Pierce, and Snohomish counties, the impacts of this alternative on future water supply in Kitsap County could be less than the impacts in King, Pierce, and Snohomish counties.

— **Pierce County.** Under the Larger Cities Alternative, the greatest impact on future water demand could be experienced in core cities and larger cities. Pierce County has only three such cities (Lakewood, Puyallup and University Place). With lower growth in Tacoma, it is possible that increased demand in core and larger cities might be addressed with the diversion of water supplies planned for Tacoma under Growth Targets Extended.

— **Snohomish County.** Since growth in a number of the county’s larger cities is greater than that allocated under Growth Targets Extended, it is possible that these cities could experience shortfalls in water supply in 2040. Overall county growth, however, is the second lowest in this alternative, offering a possibility of the reallocation of planned water supplies within the county. Accordingly, local impacts of this alternative could be greater than the impacts under Growth Targets Extended — due to the possible expense of reallocation — and similar to the impacts under the Metropolitan Cities Alternative.

**Smaller Cities Alternative.** As described in section 5.7.2.3 above, while current water supply plans address meeting future demand in many urban growth areas through additional transmission lines, larger pipes, interlocal agreements, and conservation programs already underway, shortfalls in a number of cities and towns could occur if new supplies cannot be found and/or demand cannot be reduced by implementation of conservation and/or water reuse. Furthermore, shortfalls could be more severe in smaller cities and towns and outside contiguous urban growth areas since serving these areas with additional transmission lines might be less feasible due to the need to traverse long distances through rural areas, and distance from larger treatment plants through which the reuse of reclaimed water might be an option to serve increased local demand. The large amount of growth in small cities and unincorporated urban growth areas could place additional strains on existing systems, for which water purveyors are not currently planning. Since most of the smaller cities would experience a percentage change in population that would be much greater than that allocated under Growth Targets Extended, current water system plans do not consider how future water demands in these areas are going to be met. It is possible that growth under the Smaller Cities Alternative could have the greatest widespread impact on current plans for future water supply in 2040.

— **King County.** While overall growth in King County is less under the Smaller Cities Alternative as it is under Growth Targets Extended, impacts could possibly be greater since this growth would occur in smaller cities. For localities within the urban growth area, it is possible that future supply could be met with fewer additional transmission lines and interties. For those urban islands outside the contiguous urban growth area, the cost of additional transmission lines could become prohibitive. For these locations, there might need to be greater emphasis on the use of groundwater, storage, or conservation measures such as the collection of roof runoff or increased use of “gray” water for irrigation. These approaches might be considered on a case-by-case basis depending upon feasibility and cost at the local level. Given the long lead-time required to plan for such facilities and secure water rights and permits, such constraints might prove to be a hindrance to allocated population growth in these areas. Furthermore, one consequence of an increased reliance on groundwater could be a need for increased protection of aquifer recharge areas through local land-use policies (e.g., open space acquisition, zoning, and proposed sensitive areas ordinances), which itself may conflict with plans for increased growth in these areas.

— **Kitsap County.** Future growth of smaller cities will be of particular concern for Kitsap County since, regardless of the alternative considered, future water supply will have to be met largely from groundwater sources given the absence of large rivers for surface water supply. Growth in smaller cities raises the potential for an increase in the number of shallow wells outside the urban growth area in the county. Furthermore, the Kitsap County Coordinated Water System Plan suggests that a few new wells located in the southern part of the county have not yet identified any significant new sources.

— **Pierce County.** In Pierce County, the impacts of the Smaller Cities Alternative on future water supply could also be greater than Growth Targets Extended, given the number and location of small cities throughout the county. Furthermore, since overall growth in Pierce County under the Smaller Cities Alternative would be greater than that under Growth Targets Extended, the impacts could be even greater than those in King County. The large amount of growth might require the formation of an alliance in Pierce County such as the Cascade Water Alliance (in King County) to make planning for future water supply more organized and effective.

— **Snohomish County.** Similar to King County, overall growth under the Smaller Cities Alternative would be greater to that under Growth Targets Extended. However, since this growth may occur at a much greater rate in the county’s smaller cities than under Growth Targets Extended, it is possible that current planned supplies may not meet demand in these areas.
Comparison of Alternatives

Assuming that growth under Growth Targets Extended is similar to that used in water system plans currently developed in King, Pierce, Snohomish, and Kitsap counties, it is estimated that the impacts on water supply planning under the Growth Targets Extended Alternative will be lower than the Metropolitan Cities, Larger Cities, and Smaller Cities alternatives. The Preferred Growth Alternative is similar but more focused to current plans (Growth Targets Extended), and is therefore likely to be similar to current water system plans, which should lessen impacts by shifting growth to geographies with greater options for accommodating the increased supply. In contrast, since the change in population under the Smaller Cities Alternative for smaller cities is much greater than that under Growth Targets Extended, the Smaller Cities Alternative might have the greatest impact on future water supply in the region. The Metropolitan Cities Alternative could have a greater impact than Growth Targets Extended, but less of an impact than the Larger Cities and Smaller Cities alternatives because of the feasibility of increasing the capacity of supply systems currently planned, increased use of reclaimed water, and implementation of water conservation plans to decrease demand. The Larger Cities Alternative may have a greater impact than the Metropolitan Cities or Preferred Growth Alternatives, but less of an impact than the Smaller Cities Alternative.

5.7.2.4 IMPACTS TO FIRE PROTECTION AND POLICE SERVICES

Impacts Common to All Alternatives

Additional fire and police services could be needed throughout the region, with existing facilities and staff levels potentially needing to be expanded and new stations or response centers built in some areas. In areas with higher densities, the nature of police and fire services could change as more high-rise developments emerge. For instance, police services could change from vehicular patrols to foot or bicycle patrols. Levies, passed by voters at the city level, provide funding to pay for new facilities, increased staffing, and expansion and renovation of existing facilities.

The need for justice facilities, including courts and jails, could be expected to increase under all alternatives. Few differences in impacts among alternatives could be expected, although with the most dispersed growth patterns (the Smaller Cities Alternative), the possible increased demand for courts and jails more widely distributed around the region may represent a shift from existing plans. Historically, most facilities of this type have been provided on a shared regional basis or in cooperation with other municipalities.

Analysis of Each Alternative

- **Preferred Growth Alternative.** The Preferred Growth Alternative, which encourages growth in metropolitan and core cities, as well as in unincorporated urban growth areas, could require new and renovated neighborhood fire and police stations to provide additional service capacity. Such efforts are already underway in cities such as Seattle, which passed the Fire and Facilities Emergency Response Levy in November 2003. The Preferred Growth Alternative has a lessened impact on small cities, unincorporated urban and rural areas than under current plans (Growth Targets Extended) to expand their current levels of staffing and infrastructure. Small cities in rural areas could potentially continue to utilize part time staff and could continue to coordinate with neighboring cities to provide fire and police services.

- **Growth Targets Extended.** Alternatives that encourage more dispersed growth patterns, such as the Growth Targets Extended and the Smaller Cities alternatives, could increase the need for new staff, stations, and facilities in the lower density and rural areas of the region. Response times could possibly increase due to the longer distances to travel within service areas. Kitsap and Snohomish counties could experience the greatest impact to fire and police services because these counties contain larger numbers of small, low-density towns and rural areas. Impacts in King County could be both in its major cities and along the fringe of the urban growth area. Impacts in Pierce County could be particularly significant in unincorporated urban growth areas.

- **Metropolitan Cities Alternative.** The Metropolitan Cities Alternative, which encourages growth in metropolitan and core cities, could require new and renovated neighborhood fire and police stations to provide additional service capacity. The Metropolitan Cities Alternative has the lowest impact on smaller cities to expand their current levels of staffing and infrastructure. Small cities in rural areas could continue to utilize part time staff and could continue to coordinate with neighboring cities to provide fire and police services.

- **Larger Cities Alternative.** Impacts possible under the Larger Cities Alternative are somewhat similar to those described for the Metropolitan Cities Alternative, and to a lesser extent the Preferred Growth Alternative. Greater numbers of the region’s larger cities could require new facilities under this alternative in order to accommodate an influx of new people and businesses.
• **Smaller Cities Alternative.** The impacts associated under the Smaller Cities Alternative may be similar to those described under the Growth Targets Extended Alternative. New facilities and staff levels may be required under this alternative in communities on the urban edge and beyond.

### 5.7.2.5 IMPACTS TO HEALTH AND EMERGENCY MEDICAL SERVICES

**Impacts Common to All Alternatives**

Population density and proximity to the larger cities are the primary factors when discussing impacts to and the need for more health care facilities. Because of this, demand for new facilities will vary by area, but overall regional needs for expanded health care facilities will be similar for all alternatives.

Recent trends of consolidation to minimize cost increases in the health care industry will likely continue in the future due to continued technology advances and increased specialization. As a result, it could become increasingly less cost effective to provide high levels of specialized health care services in less dense small cities and rural areas of the region. Recent research and studies have also linked lower density development with rising obesity levels and health care costs per capita due to development patterns that offer fewer opportunities for physical exercise.

**Analysis of Each Alternative**

- **Preferred Growth Alternative.** The Preferred Growth Alternative concentrates a higher portion of new growth in already highly dense areas such as metropolitan cities and core cities than concentrated under current plans (Growth Targets Extended). In the denser areas, existing facilities, and service types and techniques, may need to be expanded, and new stations or response centers could need to be constructed in some areas in order to meet increased demand under this alternative. Conversely, fewer facilities and staff will likely be needed in the outlying areas of the region as compared to Growth Targets Extended.

- **Growth Targets Extended Alternative.** Growth Targets Extended (along with the Smaller Cities Alternative), which has higher levels of dispersed growth, could possibly require the construction of new health care facilities since many residents might not be within a reasonable distance of existing health care facilities. Emergency service response times and response needs could be affected by different distributions of population and employment in the region. Impacts may be mostly experienced in smaller cities and rural areas, while metropolitan and larger cities could experience impacts to a lesser degree because hospitals and health care facilities are already in place.

- **Metropolitan Cities Alternative.** The Metropolitan Cities Alternative concentrates a large portion of new growth in already highly dense areas such as metropolitan cities. In order to meet increased demand under this alternative, existing facilities and staff levels may need to be expanded, and new stations or response centers could need to be constructed in some areas.

- **Larger Cities Alternative.** The impacts expected under the Larger Cities Alternative could be similar to those expected under the Metropolitan Cities and the Preferred Growth Alternatives. Growth is slightly more dispersed under this alternative, but demand may increase most dramatically in metropolitan, core and large cities, and less in smaller cities and rural areas. New facilities and increased staff levels may be necessary to accommodate the growing demand in core and larger cities.

- **Smaller Cities Alternative.** The impacts expected under the Smaller Cities Alternative could be similar to those expected under Growth Targets Extended. Construction of new facilities and increases in staff levels could be required under this alternative in smaller cities and rural areas. Current staffing levels may not meet the increased demand expected in rural areas and small towns under this alternative, as they may be able to under the Metropolitan Cities and Larger Cities alternatives.

### 5.7.2.6 IMPACTS TO SCHOOLS

**Impacts Common to All Alternatives**

The need for new, expanded, or remodeled schools may increase for all counties under all alternatives. The location of new or expanded schools could vary by alternative, but the overall magnitude of the need could be similar. Transportation costs may be increased in areas where growth is more widely distributed.
Analysis of Each Alternative

- **Preferred Growth Alternative.** The Preferred Growth Alternative would encourage most new growth to concentrate in metropolitan and core cities, and to a lesser extent the unincorporated urban areas (although in this geography at levels lower than under Growth Targets Extended). Enhancements and expansion of existing educational facilities and construction of new education facilities in metropolitan cities, core cities, and unincorporated urban growth areas could be necessary under this alternative. School transportation costs for this alternative could be lower than with the Growth Targets Extended or the Smaller Cities alternatives. Overall costs per capita for public education could also be lower. Given that the Preferred Growth Alternative improves the jobs-housing balance at the regional geography level as compared to Growth Targets Extended, there is the possibility that a greater number of people may live within a reasonable distance of existing educational facilities, perhaps improving transportation choices for commuting to educational facilities.

- **Growth Targets Extended Alternative.** Under the Growth Targets Extended (as well the Smaller Cities Alternative), a greater number of people may not live within a reasonable distance of existing educational facilities, perhaps requiring the construction of new educational facilities. School transportation costs may also be higher due to a larger number of students regionwide that could require transportation services. Some studies have found that overall capital costs for infrastructure to serve new development, including schools, could be as much as two to three times higher for lower density development patterns than for higher ones.10

- **Metropolitan Cities Alternative.** The Metropolitan Cities Alternative would encourage most new growth to concentrate in metropolitan and core cities. Enhancements and expansion of existing educational facilities and construction of new education facilities in metropolitan cities could be necessary under this alternative. School transportation costs for this alternative could be lower than with the Growth Targets Extended or the Smaller Cities alternatives. Overall costs per capita for public education could also be lower. Kitsap and Snohomish counties could experience the least overall amount of growth under this alternative compared to the other alternatives. Expansion of existing facilities and construction of new facilities could still be necessary under this alternative, but the demand to construct new facilities could be less under the Metropolitan Cities Alternative for those two counties.

- **Larger Cities Alternative.** The impacts expected under the Larger Cities Alternative may be similar to the impacts expected under the Metropolitan Cities and the Preferred Growth Alternatives. Core and large cities would experience the majority of growth under the Larger Cities Alternative, and may therefore need to construct new education facilities or expand and renovate existing facilities more so than smaller cities and rural areas. Due to higher population and employment growth levels in King and Pierce counties, their school districts may be most impacted by the Larger Cities Alternative. Lower population and employment growth in Snohomish and Kitsap counties could result in fewer impacts to school districts than described under Growth Targets Extended. School transportation costs for this alternative could be lower than with the Growth Targets Extended or the Smaller Cities alternatives, due to the possibility that a larger number of students may be within convenient walking or public transit distance of school facilities.

- **Smaller Cities Alternative.** The impacts expected under the Smaller Cities Alternative might be similar to those described under the Growth Targets Extended Alternative. Smaller cities and rural areas could experience significant population and employment growth, and school districts in these areas could be most impacted. Construction of new facilities and expansion of existing facilities could be required in smaller cities in order to meet increased demand.

School transportation costs in the Smaller Cities Alternative could be higher due to the greater distances required to transport students to school facilities. Possible cost increases associated with the Growth Targets Extended or the Smaller Cities alternatives compared to the Metropolitan Cities, Preferred Growth, and Larger Cities alternatives are dependent on many area specific factors; however, some studies have found that overall capital costs for infrastructure to serve new development, including schools, could be as much as two to three times higher for lower density development patterns. Similar to Growth Targets Extended, Kitsap and Snohomish counties could experience large increases in population and employment, which could require additional capital and operating expenditures for local schools. Conversely, King and Pierce counties could experience less growth, with fewer associated school expenditures.

### 5.7.3 Cumulative Effects

All alternatives address increased population and employment growth in the region, but vary geographically in density and distribution of growth. For all types of public services and utilities, increased growth would likely increase demand for public services. There could be relatively few other actions that would occur that result in additional demand for public services, as considered at the regional level. Overall, the regional consequences could be similar, with the primary impact being that public service and utility providers could need to expand their services and facilities to meet the needs of growth, which could increase

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public costs and impact environmental resources. The alternatives shift the changes geographically, with some requiring more new infrastructure and others requiring more retrofits, but increased growth occurs with all alternatives and in all communities. Major disasters, including earthquakes, explosions, fires, and other events can also affect the levels of emergency services needed, and can impact the delivery of services.

**Solid Waste.** Expansion of recycling programs to capture a larger percentage of solid waste generated may be more cost effective in dense urban areas due to economies of scale. Solid waste transportation costs per capita in less dense rural areas may be higher.

**Sewer.** The Growth Targets Extended and Smaller Suburban Cities alternatives could rely more on septic systems to serve new development occurring outside the urban growth area. Additional measures could be needed to address the related environmental concerns and possible impacts of adding to the number of septic systems already in the region.

**Water Supply.** Water supply could be affected in some watersheds by water withdrawals or diversions upstream, or by increased protections for endangered species, such as salmon. In addition, the impact of climate change-related temperature increases is significant since this amounts to almost double the previously forecast increases for the region in the last 100 years (see Chapter 2 – Regional Environmental Baseline for more information on climate change and regional temperature). However, at this time, it is uncertain how these changes will affect precipitation and seasonal snow-pack in the region. Similarly, the amounts of impervious surface coverage can affect groundwater recharge rates, and these in turn can limit water supply for areas using groundwater sources.

**Fire and Police.** Most districts that currently rely on volunteer or part-time public safety services may need to consider expanding their service provision to include more full-time professionals.

**Hospital and Emergency Medical Services.** The impacts to these services could remain commensurate with the population increases under all alternatives.

**Schools.** School districts with service areas that are bisected by the urban growth area boundary may have increased pressure to expand new services. Attention is needed to ensure that services provided for urban populations in such situations are located inside the urban growth area.

### 5.7.4 Potential Mitigation Measures

Most of the public services and utilities impacts (increased demand for services and facilities) could be addressed through improvements and upgrades at levels sufficient to meet the needs of growth. Variables would include cost, efficiency, and the potential that, at the project level, environmental consequences may shape the choices made by individual service providers. Mitigation during subsequent planning actions will be required, although some conservation and demand reduction measures could reduce the demand for services and affect the level of necessary mitigation. For all types of public services, effective emergency and disaster planning programs are needed to help reduce impacts from regional events such as earthquakes, explosions or other events.

In many areas, incentive programs to increase the utilization of innovative/alternative technologies and conservation practices can also be used to reduce demand, increase the effectiveness of supply, and further preserve resources.

**Solid Waste.** For solid waste, impacts could be reduced through conservation measures to reduce waste and increase the rates of recycling, consistent with goal in all of the four counties’ comprehensive plans. Increased emphasis on use of recycled products, recycling of construction waste, and reductions in non-recyclable packaging could all help to reduce the amount of solid waste generated.

**Sewer.** Continued implementation of planned and programmed improvements to sewer and wastewater facilities could be needed, and address most impacts. Federal, state, and local regulations also provide for the protection of public health by placing strict regulations regarding the handling of sewage/wastewater. Implementation of measures to conserve water could also benefit wastewater utility providers by reducing wastewater generation. Measures could include improving collection systems to reduce the amount of rainwater and groundwater that infiltrates the pipes, which then increases capacity at treatment plants, could reduce the need for expanded treatment facilities.

**Water Supply.** Most water utility providers could potentially meet increased demand by expanding systems and seeking services for supply through strategies such as:

- Conventional supply options
- Additional conservation
• Reuse options (reclaimed water)
• Stormwater options\textsuperscript{11}
• Extraction of water from new ground or surface water sources
• Extraction of additional water from existing ground or surface sources
• Storage and release when needed
• Interties and sharing supplies\textsuperscript{12}

In some instances, adding new transmission lines is all that may be needed to meet the needs for some utilities.\textsuperscript{13}

Given the level of uncertainty for water supply that is related to climate change, other environmental protections (such as the Endangered Species Act) and other factors, additional regional and localized study of water availability and demand may be needed. These measures can help individual jurisdictions better determine the long-term actions that need to be taken to meet demand.

Fire, Police, Hospitals and Emergency Medical Services. The demand for public safety and other public services, including hospitals, educational facilities and courts correlates to growth. Interlocal agreements, which provide for mutual response, the sharing of facilities and/or joint service provision, could mitigate cost impacts for smaller jurisdictions.

Schools. Impacts to schools could be lessened through careful examination of resources and whether they are being allocated in the best possible manner. Additional measures could include reassessment of current school district boundaries.

5.7.5 Significant Unavoidable Adverse Impacts

All of the alternatives are likely to impact specific public services and facilities, in specific areas, in a manner that is not currently being planned for by providers. Other institutional issues may exist as well. The following is a list of institutional constraints to implementation of future water supply options that may apply to other services as well. Examples of these include:

• Lack of clear regional policies and decision-making structure.
• Lack of knowledge and documentation on existing resources (now or in the future).
• Impact of the Endangered Species Act.
• Balancing available information and risk in decision-making.
• Uncertainty of and disincentives to sharing supplies.
• Intertie limitations.
• Continuity of systems.
• Uncertainty of rights to existing services.
• Lack of distribution systems and plans for new conservation options. And, the need for reuse options to receive more complete evaluation and incorporation into existing plans.

\textsuperscript{11} To become a viable source of water supply, stormwater management would need to include storage in impoundments or aquifers. Local governments may have to do this to meet Endangered Species Act requirements to minimize habitat alteration. For stormwater to be used on a large scale, these storage facilities would need to be built into water supply planning.

\textsuperscript{12} For example, under a water supply agreement between Cascade and Seattle Public Utilities, the latter is obliged to provide potable water, and Cascade is obliged to buy it, through December 2053.

\textsuperscript{13} For example, in 2003, Cascade signed an “Agreement in Principle” with Tacoma Public Utilities for the potential purchase of water from the Tacoma Second Supply Pipeline, which just recently came online. As a result, Cascade is developing several long-term transmission pipeline alternatives to convey this supply to its members (See Figure 5-7-5). These include proposed pipelines from Tacoma Second Supply Pipeline to Seattle Public Utilities control works and from there, connecting to the existing Bellevue-Issaquah Pipeline. Cascade is also planning a regional storage reservoir with a storage capacity of 20 million gallons that is anticipated to be on line by 2021. Beyond 2023, Cascade anticipates transitioning to Lake Tapps in Pierce County, and other sources, as its supply commitments from Seattle Public Utilities and Tacoma Public Utilities decline.