



**CITY OF KIRKLAND**  
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## **MEMORANDUM**

**To:** Kurt Triplett, City Manager

**From:** Erin Devoto, Superintendent Public Works  
Ray Steiger, Streets Division Manager  
Greg Neumann, Water Division Manager  
Marilynne Beard, Interim Public Works Director

**Date:** September 23, 2014

**Subject:** 2014 WATER SYSTEM PLAN PUBLIC HEARING

### **RECOMMENDATION:**

That the City Council conducts a public hearing on the City's 2014 Water System Plan update as required by KMC 3.10.010.

### **BACKGROUND AND DISCUSSION:**

The 2014 Water System Plan (WSP) is required by Washington State Regulation WAC 246-290-100, and is reviewed and approved by the Washington State Department of Health (DOH). The WSP presents a description of the existing water system and system area, a forecast of future water demands, policies and design criteria for water system operation and improvements, the operations and maintenance program, staffing requirements, a schedule of improvements, and a financial plan to accomplish the improvements. The 2014 WSP Update also includes several ancillary elements, including a water use efficiency plan, a water quality monitoring plan, and a cross-connection control plan.

On August 6, 2014, information on the 2014 WSP update was presented to the Public Works/Parks/Human Services Council Committee.

As of 2013:

- The City provides water service to approximately 12,318 customer accounts.
- Population served is approximately 40,370.
- Residential customers make up approximately 84 percent of all customer accounts.
- Residential customers use approximately 52 percent of all water supplied.

The City also operates several joint-use facilities that provide supply to areas of the City of Redmond and the City of Bellevue. All three cities are proportionally responsible for the cost of maintaining and operating the joint use facilities. This arrangement was agreed to during the Rose Hill Water District assumption in 1994. Under the assumption agreement, the City became a wholesaler of water to both the City of Redmond and the City of Bellevue. The areas of Bellevue and Redmond supplied by the joint-use facilities are all within the area served previously by the Rose Hill Water District. Under the agreement, the City is only required to

supply a rate of supply proportional to each City's percent ownership in each joint-use supply facility as described in the assumption.

The purpose of the hearing is to provide the public with an opportunity to comment on or offer input on the City's WSP update. The draft plan has been submitted to DOH, the County and adjacent purveyors as required for review and comment. DOH takes 90 days to review the Draft WSP. Once comments are received from DOH, the City is given 90 days to revise, adopt by resolution, and resubmit the plan. A date will be set within the 90 days for Council to formally adopt the plan.

The next comprehensive WSP Update will be presented to the DOH in 2020. The Executive Summary of the Plan is included as Attachment A. Because of its length, the entire WSP Update is available online for review on the City's website at [http://www.kirklandwa.gov/depart/Public\\_Works/Utilities/Water/kir2014WSP.htm](http://www.kirklandwa.gov/depart/Public_Works/Utilities/Water/kir2014WSP.htm).

Attachment A: Executive Summary

# ***Executive Summary***

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## **PURPOSE OF THE PLAN**

The primary purpose of the City of Kirkland's (City) Water System Plan (WSP) is to identify and schedule water system improvements to correct existing system deficiencies and ensure a safe and reliable supply of water to current and future customers. This WSP complies with Washington State Department of Health (DOH) regulations under Washington Administrative Code (WAC) 246-290-100, which requires water purveyors to update their water system plans every 6 years.

## **CHANGES SINCE THE LAST PLAN UPDATE**

The City's last comprehensive water system plan was approved by DOH in 2007. The following are changes that have occurred since the last update and affect water system planning for the City.

- The DOH Water Use Efficiency (WUE) Rule became effective on January 22, 2007, to ensure that water systems have a reliable supply of water and are using water more efficiently.
- The DOH *Water System Design Manual* was updated in December 2009. The revisions primarily address water demand requirements and water system physical capacity analysis, both of which affect the City.
- Drinking water regulations are continually evolving to ensure that water purveyors are providing a safe and reliable water supply to their customers. Additional water quality monitoring requirements and revisions to existing regulations, such as the Groundwater Rule, and Stage 1 and 2 Disinfectants/Disinfection By-products Rule, have been implemented since the City's last WSP was completed.

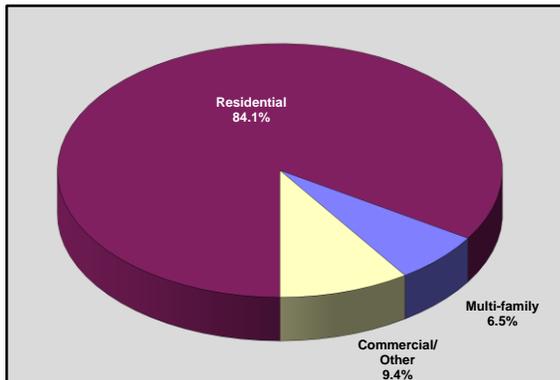
## **SUMMARY OF KEY ELEMENTS**

The 2014 WSP presents a description of the existing water system and service area, a forecast of future water demands, policies and design criteria for water system operation and improvements, the operations and maintenance program, staffing requirements, a schedule of improvements, and a financial plan to accomplish the improvements. This WSP also includes several ancillary elements, which include a WUE plan, a water quality monitoring plan, and a cross-connection control plan. A summary of the key issues related to these elements is provided in the following sections.

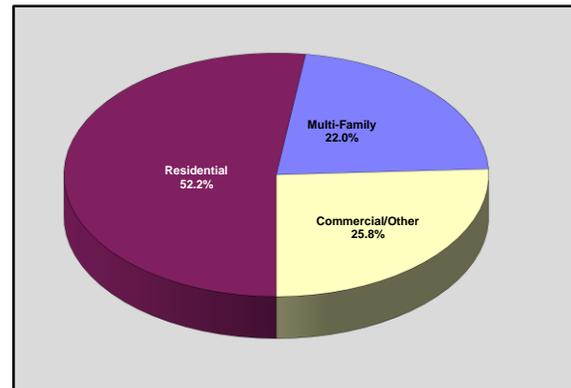
### ***Water Service Area***

The City provides water service to approximately 12,318 customer accounts throughout its existing water service area for a population of approximately 40,370 people in 2013. The City provides water service to primarily residential customers, which make up approximately 84 percent of all customer accounts and use approximately 52 percent of all water supplied.

## EXECUTIVE SUMMARY



2013 Water Connections



2013 Water Consumption

The City also operates several joint-use facilities that provide supply to areas of the City of Redmond (Redmond) and the City of Bellevue (Bellevue). All three cities are proportionally responsible for the cost of maintaining and operating the joint use facilities. This arrangement was agreed to during the Rose Hill Water District assumption in 1994. Under the assumption agreement, the City became a wholesaler of water to both Redmond and Bellevue. The areas of Bellevue and Redmond supplied by the joint-use facilities are all within the area served previously by the Rose Hill Water District. Under the agreement, the City is only required to supply a rate of supply proportional to each City's percent ownership in each joint-use supply facility as described in the assumption.

### *Past Water Usage and Conservation*

Total system-wide water usage has decreased approximately 5 percent from 2005 to 2013, primarily due to water use efficiency practices and an increase in the number of homes with water-efficient plumbing. During this same time period, the average amount of water demand per person has decreased from approximately 108 gallons per day in 2005 to approximately 89 gallons per day in 2013. The City's average per capita demand of 95 gallons per day from 2007 through 2013 and average demand per equivalent residential unit (ERU) of 189 gallons per day are slightly less than the average for the Puget Sound area. The amount of distribution system leakage in the City's system was 6 percent in 2013 based on a 3-year rolling average, which is below the standard established by the WUE Rule of 10 percent or less. The City's WUE Program presents a goal of saving 53,000 gallons per day annually from 2014 through 2019, based on the City's portion of Cascade Water Alliance's (Cascade) regional goal. Beyond 2020, the demand projections with WUE do not include additional water savings beyond the initial goal. .

### *Future Water Demands and Water Supply*

Overall water demand within the City's system is estimated to increase by up to 15 percent within the next 6 years and by up to 33 percent within the next 20 years, depending on future water use reductions due to the City's WUE Program and the rate at which growth actually occurs in the

system. The City currently anticipates using its 3 existing Tolt Pipeline connections to meet the demand requirements of the system through the 20-year planning period. The capacity of these facilities is adequate to meet the projected demands for this period. However, Cascade may choose to provide water to the City through alternative sources. If alternative sources are utilized, Cascade will construct supply facilities capable of meeting the City's needs.

### ***Water Source and Quality***

The City of Kirkland is a Cascade member. The Interlocal Contract between the City and Cascade states that Cascade will provide a full supply commitment to the City for current and future water supply needs. Cascade shall provide for the necessary water system expansions and extensions to the meet the needs of additional water customers of Cascade members, if the growth is consistent with applicable growth management plans.

In December 2003, Cascade signed a 50-year declining block agreement with the City of Seattle (Seattle). Kirkland relinquished its individual contract with Seattle in favor of a contract between Cascade and Seattle. The agreement requires Seattle to provide water to Cascade through December 31, 2053, in decreasing amounts. It is the intent of Cascade to procure other sources of water as time progresses to meet the demands of its members. Water will continue to be provided to the City from the existing supply stations.

The City relies on the personnel and procedures of Seattle to provide a reliable and high quality supply of water to the City's system. Seattle is responsible for the quality of the water from the source to the City's three metered supply connections. The City is responsible for water quality within its water service area boundary. The City monitors water quality in its system but does not provide water treatment; all water treatment is provided by Seattle. In the past source water quality has been good but not without some problems related to Seattle's regional water system. Seattle recently completed construction of new water treatment plants that have increased the reliability and quality of the water supply.

### ***Operations and Maintenance***

The City's operations and maintenance organization is staffed by well-qualified, technically trained personnel. City staff regularly participates in safety and training programs to keep abreast of the latest changes in the water industry and to ensure smooth and safe operation of the water system. The current staff of supervisory and maintenance personnel have effectively operated and maintained the water system in the past. However, approximately one additional staff is necessary to fulfill the optimum preventive maintenance requirements of the water system. The City plans to add staff to properly maintain the system and to keep up with system growth as the budget allows.

The City has taken several steps to prepare for emergency situations. The Emergency Response Plan was prepared for the City in December 2004 and provides information to prepare and assist the City in responding to emergency events. The City has also conducted a vulnerability assessment of its water system in accordance with the requirements of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. The City's Water Shortage Response Plan identifies procedures for managing water demand during a water supply emergency or shortage situation. Water system improvements completed by the City over the last several years and proposed

## ***EXECUTIVE SUMMARY***

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improvements identified in this WSP will reduce the vulnerability of the water system during emergency situations.

### ***Water System Evaluation***

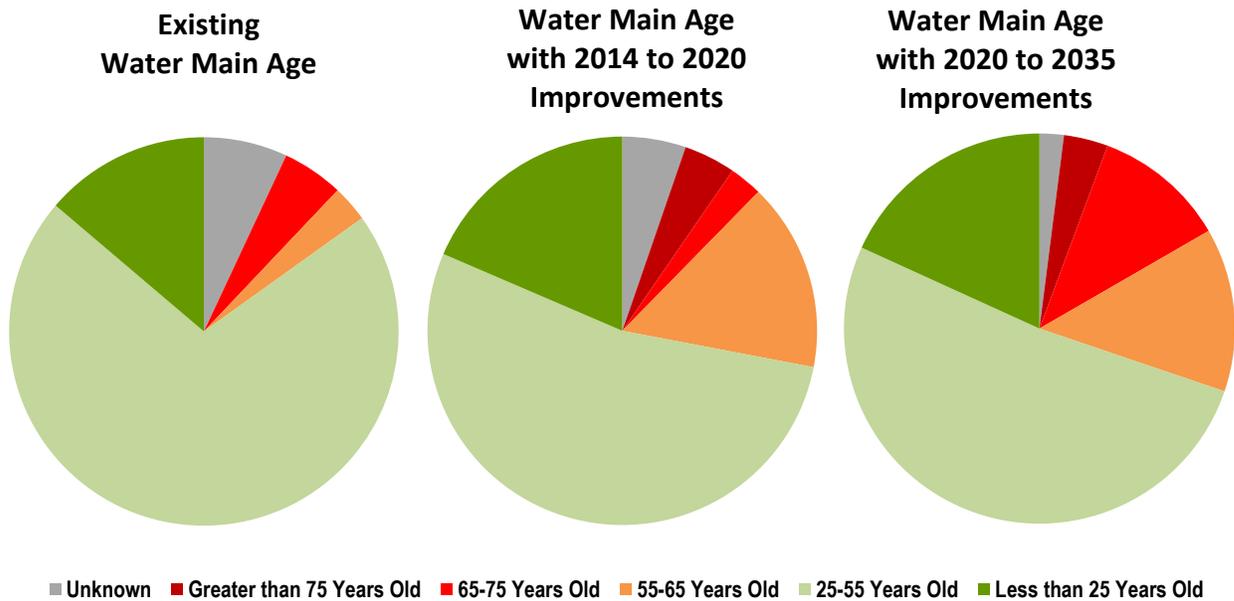
The existing water system was evaluated to determine its ability to meet the policies and design criteria of the City and those mandated by DOH. The results of the evaluation are summarized below.

- The City's existing reservoirs and Tolt supply stations have adequate capacity for the next 20 years.
- All three of the City's Supply Stations should be upgraded for improved operability and ease of maintenance.
- The North Reservoir Booster Pump Station should be upgraded with larger pumps.
- Master meters throughout the City's water system should be replaced with larger meters to decrease head loss.
- Several water mains need to be replaced with new water mains to increase fire flows and resolve deficiencies related to undesirable pipe material and aging water main.
- Telemetry, operation, and control improvements are necessary to simplify the operation of the water system and optimize control of the facilities with reduced operation costs.
- The City will continue to implement measures identified in the Vulnerability Assessment.

### ***Proposed Water System Improvements and Financing Plan***

Improvements to the system are primarily necessary to resolve existing system deficiencies, but they will also improve operations, replace older aging infrastructure, and accommodate future water customers. Improvements identified for the first six years of the capital improvement program (2014 to 2020) are estimated to cost approximately \$18,233,000 (in 2014 dollars), which results in an average expenditure of approximately \$2,605,000 per year (in 2014 dollars). Scheduled improvements in the following five years (2021 to 2025) are estimated to cost approximately \$11,405,000 (in 2014 dollars). The City is planning for up to \$14,215,000 (in 2014 dollars) in improvements between 2021 and 2025, which include the scheduled improvements as well as additional unscheduled water main improvements.

As the existing infrastructure continues to age, managing and funding the water system CIP is essential in maintaining a safe and reliable water supply for the City’s customers. Based on the existing level of repair and replacement identified by the City for the water system CIP, the amount of water main in the system that is greater than 55 years old will increase from 8 percent to 28 percent by the end of the 20-year planning period. As funding becomes available, the City should consider a more aggressive water main repair and replacement program or develop asset management strategies to address future infrastructure needs.



The financial analysis is intended to illustrate the feasibility of funding the operation, maintenance, and capital improvements planned for the water system for the next six years. The financial forecast projects that the City is capable of funding the CIP with a projected share of 2 percent debt and the remainder from rate-funded Capital Reserves and Capital Facilities Charges (CFCs). The revenue needs forecast provides for between 1.9 percent and 3.1 percent rate increases each year through 2019.

The City has established rates that are affordable to its customers and has earned a reputation for providing high-quality customer service and outstanding water quality. The City’s proven financial strength will ensure that customers will continue to receive the same high-quality level of service they have come to expect.



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