

EXECUTIVE SUMMARY

INTRODUCTION

The Northshore Utility District (District) Water System Comprehensive Plan (Plan) has been developed in accordance with the latest revision to Chapter 246-290 of the Washington Administrative Code (WAC), as presented in the Washington State Department of Health (DOH) regulations for Group A Public Water Systems, effective July 3, 2004.

SERVICE AREA AND PLANNING CRITERIA

The service area includes those properties within the current District retail service area boundary including those areas served by interlocal agreements. Since the availability of water service is dependent upon whether or not allowable service pressures can be maintained, the retail service area boundary and the District corporate boundary are not entirely coincidental. The District's corporate boundary and retail service are shown in figures and described in further detail in Chapter 3.

The planning period for the Plan is to 2035, coinciding with a 20-year planning interval. Because the service life of many water system components is greater than 20 years, the planning of future facilities considers a buildout scenario as an estimate of the ultimate capacity required to serve all land under current zoning.

The current and future populations within the retail service area are estimated based on transportation analysis zone (TAZ) population projections. A summary of the projected annual population growth rate, population, employee growth rate, and number of employees within the District's water service area for the 20-year planning period and buildout is presented in Table E-1. The projected buildout population for the District's retail service area is 107,480.

TABLE E-1

Projected Water Service Area Population and Employment

Year	Population Growth Rate	Population	Employee Growth Rate	Employees
2014	1.96%	71,084	3.13%	18,774
2015	1.30%	72,010	3.03%	19,343
2016	1.29%	72,936	2.94%	19,913
2017	1.27%	73,863	2.86%	20,482
2018	1.25%	74,789	2.78%	21,052
2019	1.24%	75,715	2.71%	21,621
2020	1.22%	76,641	2.63%	22,191
2021	1.21%	77,567	2.57%	22,760
2022	1.19%	78,494	2.50%	23,330
2023	1.18%	79,420	2.44%	23,899
2024	1.17%	80,346	2.38%	24,469
2025	0.95%	81,107	2.11%	24,986
2026	0.94%	81,869	2.07%	25,503
2027	0.93%	82,630	2.03%	26,019
2028	0.92%	83,391	1.99%	26,536
2029	0.91%	84,153	1.95%	27,053
2030	0.90%	84,914	1.91%	27,570
2031	0.90%	85,675	1.87%	28,087
2032	0.89%	86,437	1.84%	28,604
2033	0.88%	87,198	1.81%	29,121
2034	0.87%	87,959	1.77%	29,638
Buildout		107,480		30,149 ⁽¹⁾

(1) Employees at buildout are assumed to equal the number of employees in 2035.

EXISTING SYSTEM

The District owns and operates a Group A water distribution and storage system. The system consists of 24 pressure zones, ranging from a hydraulic grade of 680 feet in the Lake Forest Park area to 292 feet along the shore of Lake Washington. The District’s distribution system includes 29 MG of storage, three booster stations, and over 279 miles of pipe, ranging from 1.5 inch to 24 inches in diameter. Table E-2 provides a summary of the District’s service area characteristics and water system facilities.

TABLE E-2

2013 Water System Data

Description	Data
Water Service Area Population	67,717
Total Connections	21,093
Total ERUs	28,088
Demand per ERU (2006-2013 Average)	174 gpd
Demand per Capita (2006-2013 Average)	63.8 gpd
Annual Supply	1,860,000,000 gallons
Average Day Demand (2006-2013 Average)	4.83 mgd
Distribution System Leakage (3 Year Average)	4.5%
Peak Day/Average Day Demand Factor	2.0
Peak Hour/Peak Day Demand Factor	2.0
Number of Pressure Zones	24
Number of Supply Locations	11
Number of Pump Stations and Total Capacity	3 (16,800 gpm)
Number of Reservoirs and Total Capacity	8 (29.1 MG)
Total Length of Water Main	279 miles

Historically, the District has purchased all of its water from Seattle Public Utilities (SPU). In 2005, the District and SPU executed a new block wholesale contract with an expiration date of 2062. The block contract replaces the District’s prior 1982 SPU wholesale supply contract that was set to expire at the end of 2011.

The quantities secured under the new SPU block contract, coupled with ongoing and future conservation programs, are expected to meet the District’s system demands over a 20-year planning period, if not longer. However, the contract does not preclude the District from developing additional sources of supply, including its Snohomish River Regional Water Authority water right, if such action is required and/or if such supplemental supplies can be developed on a more cost-effective basis than SPU wholesale supply.

WATER USE CHARACTERIZATION AND FORECASTING

The District’s customer base is composed of residential, commercial, and industrial connections. The total number of water service connections within the District at the end of 2013 was 21,093.

Table E-3 provides projections for the average day, maximum day, and peak hour demand. Maximum day demands are equal to 2.0 times the average day demands and peak hour demands are equal to 2.0 times the maximum day demand as discussed previously in this Chapter. Maximum month demand is estimated to equal 1.57 times the

average day demand, and peak season demand is estimated to equal 1.30 times the average day demand.

TABLE E-3

Water Service Area Peak Demand Projections

Year	Average Day Demand, ADD⁽¹⁾ (mgd)	Maximum Day Demand, MDD⁽²⁾ (mgd)	Peak Hour Demand, PHD⁽³⁾ (gpm)	Maximum Month Average Day Demand⁽⁴⁾ (mgd)	Peak Season Demand, PHD⁽⁵⁾ (gpm)
2014	5.58	11.15	15,490	8.75	5,030
2015	5.66	11.33	15,730	8.89	5,110
2016	5.75	11.50	15,980	9.03	5,190
2017	5.84	11.68	16,220	9.17	5,270
2018	5.93	11.85	16,460	9.31	5,350
2019	6.02	12.03	16,710	9.44	5,430
2020	6.10	12.21	16,950	9.58	5,510
2021	6.21	12.41	17,240	9.74	5,600
2022	6.31	12.62	17,520	9.90	5,690
2023	6.41	12.82	17,810	10.06	5,790
2024	6.51	13.03	18,090	10.23	5,880
2025	6.58	13.16	18,280	10.33	5,940
2026	6.65	13.30	18,470	10.44	6,000
2027	6.72	13.44	18,660	10.55	6,070
2028	6.79	13.57	18,850	10.65	6,130
2029	6.86	13.71	19,040	10.76	6,190
2030	6.92	13.85	19,230	10.87	6,250
2031	6.99	13.98	19,420	10.98	6,310
2032	7.06	14.12	19,610	11.08	6,370
2033	7.13	14.26	19,800	11.19	6,440
2034	7.20	14.39	19,990	11.30	6,500
Buildout	8.51	17.03	23,650	13.37	7,690

- (1) All demands are from Table 5-16.
- (2) Maximum day demand equals 2.0 times the average day demand. See Table 5-6.
- (3) Peak hour demand equals 2.0 times the maximum day demand. See Table 5-7.
- (4) Peak month demand equals 1.57 times the average day demand. See Table 5-5.
- (5) Peak season demand equals 1.30 times the average day demand. See Table 5-5.

WATER SYSTEM HYDRAULIC MODEL

The District developed a hydraulic model of the water system. The output from this model is used to evaluate the capacity of the existing system and to recommend future improvements. The District’s water distribution system has sufficient capacity through the 20-year planning period to provide peak hour demands and fire flow demands while

maintaining adequate service pressures. In general, the distribution system is well looped to minimize pipe velocities and provide redundancy.

OPERATION AND MAINTENANCE PROGRAM

The Operations Department is responsible for the operation and maintenance of the water and wastewater systems. The Operations Department is also responsible for emergency response planning and drills. The District is continuing to improve its operation and maintenance programs to meet existing and future regulations and to provide the best service possible to District customers.

SYSTEM ANALYSIS

The District has sufficient capacity in its existing storage and distribution system to meet growth for the 10-year planning period. The District has identified a number of projects that will improve redundancy and reliability and will replace aging facilities and pipelines. These improvements have been identified in the Capital Improvement Program (CIP).

WATER USE EFFICIENCY PROGRAM

The District plans to continue its existing conservation program, which is consistent with the SPU Saving Water Partnership and meets the requirements of the Municipal Water Law and the Water Use Efficiency Rule. The District's program includes a number of elements such as annual leak detection, water saving devices, and a conservation priced water rate structure. The District also is supportive of the development of a reuse system in coordination with King County Department of Natural Resources' plans to develop Class A reclaimed water at the Brightwater Treatment Plant.

CAPITAL IMPROVEMENT PROGRAM

Since the adoption of the last Plan, the District has completed numerous capital improvement projects for the water utility. These projects included seismic upgrades, valve installation, fire flow improvements, security improvements, and water main replacement.

Included in this Plan's CIP is the construction of new facilities, supporting facilities and upgrades, as well as other improvements that will increase system efficiency. Table E-4 is a summary of the total costs of the recommended 6-year and 10-year capital improvements.

In the future, other projects may arise that are not identified as part of the District's CIP. Such projects may be deemed necessary for accommodating improvements proposed by other agencies or addressing unforeseen problems with the District's water system. Due

to budgetary constraints, the completion of these projects may require that the proposed completion date for projects in the CIP to be rescheduled. The District retains the flexibility to reschedule proposed projects and to expand or reduce the scope of proposed projects as best determined by the District's Commissioners when new information becomes available for evaluation. Each capital improvement project should be reevaluated to consider the most recent planning efforts as the proposed completion date for the project approaches.

TABLE E-4

10-Year CIP Summary

	6-Year CIP	7- to 10-Year CIP	Total 10-Year CIP
Total Cost	\$4,500,000	\$13,444,000	\$17,944,000

FINANCE

In order to implement the capital improvement plan, a basic financial program must be established. Through the financial program, the District Commissioners and District Manager are assured that the capital improvement schedule can be implemented. The financial program plays a key role in establishing water rates and general facilities charges that reflect the actual costs of providing service to the District.

The District maintains a combined water and sewer utility but tracks revenues and expenses separately. Total sewer sales in 2013 were \$21,656,724, of which \$13,888,215 (64 percent) was paid to King County Department of Natural Resources (KCDNR) for treatment charges. Total water sales in 2013 were \$14,712,078, of which \$4,967,354 (34 percent) was paid to SPU for wholesale water.