UTILITIES BACKGROUND REPORT

CHAPTER 6

City of SeaTac
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SeaTac 2035

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INTRODUCTION

The Utilities Background Report provides descriptions of the utilities serving the City of SeaTac. These utilities are not operated by the City, but by private companies (electrical, natural gas, telecommunications, and solid waste) or by separate utility districts (four water districts and four sewer districts).

The general location of the facilities for each of these utility services is found on the maps in this section. Details about the facilities, operations, consumption, and capacities of each type of utility service are available from the individual service providers.

This Background Report describes each utility separately.

In general, the current provision of utility services for current and future demand is not hindered by any serious constraints. Several utilities, including electrical and telecommunication, are required to serve growth as it occurs.

FEDERAL AND STATE LAWS AND REGULATIONS

In large part due to the large investments necessary and economies of scale that are often achieved through the centralized production or distribution of utilities, many utilities are considered "natural monopolies" and are allowed to operate as such. However, because of the lack of a competitive environment, they must comply with various Federal and State laws and regulations. The following section summarizes the major regulatory measures concerning the provision of utilities.

Washington Utilities and Transportation Commission

Many utilities SeaTac are regulated by the Washington Utilities and Transportation Commission (WUTC). The WUTC, composed of three members appointed by the Governor, is empowered to regulate utilities including electric, gas, telecommunications, solid waste carriers, and safety issues affecting limousine services. Some water companies are subject to WUTC regulation; however, this does not apply to SeaTac's water districts. State law (WAC 480-120) regulates rates and charges, services, facilities, and practices of utilities. Any change in customer charges or service provision policy requires WUTC approval. The WUTC requires utility providers to demonstrate that existing ratepayers will not subsidize new customers.

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) is an independent five-member commission with the U.S. Department of Energy. FERC establishes rates and charges for the interstate transportation and sale of natural gas, transmission and sale of electricity, and licensing of hydro-electric power projects. In addition, the Commission establishes rates or charges for the interstate transportation of oil by pipeline.

Natural Gas Policy Act of 1978

The central theme of the National Gas Policy Act (NGPA) is encouragement of competition among fuels and suppliers across the country. As a result, natural gas essentially has been deregulated. The NGPA also contained incentives for developing new natural gas resources and a tiered pricing structure aimed at encouraging the development of nation-wide transmission pipelines.

Northwest Power and Conservation Council

The Northwest Power and Conservation Council (NWPCC) is an eight-member council with two representatives from each of the four northwest states: Washington, Oregon, Idaho, and Montana. The Council focuses on the generation of electricity through hydroelectric dams in the Columbia River Basin. The stated mission of the NWPCC is "to ensure, with public participation, an affordable and reliable energy system while enhancing fish and wildlife in the Columbia River Basin."

1991 Clean Air Amendments

The passage of the Washington State Clean Air Act in 1991 indicates the State's intent to promote the diversification of fuel sources for motor vehicles. This is in response to a need to both reduce atmospheric emissions and to reduce the nation's reliance on gasoline. It also studies the potential and encourages the development of natural gas vehicle refueling stations.

INVENTORY

The inventory presented in this element provides basic information about the utility service providers serving the City of SeaTac. It does not include all of the data or detailed information, but presents the relevant information concerning the general location of existing and proposed utilities. Additional information is available from the individual utilities, or in the comprehensive plans of the various service districts which were the basis for this Plan's analyses.

Many public and private agencies are involved in coordinating the production, delivery, and supply of utility services. This Background Report identifies those providers. The inventory includes:

- Electrical
- Natural Gas
- Telecommunications
- Solid Waste
- Sewer
- Water

This section describes the utilities and the existing conditions of their facilities serving the City of SeaTac.

As required by the GMA, the information collected in the inventory section is presented on maps showing the general location and proposed location of utility facilities. The maps also show the areas to which utility service is provided.

The location, capacity, and timing of these improvements depend greatly on opportunities for expansion and on how quickly the City grows. The respective utility service maps show approximate locations that may not be the exact locations of the eventual improvements. There are usually several possible locations to site improvements. The final locations will depend on right-of-way permitting, environmental impact assessments, costs and the opportunities to install improvements with new development, road improvements, or other utilities. The improvements shown on the maps give an indication of the utility providers' present intent.

This section also includes types of service. Many utilities provide several types or levels of service. Some types of service require different infrastructure. For example, water utilities provide both potable (drinking) water and water to fire hydrants. Although interconnected systems, these different services have different requirements.

Finally, it summarizes coordination to meet demand. As utility service providers are updating their plans, the City provides residential and employment growth forecast estimates to ensure that utilities are planning for the same growth that the City is expecting. This allows the utility providers to develop facility plans to meet the expected future demand.

ELECTRICAL UTILITIES

Puget Sound Energy

Description of Utility

Puget Sound Energy (PSE) is an investor-owned, private utility. It provides electric service to over 1.1 million customers within the company's 6,000 square mile service territory. This territory encompasses nine counties in western and central Washington. Puget Sound Energy is regulated by the Washington Utilities and Transportation Commission (WUTC).

PSE provides electricity generated using a number of different resources. In 2012, **hydroelectric power** accounted for nearly half of its power portfolio. PSE generates electricity with **thermal power** plants, shares ownership of a large coal-fired generating facility in eastern Montana, and owns several natural-gas-fired power plants in the Puget Sound region.

Wind power is a very important and increasingly prominent resource for PSE. They own and operate three large wind farms in Central and Eastern Washington. Those wind farms together produce enough electricity, on average, to power about 230,000 homes. According to the American Wind Energy Association, PSE is the second-largest utility producer of wind power in the United States.

General Location

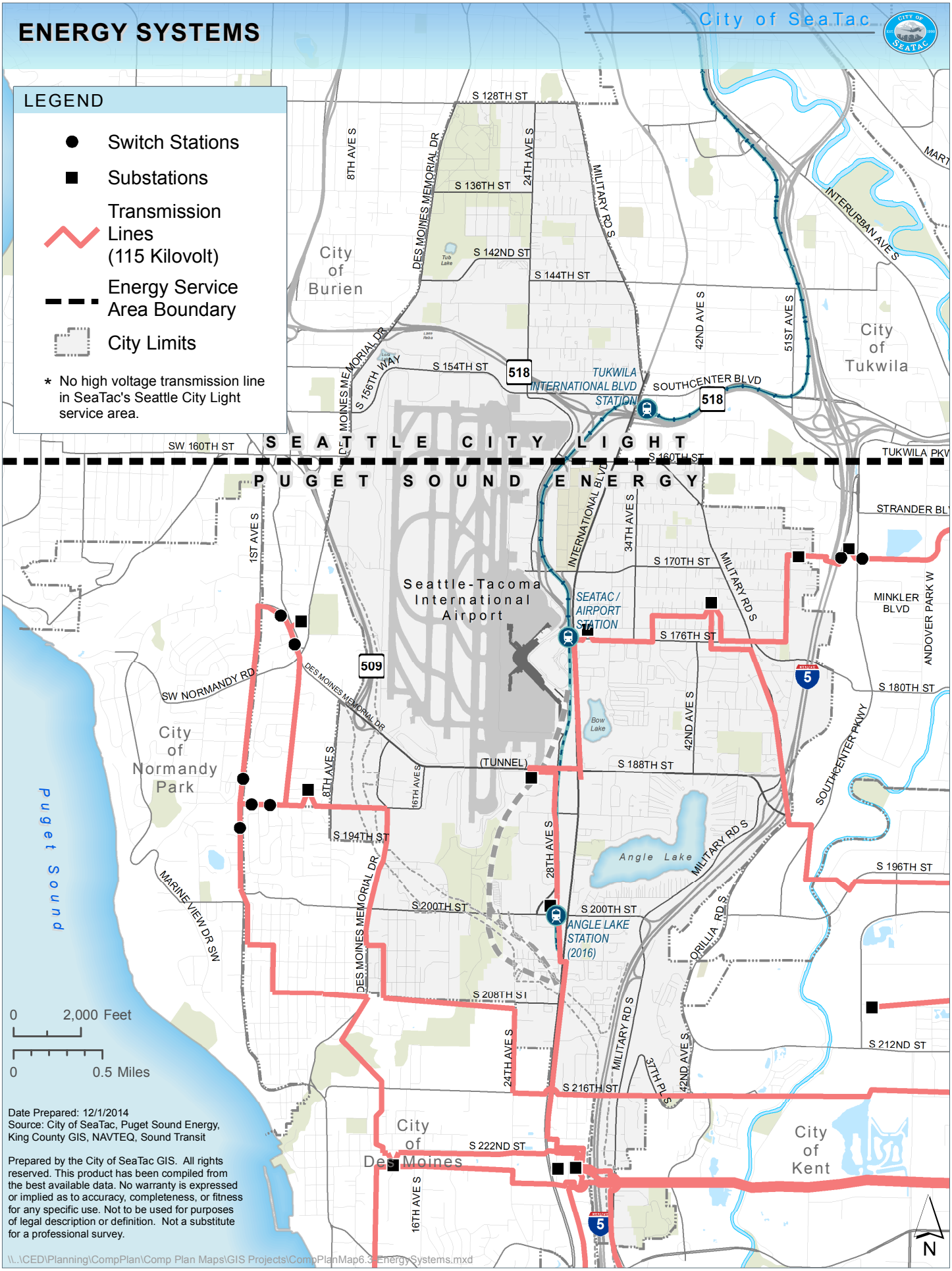
Puget Sound Energy supplies electric service in SeaTac south of S. 160th Street. PSE's electrical distribution facilities serving SeaTac are shown on the Energy Systems map in this section.

Types of Service

Puget Sound Energy offers residential, commercial, and industrial (three-phase) currents.

Coordination with Utility Service Providers to Meet Existing and Future Demand

As utility service providers are updating their plans, the City provides residential and employment growth forecast estimates to ensure that utilities are planning for the same growth that the City is expecting. This allows the utility providers to develop facility plans to meet the expected future demand.



Map BR6.1. Energy Systems

Seattle City Light

Description of Utility

Seattle City Light is the City of Seattle-owned electrical utility. Its total service area covers approximately 131 square miles, including all of Seattle and some portions of incorporated and unincorporated King County to the north and south of Seattle. Seattle City Light is both a retailer and wholesaler of electric power.

Seattle City Light generates 70 percent of the power it sells to retail customers from its own facilities. The largest facilities are the hydro-generating plants of the Skagit Project. Another smaller hydro-generating facility is the Cedar Falls Dam on the Cedar River. Seattle City Light also holds an eight percent interest in the Centralia coal-fired generating plants in southwest Washington, and purchases power from the Bonneville Power Administration (BPA).

Seattle City Light owns and maintains approximately 649 miles of transmission lines which transmit power from the Skagit and Cedar Falls generating facilities to 14 principal substations. Power is distributed from these principal substations via high voltage feeder lines to numerous smaller distribution substations or pole-mounted transformers.

General Location

Seattle City Light serves the area of the City of SeaTac north of S. 160th Street. The areas south of Seattle are served by Seattle City Light's Duwamish Substation. The Duwamish Substation is located along SR 99 south of Boeing Field. Seattle City Light has no transmission lines or substations currently located in the City of SeaTac. The Energy Systems map in this section shows the location of transmission lines, substations and switching stations in the City.

Types of Service

Seattle City Light provides single-phase service in all parts of its service area. Industrial (three-phase) service is available in some areas.

Coordination with Utility Service Providers to Meet Existing and Future Demand

As utility service providers are updating their plans, the City provides residential and employment growth forecast estimates to ensure that utilities are planning for the same growth that the City is expecting. This allows the utility providers to develop facility plans to meet the expected future demand.

NATURAL GAS UTILITY

Puget Sound Energy

Description of Utility

Puget Sound Energy (PSE) is an investor-owned natural gas utility serving more than 770,000 natural gas customers in five Western Washington counties – Snohomish, King, Pierce, Thurston and Lewis. Natural gas, or methane, is a naturally occurring gas resulting from the bacterial digestion of organic material. PSE purchases gas from other regions, and manages the distribution of natural gas to customers within its service area. This involves pressure regulation and the development and maintenance of distribution lines.

Natural gas, along with many other utilities, is regulated by the Washington Utilities and Transportation Commission (WUTC). The Federal Energy Regulatory Commission (FERC) also sets rates and charges for the interstate transportation and sale of natural gas. The Natural Gas Policy Act of 1978 (NGPA) was designed to increase competition among energy sources by encouraging the development of new natural gas resources and the development of nation-wide transmission pipelines.

General Location

Natural gas is currently supplied to most areas within the City through 45 miles of natural gas mains. Gas flows through the system under pressure. This pressure is reduced en route to individual services by a series of regulators which are self-controlled and adjust the supply of gas to compensate for varying load demand. Maintaining a constant pressure at any point in the system is essential to ensure continuous and equal gas service throughout the system.

The gas distribution network can be likened to a tree. Large diameter mains are closest to the supply source, or the trunk of the tree. The diameter of these mains is reduced the farther one moves away from the source, like the branches of a tree.

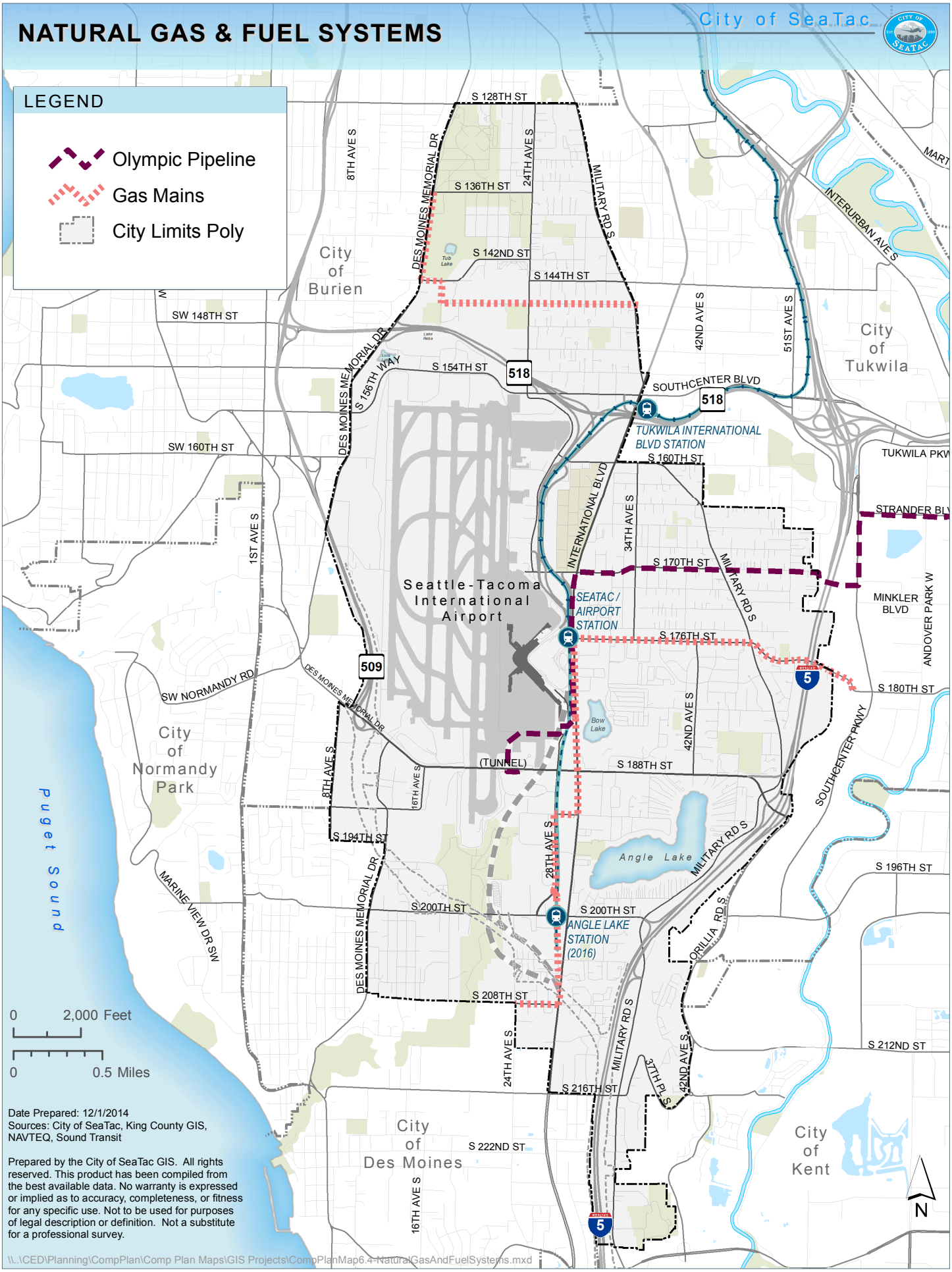
The Natural Gas and Fuel Systems map following this section shows the existing and proposed distribution network of gas mains.

Types of Service

The types of service PSE provides are residential, commercial, and industrial.

Coordination with Utility Service Providers to Meet Existing and Future Demand

As utility service providers are updating their plans, the City provides residential and employment growth forecast estimates to ensure that utilities are planning for the same growth that the City is expecting. This allows the utility providers to develop facility plans to meet the expected future demand.



Map BR6.2. Natural Gas and Fuel Systems

TELECOMMUNICATIONS UTILITIES

CenturyLink Communications

Description of Utility

CenturyLink is a private, for-profit corporation offering telecommunication services to 25 million customers in 14 western states. CenturyLink and its predecessors have provided telephone services in Washington communities for over 100 years, pursuant to State law (RCW Title 80). The Washington Utilities and Transportation Commission (WUTC) regulates the provision of telecommunication services. CenturyLink is also subject to various federal laws and regulations administered by the Federal Communications Commission (FCC).

General Location

Cities in Washington all fall within a particular Local Access and Transportation Area (LATA). A LATA is a telephone exchange area which serves to define the area within which CenturyLink is permitted to transport telecommunications traffic. There are hundreds of Central Offices (COs) that serve CenturyLink customers in Washington. A CO is the facility of a telecommunications common carrier (such as CenturyLink) where calls are switched. For local exchange or intra-LATA calls, the central office switches calls within and between line exchange groupings. These groupings are addressed uniquely by an area code and the first three digits of a phone number. The City of SeaTac is served by two COs: the Cherry CO, located at S. 146th Street and 8th Avenue S. in Burien; and the Des Moines CO, located at 802 S. 223rd Street in Des Moines.

Types of Service

CenturyLink provides local, long distance and wireless telephone service, internet service, and direct television service

Analysis of Existing and Future Demand

Current Number of Customers in SeaTac. Since the COs and the respective exchanges they serve do not correspond with City boundaries, CenturyLink was not able to supply the number of customers served in SeaTac.

Local Capacity. Advances in technology and the use of digital transmission allow CenturyLink to increase the capabilities in CO switches as demand grows. A 10,000 line grouping can be installed by adding circuit packs, line/trunk capacity units, and distribution frame wiring which can be engineered and installed in 12 months.

Future Capacity. WUTC regulations require CenturyLink to provide adequate telecommunications service on demand, and Section 480-120-086 of the Washington Administrative Code (WAC) requires CenturyLink to maintain adequate personnel and equipment to handle any reasonable demand and

traffic. In addition to adding facilities, new technology, such as multiplexing and digital transmission, cellular and fiber optic technologies are allowing dramatic advances in communication.

Limits to Future Capacity. Because CenturyLink provides service on demand, there are no envisioned limits to future capacity.

Proposed Location. Since CenturyLink construction planning and growth is driven by the needs of their customers, facilities are upgraded in response to growth.

Cellular Communications

Description of Utility

The Federal Communications Commission (FCC) has divided geographic areas into regional cellular service areas. The FCC awards licenses to two cellular providers within each regional service area to maintain healthy competition.

One hundred percent of the market area within each service area must be serviced within five years of the FCC awarding the respective license. Apart from this general requirement, the FCC applies no "level of service" standards to cellular activity.

Service from most of the national cellular phone companies is available to SeaTac customers, including Verizon, Sprint, and T-Mobile. Although the cellular industry is regulated by the FCC, it is not subject to the jurisdiction of the Washington State Utilities and Transportation Commission (WUTC), and is not required to develop any formal capital facilities plans for public review.

General Location

To process a call, the signals to and from mobile phones are routed by a series of low-powered transmitting antennas through a central computer called the Mobile Telephone Switching Office (MTSO), which connects the calls to its destination and into the conventional telephone network. The CenturyLink MTSO serving the SeaTac area is located at 6901 W. Marginal Way SW in Seattle.

The transmitting antennas are located at "cell sites" and their coverage area or effective signal radii are known as "cells." These cells connect in a manner similar to a honeycomb, through strategic placement of the antennas, permitting a "handing off" of the signal as a carrier of the phone travels. The network of cells is called a "grid."

Analysis of Existing and Future Demand

Local Capacity. "Capacity" overload and consequent cellular system expansion is a response to several factors: an increase in the number of customers residing within a designated area; a shift in traffic volumes affecting cellular users; or a record of service inadequacies such as dropped calls or poor quality sound.

Future Capacity. When demand warrants, additional capacity is added through the addition of transmission antennas. This has the effect of dividing larger cells into smaller cells. As with many other utilities, cellular system growth follows increases in population density and higher volume transportation corridors.

Limits to Future Capacity. Because of the small size of facilities (transmission antennas) and the fact that they can be located on top of buildings, and do not require utility corridors, there are no significant limits to future capacity.

Proposed Location. The location of antennas is planned according to geographic and engineering constraints.

SOLID WASTE UTILITIES

The State gives cities exclusive authority (Chapter 35.21 RCW) to provide and set rates for solid waste services by using municipal workers, competitively bidding contracts to private companies, or developing interlocal agreements with a county or city to provide services. By State law, the WUTC regulates garbage-collection service in unincorporated areas and cities that choose not to regulate or provide service. The WUTC does not regulate City-provided garbage and recycling collection.

Description of Utility

The City of SeaTac entered into a contract with Recology CleanScapes on June 1, 2014, for comprehensive residential and commercial garbage, recycling, and compostables collection and transport service. This seven year contract replaces the previous contract with Republic Services (SeaTac disposal Company/Rabanco/Allied waste Services). New rates include embedded yard and food (compostables) waste for residential customers and embedded recycling for commercial customers.

Recology CleanScapes is the certified waste hauler for the general curbside collection and transport of refuse and putrescibles, recyclables, and compostables operating within SeaTac's boundaries, as determined by the Comprehensive Garbage, Recyclables, and Yard Debris Collection Contract. This hauler provides for collection at single family, multifamily and commercial business operations, as well as Seattle-Tacoma International Airport.

The City of SeaTac adopted the 2001 King County Comprehensive Solid Waste Management Plan and follows all guidelines of that Plan.

2001 Comprehensive Solid Waste Management Plan

General Location

Service Areas. The entire City of SeaTac is serviced by Recology CleanScapes. Additionally, there are several small operators serving the commercial industry for the recycling of cardboard, aluminum, and other recyclables within the City of SeaTac boundaries.

Distribution System. General refuse and putrescibles are transferred to Bow Lake Transfer Station, located at S. 188th Street and Orillia Road, east of the City of SeaTac boundaries. The material is then transferred to Cedar Hills Landfill located in Maple Valley, Washington. Recology CleanScapes transfers all residential and commercial mixed recyclables to their Material Recovery Facility, located

at 4401 East Marginal Way in Seattle, Washington. Land clearing debris and construction debris are transferred to CDL Recycle, located at 7201 East Marginal Way, or to specific disposal sites as directed by King County.

Types of Service

Recology CleanScapes provides for the collection and transport of refuse and putrescibles, recyclables, compostables, construction debris, and land clearing debris. In addition, Recology CleanScapes also provides for the processing and marketing of commercial and residential mixed recyclables.

System Capacity

Recology CleanScapes is able to increase manpower to accommodate an emergency need; an example is the removal of storm debris to increase "system capacity."

Demand

Current Number of Customers in SeaTac. Recology CleanScapes services approximately 4,013 single family dwellings, 78 multifamily dwellings and 332 commercial properties for general refuse. Approximately 1,593 single family dwellings are not serviced; presumably, these residents haul their refuse to Bow Lake Transfer Station. It is unknown how many of the 790 licensed commercial businesses in the City self haul instead of using the City's contracted hauler service.

Present Utility Use and Forecast Growth Rate. Approximately 1,297 tons of refuse, 192 tons of recyclables, and 133 tons of compostables (residential only) are collected by the hauler in the current scenario per month. The SeaTac Municipal Code, section 7.40.100 mandates multifamily complexes with more than four units subscribe to garbage service. Because the collection of garbage, recyclables, and compostables materials from single family and commercial buildings is based on voluntary participation, there exists a significant opportunity for Recology CleanScapes to increase their customer base.

SEWER UTILITIES

Midway Sewer District

Description of Utility

The Midway Sewer District's entire service area is approximately 10 square miles, including portions of SeaTac Airport.

The sewer district's most recent plan was prepared in 2000 by Pace Engineering Services Company.

General Location

Service Area. The Midway Sewer District is bounded on the north by S. 170th Street, on the east by Interstate 5, on the south by S. 272nd Street and Star Lake Road, and on the west by Puget Sound. Midway serves the areas of SeaTac south of S. 176th Street, including a portion of the SeaTac Airport.

Collection System. The existing collection system consists of approximately 132 miles of interceptor, trunk, and lateral sewer lines ranging from eight to 36 inches in diameter. There are 13 pump stations with associated forces mains, and a nine million gallon per day (mgd) secondary wastewater treatment plant.

Types of Service

The Midway Sewer District provides sanitary sewer service. The SeaTac Airport owns and operates an industrial waste treatment facility, comprised of a system of collection and trunk sewers and an industrial waste treatment plant. Midway Sewer District has an agreement with the Port of Seattle whereby the industrial waste effluent bypasses the District's treatment facility and joins with the District's outfall line where it is transported to the Puget Sound for final disposal.

Existing System Capacity

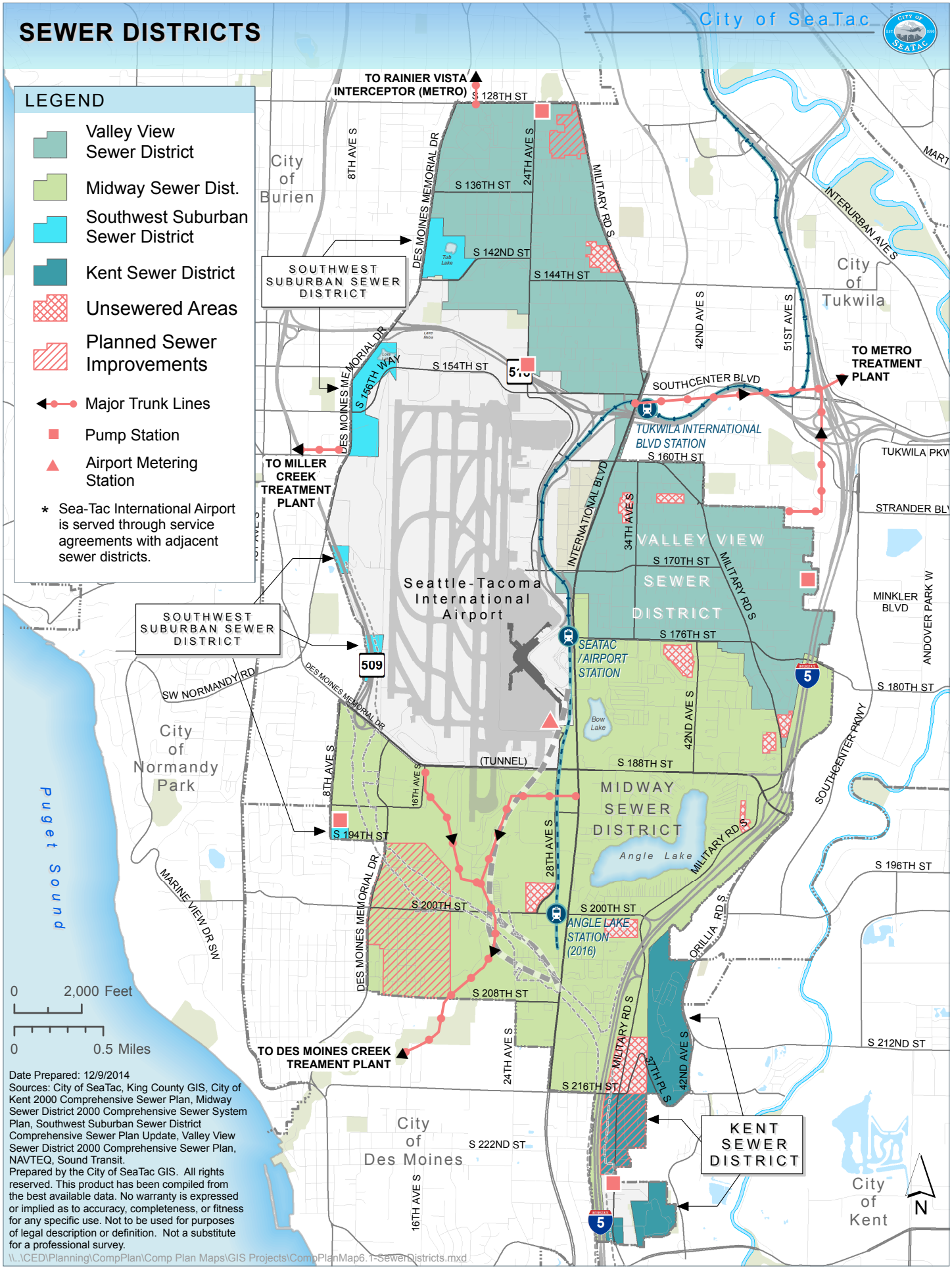
The existing system is currently operating with a nine million gallons per day (mgd) capacity.

Local Capacity

Local capacity is determined by sewer line size and condition. Older lines tend to have higher rates of infiltration, therefore limiting the user capacity. The overall system capacity is not designated to specific areas.

Demand

Current Number of Customers. The Midway Sewer District serves approximately 5,385 residences and 11,239 employees in SeaTac. The District's service area includes portions of McMicken Heights,



Map BR6.3. Sewer Districts

the Angle Lake neighborhood, and all of the City south of the Airport. A few areas are not served by sanitary sewer service, and are illustrated on the Sewer Districts map in this section.

Commercial customers within the Sewer District are billed based on "Residential Equivalent Units" (REU) which are determined from water consumption reports. One REU is equal to a water consumption rate of 750 cubic feet per month.

Coordination with the District to Meet Existing and Future Demand

Midway does not currently have plans to increase the capacity of the existing system. Demand will dictate future system expansions. When the District is updating its Comprehensive System Plan, the City provides residential and employment growth forecast estimates to ensure that we are both planning for the same future growth. This allows the District to develop facility plans to meet the expected future demand.

Southwest Suburban Sewer District

Description of Utility

The Southwest Suburban Sewer District (SWSSD) provides both wastewater collection and treatment services to the area within its corporate boundaries and in adjoining municipalities, special districts, and SeaTac Airport through service agreements. The corporate area encompasses 17 square miles in White Center, Burien, and portions of west SeaTac. The district has been a strictly sanitary wastewater collection system since its inception. There are no combination sanitary sewers/stormwater sewers within the SWSSD.

General Location

Service Area. The portion of SeaTac served by SWSSD is located within the Miller Creek treatment plant service area, which is the larger of the two subareas within the SWSSD. The current service area of the Miller Creek treatment plant encompasses 4,023 acres, only a small portion of which is in SeaTac.

Distribution System. In total, the SWSSD service area includes approximately 571 miles of collector and interceptor sewers. The SWSSD collection and interceptor sewer system includes pipeline with diameter size ranging from four inches to three feet. Most of the system (approximately 315 miles) is eight inch diameter pipe, which is the standard size for sewer collectors serving residential neighborhoods. Trunk and interceptor sewer lines are larger, generally exceeding 15 inches in diameter.

Types of Service

The SWSSD is also one of the few remaining sewer districts within King County to provide wastewater treatment operations. The district has two treatment plants that provide secondary treatment. Bio-solids produced by existing operations at the plant are stabilized through anaerobic digestion and composting. Various means are used to dispose of the treated solids including utilization in land application and selling it to local residents for use as soil conditioner.

Existing System Capacity

The average annual flow capacity of the Miller Creek Plant is approximately 4.3 mgd. Peak flow capacity is estimated at 17 MGD. From 1975 to 1990, average daily flows at Miller Creek ranged between 1.93 MGD and 3.74 MGD.

Local Capacity

The SWSSD Comprehensive Sewerage Plan does not indicate capacity estimates specific to the portion of SeaTac served by the District. Capacity is based on the general capacity of treatment plants.

Demand

Current Number of Customers in SeaTac. There are currently no customers in Southwest Suburban's SeaTac service area.

Present Utility Consumption and Forecast Annual Growth Rate. There are currently no residential users served in SeaTac, since the Port of Seattle purchased all homes within the SeaTac service area. As a result, the City does not expect any future residential development to occur.

Coordination with the District to Meet Existing and Future Demand

When the District is updating its Comprehensive System Plan, the City provides residential and employment growth forecast estimates to ensure that we are both planning for the same future growth. This allows the District to develop facility plans to meet the expected future demand.

KENT SEWER DISTRICT

Description of Utility

The Kent Sewer District's entire service area is approximately 14,800 acres.

The sewer district's most recent plan was prepared in 2000, by the City of Kent Engineering Department.

General Location

Service Area. The Kent Sewer District is bounded on the north by South 180th Street, on the west by Interstate 5, on the south by SE 281st Street, and on the east by 138th and SE 268th Street. Kent Sewer District serves the areas of SeaTac east of Military Road and south of S. 200th Street.

Distribution System. The existing distribution system consists of approximately 212 miles of interceptor and trunk lines ranging from six to 36 inches in diameter. There are nine pump stations operating in the Kent system. King County has assumed the responsibility of intercepting, treating and disposing of wastewater from Kent and neighboring communities.

Types of Service

The Kent Sewer District provides sanitary sewer service. The City of Kent has 133 connection points to King County interceptors. A series of large interceptor lines (12 to 78 inches) intercept flows from the Kent collection system and transport the flows to the major interceptors running north along the Valley floor to King County's secondary wastewater treatment facilities in Renton.

Local Capacity

Local capacity is determined by sewer line size and condition. Older lines tend to have higher rates of infiltration, therefore limiting the user capacity. The overall system capacity is not designated to specific areas.

Demand

Current Number of Customers. Based on information provided by the District, there are approximately 10,342 households currently served within the Kent Sewer District service area.

Future Capacity

According to the District, the existing sewer system is adequate for full build-out. The District does not anticipate increasing capacity of the existing system. However, there are several individual sections of sewer in the southeast service area that need upsizing. The District also plans to work with King County to upsize County trunk mains that are located within the City's service area.

Limits to Future Capacity

Although the Kent Sewer District's system has the capacity to serve the growth forecast by SeaTac, issues of topography, and Kent Sewer District's policy against the use of grinder pumps (for individual properties) and lift stations will make it difficult to provide service to the District's areas in SeaTac that are still not served by sanitary sewers.

Valley View Sewer District

Description of Utility

The Valley View Sewer District was established in 1946 for the purpose of providing sanitary sewer service. In 1996 Valley View expanded, merging with the Rainier Vista Sewer District, which had been established in 1945. This new Valley View Sewer District serves the northern portions of the City of SeaTac, including McMicken Heights, Riverton Heights, and a portion of the SeaTac Airport. This area is a composite of residential communities and a substantial business corridor along International Boulevard from S. 170th Street north to the City limits. It also includes the industrial developments in the vicinity of 24th Avenue S. and S. 146th Street.

The District's most recent comprehensive sewer plan was completed in 2009 by PACE Engineers, Inc.

General Location

The Valley View Sewer District serves the north and northeast portions of the City of SeaTac. The District is generally bounded by the City of Seattle, the Burlington Northern Railroad right-of-way, the Duwamish River, and SR 599 on the north; Interstate 5 on the east; S. 184th Street and S. 176th Street on the south, and SR 509 on the west.

Types of Service

The District provides sanitary sewer service. Valley View maintains interlocal agreements with Metro, City of Tukwila, Midway Sewer District, and Southwest Suburban Sewer District for treatment and disposal of wastewater. Although the majority of sewage from Valley View ultimately flows into the Metro regional collection and treatment system, a small portion is received, treated, and disposed of by Midway Sewer District.

Existing System Capacity

The Valley View system consists of approximately 104 miles of four- to 24-inch gravity and pressure lines, and 19 sewer lift stations. The district transports most of its sewage through Metro's regional collection; however, 150 acres in its service area transports sewage to the Midway Sewer District for treatment. Some parts of the system do not have flow meters installed, so remaining system capacity is not known.

Local Capacity

Valley View estimates that it can accommodate the sewerage flows as projected within the City's current zoning as indicated in their current comprehensive system plan. The District did not identify any issues related to local capacity.

Demand

Number of Customers. The Valley View Sewer District serves approximately 6,618 residential customers and 1,008 commercial customers within its service area. The District serves approximately 4,100 households and 2,051 employees in SeaTac.

The District's Comprehensive System Plan uses Puget Sound Regional Council regional forecast data, and coordinates with the City for locally relevant forecasts of housing units and employment.

Future Capacity

Limits to Future Capacity. Various portions of Riverton Heights and McMicken Heights are not currently served by the District (see the Sewer Districts map); however, most soils found within the district are not suitable for septic system drainage.

Proposed Location. Anticipated improvements will serve to eliminate existing deficiencies and problems in the service area. This entails eliminating failing septic systems, replacing pumps with gravity systems where appropriate, and generally eliminating unacceptable conditions. The Sewer Districts map indicates areas where improvements are planned.

WATER UTILITIES

Introduction

The City of SeaTac is served by four water districts: King County Water Districts No. 20, No. 49, No. 125, and Highline Water District (formerly King County WD No. 75). The Seattle-Tacoma International Airport operates an internal water system. The primary supply point for these districts is the City of Seattle Water System's 60-Inch Cedar River Pipeline No. 4, which enters the City of SeaTac from the east along S. 160th Street. The service areas for the four water districts, including the main intertie points, meters, water storage facilities, and local wells are shown on the Water districts map in this section.

Water distribution within the City is through a network of main and local lines ranging in size from two inches to 18 inches. Detailed maps of the distribution systems are included in each district's comprehensive plan. A description and analysis of each water district follows.

Highline Water District

Description of Utility

The Highline Water District, formerly King County Water District No. 75, serves the eastern and southern portions of the City of SeaTac. The system provides domestic water and fire protection services.

The district's most recent comprehensive water plan was completed in 2002 by Penhallegon Associates Consulting Engineers (PACE).

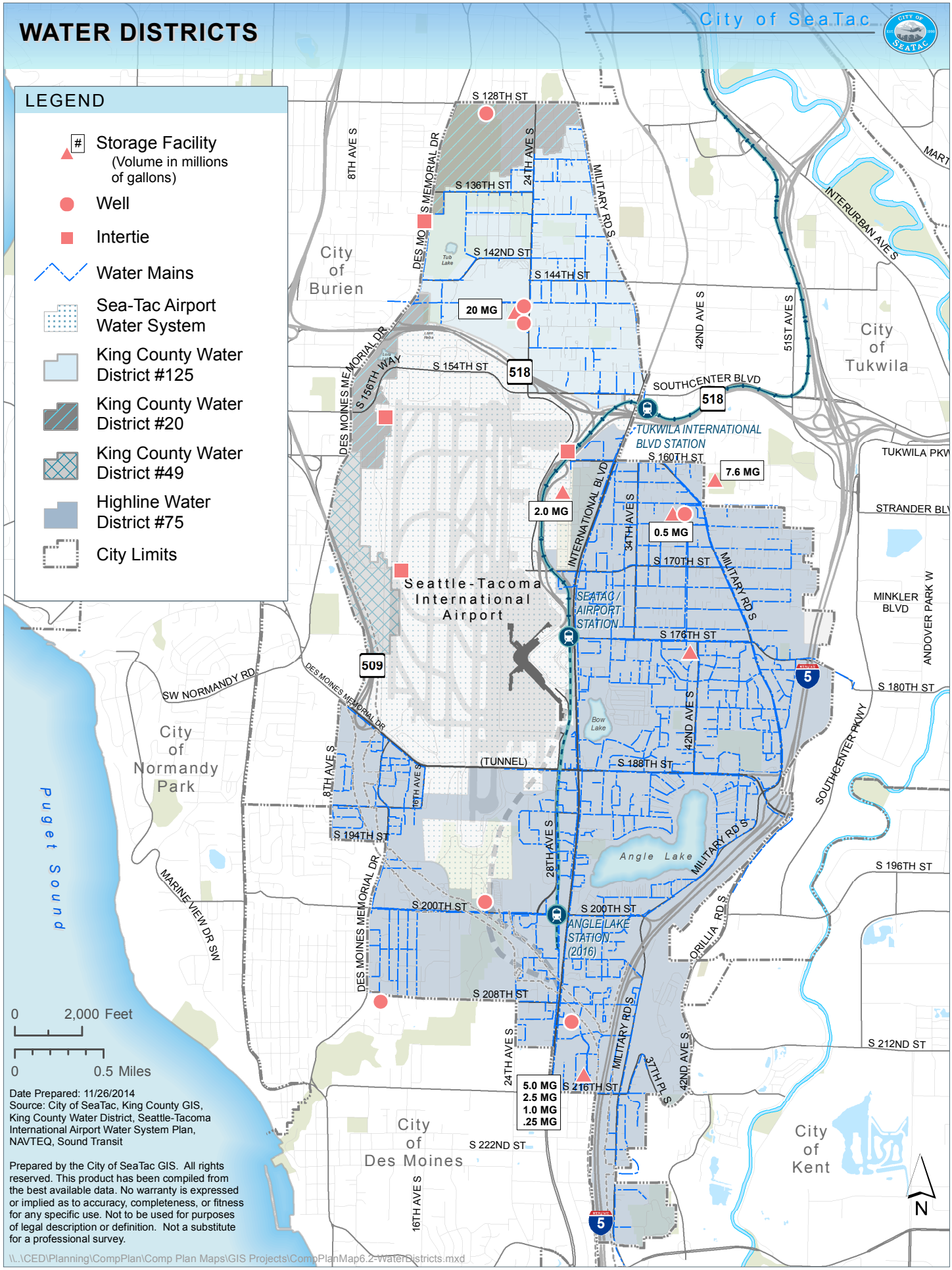
General Location

Service Area. The district is generally bordered by SR 518 on the north, the Lakehaven Utility District (LUD) on the south, the Puget Sound on the west, and the Green River and Kent Water District to the east. The SeaTac Airport water system abuts a portion of the northern boundary of the Highline Water District.

Distribution System

Supply. The Highline Water District receives approximately 80 percent of its water supply from the Seattle Water Department directly through the 60-inch Cedar River Pipeline No. 4. The District supplements its Seattle source with two wells brought on line in the summer of 1985. One of these wells is located along International Boulevard, south of S. 208th Street. These wells provide approximately 20 percent of the total volume of water supplied.

Distribution and Transmission. The current District policy is to require minimum six-inch distribution mains to residential areas, and minimum eight-inch in commercial areas. Major industrial and commercial areas may require minimum 12-inch or larger mains for adequate fire protection.



Map BR6.4. Water Districts

Storage. The Highline Water District has eight storage facilities with a total of 21.35 million gallons (mg) of capacity. The following storage facilities are located in SeaTac:

Table BR6.1 Water Storage Facilities

NAME	LOCATION	TANK VOLUME (MG)
Bow Lake Standpipe (Tank No. 2)	S. 176th Street and 42nd Avenue South	1.0
Mansion Hill Elevated Tank (Tank No. 3)	31st Avenue South and S. 213th Street	0.25
Mansion Hill Reservoir (Tank No. 4)	31st Avenue South and S. 213th Street	2.5
Mansion Hill Elevated Tank (Tank No. 5)	31st Avenue South and S. 213th Street	1.0
McMicken Hts. Elevated Tank (Tank No. 6)	40th Avenue South and S. 165th Street	0.5
Mansion Hill Reservoir	31st Avenue South and S. 213th Street	5.0

Fire Flows. The District does not identify any deficiencies in fire flows for its service area.

Types of Service

The Highline water system provides water conveyance and fire flow service to hydrants, individual and multifamily residences, commercial customers, and fire suppression systems.

Existing System Capacity

System capacity is largely determined by the ability of the City of Seattle to supply the district, wells, local pump capacity, and distribution system capacity. Total existing supply capacity is approximately 20 mgd.

Local Capacity

The District's water system plan does not identify any capacity issues related to areas served within the City of SeaTac.

Demand

Current Number of Customers. In 2003 the Highline Water District had an approximate total of 14,316 residential customers, 805 commercial and industrial customers, and 49 other customers. As of December 2000, the District had approximately 14,677 single family residential connections, 1,100 multifamily residential accounts, 1,055 commercial accounts, and 67 school accounts. The estimated population served in 2000 was 65,000. SeaTac staff analysis of Puget Sound Regional Council TAZ (Transportation Analysis Zones) estimates indicate that there are approximately 6,339 households and 11,871 employees within the portion of SeaTac served by Highline Water District.

Present Utility Consumption. From these estimates of households and employment, and assuming an average water consumption of 150 gpd for households and 75 gpd per employee, present water consumption in the portion of the Highline Water District located in SeaTac is approximately 1,841,200 gpd.

Coordination with the District to Meet Existing and Future Demand

System Design Capacity. When the District is updating its Comprehensive System Plan, the City provides residential and employment growth forecast estimates to ensure that we are both planning for the same future growth. This allows the District to develop facility plans to meet the expected future demand. Over the last 20 years, advances in conservation measures have reduced per capita demand. The total supply is adequate to meet the projected domestic and fire demands through the year 2035.

Seattle-Tacoma International Airport Water System

Description of Utility

The Seattle-Tacoma International Airport Water System is a public water system, owned, operated, and maintained by the Port of Seattle for the purpose of distributing water to those businesses and operations affiliated with Airport operations. The system provides domestic water and fire protection services.

General Location

Service Area. The district is generally bordered by the SR 518 on the north, S.188th Street on the south, International Boulevard/SR 99 and Air Cargo Road on the east, and Des Moines Memorial Drive on the west. No residential uses are connected to the SeaTac water system.

Distribution System

Supply. The SeaTac water system has two available sources of supply: water from Seattle Public Utilities and also ground water. The SeaTac Airport water system receives its primary water supply from Seattle Public Utilities. Water is purchased at retail commercial rates through two 24-inch meters located near the northeast corner of the Airport. In addition, a manual intertie with the Highline Water District at the south end of the Airport provides a backup source of supply in the event of interruption in the Seattle supply.

The secondary source is from ground water. The Port of Seattle holds one Certificate of Ground Water Right. The available use for this permit is at 250 gallons per minute (gpm).

Distribution and Transmission. Because of the hydraulic gradient of the Seattle supply, all water consumed by the SeaTac system is pumped. Under normal operating conditions, the system supplies water to the various Airport facilities by pumping to the on-site elevated storage reservoir and utilizing gravity flow from that facility.

The main portion of the primary distribution loop is composed of 24-inch ductile iron pipe constructed in the early 1970s. The primary distribution loop is interspersed with smaller diameter loops and connections around main buildings and facilities. These loops consist of eight-, 10- and 12-inch pipe, most of which have been built since the construction of the 24-inch pipe.

Storage. The Port of Seattle replaced a 300,000 gallon on-site elevated tank with a two million gallon reservoir at the northeast corner of the Airport. Additional storage is available in the City of Seattle system and their 20 million gallon Riverton Heights reservoir is located less than one mile north of the Airport. The combined storage available from the on-site reservoir and the City of Seattle's reservoir is adequate to meet existing and projected water storage needs.

Fire Flows. The fire flow requirements at the Airport are higher than those typically provided by neighboring water systems. Under high demand conditions, such as a fire, a bank of 10 fire pumps are available to boost the system pressure and provide the high pressures and flows required in such an emergency. Each of these fire pumps are capable of operating at approximately 2,500 gpm.

Types of Service

The SeaTac water system provides water conveyance and fire flow service to hydrants and fire suppression systems.

Existing System Capacity

System capacity is largely determined by the ability of the City of Seattle to supply the district, local pump capacity, and distribution system capacity. Total existing supply capacity, drawn through the two 24-inch metered connections to the City of Seattle water system, is 28,000 gpm or 40 mgd.

Local Capacity

All of the Airport's water system is located within the City of SeaTac. The local capacity is therefore equal to the system capacity.

Demand

Current Number of Customers. Water service is provided to approximately 32 Airport tenants through a total of 71 metered connections to the SeaTac system.

Present Utility Consumption. The current water demand of the SeaTac water system is estimated at approximately 423 million gallons annually or approximately 1.16 mgd. These estimates are based on the passenger estimate of 28.3 million for 2004 and domestic demand of 15 gpd per passenger.

Future Capacity

System Design Capacity. Total existing supply capacity, drawn through the two 24-inch metered connections to the City of Seattle water system, is 28,000 gpm or 40 mgd. This total supply is adequate to meet the projected domestic and fire demands through the year 2020.

Growth in Demand by Type of User

The SeaTac water system demand analysis is based on the Port's estimates of travel demand and the growth in demand of existing and future Airport facilities and associated users. Table BR6.2 shows the forecasted demand of SeaTac's water system based on projected number of passengers in 2010 and 2020.

Table BR6.2 SeaTac Airport Water System – Forecast Demand

	2010	2020
Average Domestic Demand*	1.48 mgd	1.66 mgd
Fire Demand**	10,000 gpm	10,000 gpm

* *Minimum source requirements for domestic demand is based on Port of Seattle estimate of 15 gpd per forecast passenger in 2010 and 2020. Passenger estimates are taken from SeaTac International Airport's Million Annual Passenger (MAP) projections, and are as follows: 36.0 million for 2010 and 40.4 million for 2020. These are listed in the Final Supplemental Environmental Impact Statement for the Proposed Master Plan Update Development Actions, prepared in May, 1997.*

** *Minimum source requirement for fire demand is based on the Port facility with the highest estimated fire flow (Source: SeaTac Airport Comprehensive Water System Plan, August 1991).*

Limits to Future Capacity. Although the existing quantity of water supply via the City of Seattle system is adequate, provision of an alternate source is desired. The existing intertie with the Highline Water District is not adequate as an alternate source because it is not automatically activated in case of emergency. The connections to the Seattle system are also somewhat vulnerable because they are located adjacent to each other and, therefore, both subject to localized system failure.

The Riverton Heights Reservoir is not capable of providing water to the Airport at positive pressure conditions when there is greater than 50 percent drawdown, creating system vulnerability in the event of a Seattle system emergency. Some of the system's distribution pipes are old and in need of replacement and some looping of dead end mains is necessary.

Proposed Location. The future service area contemplated by the SeaTac system is limited to the property owned by the Port of Seattle, although may not include properties which are not used for aviation related facilities. The reason for the Port providing water services to all aviation related operations is that these operations are commonly restricted to the public, limiting access for operations and maintenance by another purveyor.

King County Water District No. 20

Description of Utility

King County Water District No. 20 serves the northernmost portion of the City of SeaTac. The system provides domestic water and fire protection services.

The District's most recent approved Comprehensive Water System Plan (CWSP) was prepared in June 1996 by CHS Engineers, Inc. of Bellevue, Washington. Amendment No. 1 to the CWSP was adopted in January 1999. The CWSP was updated in March 2004 and is currently in the review and approval process.

General Location

Service Area. Water District No. 20 is located immediately south of the Seattle City limits, serving portions of unincorporated Boulevard Park, and portions of the cities of Burien, Tukwila, and SeaTac. The District is bounded on all sides by other water districts. Expansion is therefore unlikely except in the case of a merger with an adjacent purveyor.

Much of the area previously served by this District, in what is now the northern portion of SeaTac, has been bought out by the Port of Seattle as part of their noise remedy program. This area is now planned for development as North SeaTac Park.

Distribution System

Supply. Water District No. 20 receives all of its water supply from the Seattle Public Utilities. A 16-inch meter and 24-inch supply main supply the District's storage tank from Seattle's 48-inch main located along 24th Avenue South. Another 24/20-inch Seattle main supplies the District through the Seattle pumping station located at 4th Avenue SW and SW 146th Street.

Distribution and Transmission. Water is distributed through a combination of four-, six-, eight-, 12- and 16-inch cast iron and ductile iron pipes in the portion of SeaTac served by Water District.

Storage. In 1977, Water District No. 20, in conjunction with King County Water Districts No. 125, 45, and 85, constructed a six-million gallon underground reservoir and a 9,000 gpm pumping station at South 120th Street and 14th Avenue South to meet peak water demands during the summer months. In 1999, the pump station was upgraded to 9,600 gpm.

Fire Flows. Fire flow demand for the District is based on minimum flows required by King County rules relating to fire hydrants and water mains. The minimum fire flow for detached single family residential dwellings is 1,000 gpm at 20 pounds per square inch. Minimum flows for other uses are based on formulas contained in the King County regulations. Anticipated future development within this District is not anticipated to impact fire flow.

Types of Service

Water District No. 20 provides water conveyance and fire flow service to hydrants and fire suppression systems.

Existing System Capacity

System capacity is largely determined by the ability of the City of Seattle to supply a district with wells, local pump capacity, and distribution system capacity. Total existing supply capacity to Water District No. 20 is approximately 36 mgd.

Local Capacity

Water District No. 20's water system plan does not identify any capacity issues related to areas served within the City of SeaTac. Isolated locations of existing four-inch water mains will be replaced by new eight-inch water mains as part of the District's ongoing Capital Improvement Program.

Demand

Current Number of Customers. In 2003 the District had approximately 7,881 single family, 422 multifamily, and 546 commercial and industrial customers. In 1994, Water District No. 20 had

approximately 7,378 single family and 387 multifamily residential customers, and 475 commercial and industrial customers.

This District serves 209 customers within the City of SeaTac.

Present Utility Consumption. In 2003 average District-wide consumption was 2.5 mgd. Average per capita is estimated at 75 gpd for 2003.

Coordination with the District to Meet Existing and Future Demand

System Design Capacity. When the District is updating its Comprehensive System Plan, the City provides residential and employment growth forecast estimates to ensure that we are both planning for the same future growth. This allows the District to develop facility plans to meet the expected future demand.

King County Water District No. 125

Description of Utility

Water District No. 125 operates under Title 57 (Water Districts) of the Revised Code of Washington (RCW). Some powers granted to water districts include the right to: acquire property; convey water systems; let contracts for work; provide street lighting; to own and operate sewer systems; and set rates and charges for service.

The District is responsible for providing adequate water service to its 3,219 customers and for proper planning for future water use. The District's Board of Commissioners sets the policies for the District. Historically, the District has retained a competent superintendent, office and field staffs, who implement the Board's policies, and provide for the day to day operation of the district.

The district's most recent comprehensive water district plan was completed in 2009 by PACE Engineers, Inc., of Kirkland, Washington.

General Location

Service Area. The district is generally bordered by the Duwamish River to the northeast, the City of Tukwila to the east, SR 518 and the SeaTac Airport to the south and southwest, and Des Moines Memorial Drive to the west. Water District No. 125 serves the portion of SeaTac to the north of SeaTac Airport, with the exception of a small area served by Water District No. 20.

The District's administration office is located at 2849 South 150th Street, in SeaTac, Washington.

Distribution System

Supply. District No. 125 receives its water supply from the Seattle Water Department directly, and through interties with Districts 20 and 49. A six million gallon storage tank, located in District No. 20, is shared with Districts 20 and 49. Pressure gradients of 465 and 575 feet are maintained within the City.

Distribution and Transmission. The primary distribution is through six-inch mains, as required by DSHS and the Board of Fire Underwriters. The largest distribution main in the District is an 18-inch main along S. 146th Street from the Burien pump station easterly to 24th Avenue South. Other 12-, 10- and eight-inch transmission mains run along key roads such as Pacific Highway/International Boulevard, Military Road South, 24th Avenue South, S. 144th Street and S. 152nd Street.

A primary distribution system of six-inch mains branches out from the transmission mains. Additional distribution is provided to the older residential areas by mains with diameters of four inches or less, many of which are old cast iron lines in need of replacement.

Storage. Equalization and standby storage is provided during the summer by a six million gallon storage tank located within Water District No. 20 at 120th Street South and 14th Avenue South. This tank is jointly owned by Water District Nos. 20, 49 and 125, with District No. 125 having 35 percent, or 2.1 million gallons, of the share.

Pressure Zones. The static pressure of a water system is determined by the water supply hydraulic elevation, together with the topographical elevation of the system being served. The desirable pressure range lies between 50 and 80 pounds per square inch (psi), with 30 psi as the minimum acceptable pressure during times of fire flow. All areas within the District have sufficient pressure.

Fire Flows. Fire flow standards are established by the Insurance Standard Office, and are based on factors including source, building material, intended use and space of building. In addition they vary according to zoning classification. The DSHS standards for minimum fire flow are as follows:

Table BR6.3 Minimum Fire Flow Requirements

DEVELOPMENT CLASSIFICATION	MINIMUM FIRE FLOW REQUIREMENT*
Residential	500 gpm for 30 minutes
Commercial and Multifamily	750 gpm for 30 minutes
Industrial	1,000 gpm for 60 minutes**

* *Minimum source requirements for domestic demand is based on Port of Seattle estimate of 15 gpd per forecast passenger in 2010 and 2020.*

** *Minimum source requirement for fire demand is based on the Port facility with the highest estimated fire flow (Source: SeaTac Airport Comprehensive Water System Plan, August 1991.)*

Flows in excess of 1,000 gpm are available at most locations within the District.

Types of Service

District No. 125 provides water conveyance and fire flow service to hydrants and fire suppression systems.

Existing System Capacity

System capacity is largely determined by the ability of the City of Seattle to supply the district. It is estimated that Seattle has sufficient supply until at least the year 2010. Increasing conservation could extend this supply for a number of years.

Local Capacity

Local capacity varies according to the size of distribution mains and the pressure at which water is supplied. Peak daily use per customer and fire flow standard set the level at which capacity must be determined.

Demand

Current Number of Customers in SeaTac. In 2004 there are an estimated 1,020 commercial and domestic water hook-ups in SeaTac served by Water District No. 125.

Present Utility Consumption and Forecast Annual Growth Rate. Patterns of water usage are highly variable and depend on the type of customer. A national average for overall municipal water consumption, including residential, commercial and industrial customers, is 600 gallons per day per customer. Consumption by residential customers is typically between 210 and 460 gallons per day per household, with lawn watering being a major factor contributing to the variation in this range. An average of approximately 110 gallons per day is consumed on a per capita basis.

Although water demand varies by season and customer type, an average of 150 gpd for residential customers and 75 gpd per employee is considered standard. This standard is used to estimate future demand in Table BR6.3.

Coordination with the District to Meet Existing and Future Demand

System Design Capacity. When the District is updating its Comprehensive System Plan, the City provides residential and employment growth forecast estimates to ensure that we are both planning for the same future growth. This allows the District to develop facility plans to meet the expected future demand.