

BELLEVUE UTILITIES
2021-2027 CAPITAL INVESTMENT PLAN (CIP)
WATER FUND
PROPOSED BUDGET BY PROGRAM



W-16 Water Main Replacement

Description and Scope

This program focuses on replacing water main pipe that has reached its useful life. Additional benefits include increasing the firefighting flow available to neighborhoods, adding reliability with additional valves (to limit service shutdowns), and improving earthquake resiliency. This investment funds pipeline replacement at a rate of 5 miles/year, adjusted with inflation. At that rate, water pipe will need to last on average 100-125 years to sustain the system’s 600+ miles of pipe. 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 or other benefits listed above.

Project Need: System Renewal and Replacement

Proposed Budget (includes inflation)

W-16	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Miles Replaced	5	5	5	5	5	5	5	5	5
Adopted	\$16,040,000	\$12,014,000							
Proposed			\$6,320,000	\$12,820,000	\$9,860,000	\$12,680,000	\$12,730,000	\$12,770,000	\$14,110,000

Types of Projects and Program Highlights

- Previously-unavailable earthquake-resistant pipe is now used in vulnerable soils to improve resiliency.
- There is no change to the target of replacing 5 miles of pipe per year. Locations are identified based on the criteria above. Some specific sub-projects proposed for 2021-2022 include the following:
 - Forced water main relocation for WSDOT projects (\$4.0M), including 2 new I-405 bridges at Main St & Lake Wash. Blvd, proposed downtown access project (I-405), and Overlake access ramp (SR-520).
 - Bellevue Way main replacement from SE 8th (fire station) to SE 16th (Chace’s Pancake Corral), in reaction to numerous recent main breaks (known failing condition), prioritized to also address capacity bottleneck
 - Water mains surrounding Lake Bellevue, in reaction to numerous recent main breaks (known failing condition), prioritized due to increasing frequency of failures and suspected leakage.
 - NE 32nd/33rd & 130th/131st main replacement (Cherry Crest & Compton Green neighborhoods) due to AC main age, prioritized to address fire flow deficiency identified in the 2016 Water System Plan (p. 4-12).
 - SE 60th St main replacement, due to main break on steel pipe that is outside the capability of staff to repair in-house, prioritized to restore full redundancy and fire flow service (main is currently shut down).
 - Non-destructive condition assessment (\$1.1M) to aid prioritization of replacement sites and assist in “go/no-go” decision making prior to pipe replacement driven by external projects (e.g. street overlays).

W-67 Pressure Reducing Valve (PRV) Station Rehabilitation

Description and Scope

This ongoing program rehabilitates or replaces aging, obsolete pressure reducing valve (PRV) stations throughout the water service area. It will also add remote flow and pressure sensors beginning in 2025. The number of PRV stations that are rehabilitated varies from year to year based on the annual program budget and the rehabilitation costs, but over the long term should average about 3 PRV stations per year. Replacement criteria include service requirements, safety, maintenance history, age, coordination with other overlapping projects (e.g. street overlays or adjacent water main replacement), and availability of replacement parts.

PROJECT NEED: System Renewal and Replacement

Proposed Budget (includes inflation)

W-67	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
# PRVs Replaced	3	3	3	3	3	3	3	3	3
Adopted	\$0	\$63,000						-	-
Proposed			\$430,000	\$240,000	\$350,000	\$790,000	\$1,000,000	\$1,790,000	\$1,400,000

Types of Projects and Program Highlights

- New system-wide “Smart Water” remote flow and pressure sensors are proposed beginning in 2025
- Funding levels continue to include a sustained rate of three PRV station rehabilitations per year.
- Annual spending fluctuates due to staffing availability and schedule impacts due to other projects
- Minimal budget request in 2019-2020 due to delay in prior funded projects from earlier years.

W-69 Minor (Small) Water Capital Improvement Projects

Description and Scope

This ongoing program pays for small improvements to Bellevue's water system to resolve deficiencies, improve efficiencies, or address maintenance problems, often in conjunction with other programs such as the Transportation overlay program. Projects are prioritized based on criteria including public safety, risk of failure or property damage, maintenance frequency, operator safety, reliability and efficiency gains, coordination with other city projects or development activity, and level of service impact.

Project Need: System Renewal and Replacement

Proposed Budget (includes inflation)

W-69	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$1,546,000	\$238,000							
Proposed			\$700,000	\$270,000	\$130,000	\$0	\$0	\$0	\$190,000

Types of Projects and Program Highlights

- New pressure-reducing valve (PRV) station is proposed to address Bellevue 220 zone low pressure deficiency per Water System Plan (p. 4-20).
- Two new PRV stations are proposed to address Pikes Peak 550 zone and Lake Hills 380 zone low fire flow deficiencies per Water System Plan (p. 4-12).

W-85 Reservoir Rehabilitation or Replacement

Description and Scope

This program funds recoating, rehabilitation, seismic retrofits and/or replacement of drinking water reservoirs to maintain these facilities for reliable operation. Bellevue operates and maintains 24 active drinking water reservoirs and is responsible for 2 decommissioned reservoirs in the service area. In addition, Bellevue shares partial ownership (and access to water) in 4 other reservoirs maintained and operated by neighboring utilities. A new study evaluating seismic vulnerability, recent Code modifications and emerging earthquake science in 2020 will inform upcoming needs and priorities.

Project Need: System Renewal and Replacement

Proposed Budget *(Includes inflation)*

W-85	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$1,284,000	\$4,585,000							
Proposed			\$7,680,000	\$3,250,000	\$2,570,000	\$890,000	\$600,000	\$2,880,000	\$5,510,000

Types of Projects and Program Highlights

- Proposed budget includes re-coating 1 tank every other year.
- Completion of Pikes Peak reservoir was delayed until 2021.
- Seismic retrofit and re-coating of the 11 million gallon South Reservoir is budgeted for 2021.
- Coating of the concrete Cherry Crest Reservoir roof is proposed to address cracking perceived to be a potential water quality risk if not addressed.
- Re-coating projects are adjusted to provide for a more robust end-product with longer life, including previously unavailable, longer-lasting zinc primers, and full removal of existing coating to bare steel for optimal surface preparation (better quality than painting over existing). This increased the initial capital cost estimates per project.
- Reservoir emergency response improvements are added, as recommended by the Water Supply Forum, to improve reliability and access following an earthquake. Schedule is 2026-2027 to allow time for FEMA grant applications.

W-91 Water Pump Station Rehabilitation or Replacement

Description and Scope

This program was established in 2005 to rehabilitate or replace drinking water pump stations. Bellevue operates and maintains 22 pump stations and shares partial ownership in a separate pump station operated by Coal Creek Utility District. Based on a needs assessment of each pump station, investments can range from basic improvements to complete reconstruction. The rehabilitation work may include capacity, safety and reliability improvements, new mechanical and electrical equipment, on-site emergency power generation, and seismic retrofits.

PROJECT NEED: System Renewal and Replacement

Proposed Budget (Includes inflation)

W-91	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$5,224,000	\$3,348,000							
Proposed			\$0	\$0	\$1,460,000	\$2,784,000	\$980,000	\$790,000	\$1,030,000

Type of Projects and Program Highlights

- Scope of program reduced from rehabilitation of one pump station per year to an average of one pump station every other year, due to staffing constraints..
- Pikes Peak Pump Station is being demolished and combined with the replaced Cherry Crest Pump Station in 2020.
- Clyde Hill and NE 40th/670 Pump Station rehabilitation sub-projects are deferred beyond 2025.
- Somerset 2 Pump Station rehabilitation is accelerated due to operational difficulties.
- Evaluation is added for the Somerset 1000 zone fire flow deficiency caused by Somerset #3 pump station decommissioning in the 2000s (identified in 2016 Water System Plan p. 4-16).
- No budget request in 2021-2022 due to previously-funded, unfinished projects to be completed in these years.

W-98 Replacement of Large Commercial Water Meter Vaults

Description and Scope

This program systematically replaces aging, obsolete vaults housing high-volume commercial water meters (3" and larger). Due to their location and condition, these meters pose safety and access concerns and are generally beyond the ability of O&M crews to replace. This ongoing program replaces approximately 4 commercial meter vaults each year.

Project Need: System Renewal and Replacement

Proposed Budget (includes inflation)

W-98	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
# Meters*	1	1	4	3	5	3	5	4	4
Adopted		\$120,000							
Proposed			\$40,000†	\$340,000	\$570,000	\$430,000	\$700,000	\$690,000	\$580,000

* Historical (pre-2019) replacement target was 4 meters per year.

† Budget request in 2021 is reduced due to delayed work from 2019-2020.

Types of Projects and Program Highlights

- Proposed scope returns to the original (pre-2019) average replacement rate of 4 per year. The current budget cycle reduced the rate to 1 meter per year.

W-99 Water Service Line and Saddle Replacement Program

Description and Scope

This program replaces aging and deteriorating water service saddles (the component connecting the customer's water service line to the city-owned water main), and deteriorating water service lines (the pipes between the city's water main and the customer's water meter), in response to known deficiencies and/or in advance of planned street improvements.

Project Need: System Renewal and Replacement

Proposed Budget (includes inflation)

W-99	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$0	\$263,000							
Proposed			\$240,000	\$280,000	\$120,000	\$0	\$0	\$0	\$0

Types of Projects and Program Highlights

- Average replacement rate of 30 service saddles per year is proposed for 2021-2022. This reduced rate reflects recent increased costs per saddle and reduced planned work.
- Funding is not requested at this time for 2024-2027 because (1) there is not a current backlog/list of sites (purely reactive replacement), and because (2) an evaluation of program cost efficiency and life-cycle costs versus full water main replacement is recommended. Additional future funding can be added during the next budget cycle pending results of a life-cycle cost evaluation and updated list of project sites.

W-103 Increase Drinking Water Storage Availability for West Operating Area

Description and Scope

This CIP Plan increases the drinking water storage available for anticipated population growth in Downtown, Bel-Red, and Wilburton areas. System improvements in 2020 accommodated near-term growth, while upcoming projects will plan and design a new reservoir to provide for long-term growth. New reservoir completion is accelerated from 2034 to 2030 due to recent growth and pending rezones that will increase density further.

Project Need: Capacity for Growth

Proposed Budget (Includes inflation)

W-103	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$1,576,000	\$0							
Proposed			\$1,100,000	\$190,000	\$0	\$0	\$0	\$1,170,000	\$1,620,000

Types of Projects and Program Highlights

- Completion of the NE 8th St transmission main to access surplus storage in Lake Hills has been delayed to 2021.
- The location selected for the new inlet station (CIP W-104) is co-located with the NE 8th transmission main project to benefit both projects.
- The schedule for a new reservoir is accelerated to 2030 due to recent growth exceeding projections, plus multiple pending rezones in Downtown, Bel-Red and Wilburton that will further increase density. Previously, the 2016 Water System Plan projected the new reservoir would be needed by 2034.
- A new reservoir siting study is proposed in 2021-2022, followed by design work beginning in 2026.

W-105 Water Facilities for NE Spring Blvd. Multi-Modal Corridor

Description and Scope

This project provides funds for continued design and construction of new water facilities concurrent with the design and construction of the NE Spring Blvd Multi-Modal corridor. The corridor will consist of a new street, bikeways, pathways, and the new East Link light rail. This project includes approximately 2 miles of 12 and 16 inch water main.

Project Need: Capacity for Growth

Proposed Budget *(includes inflation)*

W-105	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$877,000	\$226,000							
Proposed			\$0	\$0	\$0	\$1,600,000	\$1,250,000	\$0	\$0

Types of Projects and Program Highlights

- Previously the schedule was unknown, because projects are dictated by development activity and Transportation Department grant applications (outside the control of Bellevue Utilities). The schedule is adjusted to account for work in Spring Blvd from 120th to 132nd Ave.

W-111 Maintenance and Operations Yard

Description and Scope

As the City of Bellevue continues to grow, there is a critical need for long range operational facilities planning to ensure that the Utilities Department (Utilities) can meet the community’s current and future needs in an efficient and timely manner. The current service locations are functioning at or near capacity, and there is significant risk that they will not be sufficient to meet Utilities’ growing operational needs. To address this, Utilities initiated the development of a long range Operations and Maintenance (O&M) Facilities Plan.

Based on the alternatives analysis within the O&M Facilities Plan, property acquisition was recommended in the 2019-2025 CIP as a first step to site the maintenance facility. While a specific site has not been determined, the site acquisition is funded by available year-end 2017 operating reserves in the water (\$5.3M) and sewer utilities (\$2.7M).

Project Need: Service Enhancement

Proposed Budget *(includes inflation)*

W-111	2019 (Adopted)	2020 (Adopted)	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
Adopted	\$5,333,000	\$0	\$0	\$0	\$0	\$0	\$0		
Proposed			\$0	\$0	\$1,333,500	\$1,333,500	\$0	\$0	\$0

Program Highlights

- Design and construction of the facility has been added (2023-2024). Previous scope was only for land acquisition.
- Property transaction has been delayed to 2022.
- Estimated costs are split evenly between Water and Sewer Funds (W-111 and S-111).

W-115 (NEW) SCADA Upgrades

Description and Scope

The City of Bellevue Utilities Department utilizes a supervisory control and data acquisition (SCADA) system to control and monitor the potable water, wastewater and storm water systems. Since the initial installation in the 1970s, this system has utilized leased copper telephone lines as the SCADA communications media. With age, the copper phone lines used for communicating vital control logic and retrieving precious data have become increasingly unreliable. As the telecommunication providers transition their core business away from copper telephone lines towards fiber-optic cable and cellular networks, the City faces increasing communications outages. Any break in communications within our SCADA network increases the risk and cost of providing essential Utility services to our customers. More than ever, it is incumbent upon the Utility to modernize our SCADA communications network to a more reliable medium.

The family of projects under the SCADA Infrastructure Upgrades program will improve the reliability and security of the SCADA system across 32 potable water sites, 48 wastewater sites and 11 storm water sites. These projects will install a private, secure cellular and fiber-optic communications network and optimize the operation of the cities three utilities. Additionally, these upgrades will allow SCADA operators to leverage cutting-edge technology to improve the quality of service and reduce risks to the environment.

Project Need: System Renewal and Replacement

Proposed Budget (includes inflation)

W-115	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
SCADA Upgrades	\$0	\$80,000	\$1,000,000	\$330,000	\$0	\$0	\$0

W-117 (NEW) 170th PI SE Pressure Improvements

Description and Scope

This project is the final phase of improvements to address low pressure deficiencies in the Sammamish 270 pressure zone (SA270), and specifically on 170th PI SE, as identified in the 2016 Water System Plan (p. 4-21). Water mains installed on 170th PI SE circa 1980 have never provided the minimum 30 psi pressure established by the City and required by the WA State Department of Health, due to high elevation relative to West Lake Sammamish Pkwy and SA270. As a solution, this project includes installation of water main and a pressure-reducing valve (PRV) station in an existing driveway across Weowna Park, to provide higher-pressure water on 170th PI SE.

Project Need: System Renewal and Replacement/ Level of Service Deficiency

Proposed Budget *(includes inflation)*

W-117	2021 (Proposed)	2022 (Proposed)	2023 (Proposed)	2024 (Proposed)	2025 (Proposed)	2026 (Proposed)	2027 (Proposed)
170th PI SE Pressure Improvements	\$220,000	\$530,000	\$330,000	0	0	0	0