



# MEMORANDUM

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| <input type="checkbox"/>            | Action      |
| <input checked="" type="checkbox"/> | Information |
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**DATE:** January 7, 2020

**TO:** Environmental Services Commission

**FROM:** Linda De Boldt, Assistant Director – Engineering Division, Utilities  
Abelardo Santos, Senior Engineer - Project Management Section, Utilities

**SUBJECT:** Utilities Watermain Replacement Program – Informational Briefing

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## **No Action Required at this Time**

No action by the Commission is required at this time. This is an informational briefing on the Utilities Watermain Replacement Program, a significant and ongoing capital investment that is needed to ensure provision of high-quality drinking water for Bellevue’s customers.

## **Policy and Fiscal Impacts**

The 2021-27 CIP budget for the Watermain Replacement Program is \$81.3 million. The Watermain Replacement Program is a significant element of the 2021-27 Utilities CIP budget to meet the customer service requirements for high quality drinking water. In accordance with Council-adopted policies, the Utilities CIP is funded through utility rates. Additionally, these policies direct long-term financial capital planning to achieve smooth rate transitions, maintain high credit ratings, provide for financial flexibility, and achieve inter-generational equity.

## **Background**

Bellevue’s Water Utility serves the City of Bellevue as well as the adjacent communities of Clyde Hill, Hunts Point, Medina, Yarrow Point, and sections of the City of Kirkland. Bellevue purchases water from Seattle through the Cascade Water Alliance. The responsibility for distributing water throughout its service area rests with Bellevue Utilities. Providing water services to about 37,000 customers requires operations, maintenance, and capital renewal and replacement of \$1.2 billion of infrastructure, including over 600 miles of pressurized water pipeline, 24 reservoirs with 41.5 million gallons of storage, 22 pump stations, 62 pressure zones, and over 5,800 fire hydrants.

On January 7<sup>th</sup>, Utilities staff will provide a briefing on the Watermain Replacement Program, which is one element of the water utility capital investment plan. This program addresses replacement of over 600 miles of watermain that is critical to delivering water to our customers. Most of this pipe network was built 50-70 years ago and is now well past midlife. As this infrastructure ages, it becomes less reliable and more failures occur. This is not only disruptive and inconvenient to our customers; it can be very costly for the utility. About 40 percent of the pipes in Bellevue are asbestos cement (AC), which are prone to catastrophic failure with little warning, especially the smaller diameter AC pipes. The rest of the water system pipes are predominantly

ductile or cast iron, which generally exhibit a failure mode that allows more time for field crews to respond and thus minimize major community impacts.

The cost to operate, maintain, rehabilitate and replace water pipelines in Bellevue will steadily increase over the next 75 years. Utilities has a strategic asset management plan to minimize pipeline failures in order to maintain customer service, and to mitigate future rate spikes through proactive planning. The focus of this plan is to optimize the timing and cost of pipeline replacement. Bottom line, system renewal and replacement is needed and is a significant driver of the Utilities capital investment plan.

Based on pipe age and life cycle assessments, Bellevue Utilities determined that it was necessary to replace 5 miles of pipe per year to maintain system functionality and meet customer service levels. Over the last few decades, the rate of replacement has been gradually increased to meet this target. Even at this current rate of replacement, water pipe will need to last on average 100-125 years.

This program focuses on replacing water main pipe that has reached the end of its useful life. Additional program benefits include increasing the firefighting flow to neighborhoods, adding reliability with additional valves (to limit service shutdowns), and improving earthquake resiliency. Pipes are selected for replacement based on risk of failure (likelihood and consequence), break history, potential for cost savings or reduced neighborhood impacts by coordinating with other construction (e.g. planned street overlays), and opportunities to address deficiencies such as fire flow below the 1,000 gal/min minimum or vulnerable pipes in liquefaction areas.