

2021-2027 Capital Investment Program Plan Water

The Water Utility owns and operates over 600 miles of water distribution and transmission mains, 24 reservoirs with 41.5 million gallons of storage, and 22 pump stations. Water is supplied by the Cascade Water Alliance by contractual arrangement with the City of Seattle through the Tolt and Cedar River supply systems. Bellevue's Water Utility serves all of Bellevue as well as the adjacent communities of Clyde Hill, Hunts Point, Medina, Yarrow Point, and sections of the city of Kirkland.

Capital improvements for the Water Utility are generally based on Bellevue's 2016 Water System Plan and are informed by ongoing asset management analyses and other emerging system operational needs. The System Plan identifies system improvements needed to continue to meet the demands of population growth and system aging, and to provide for orderly system expansion and improvements which increase system reliability, efficiency, and maintain desired levels of service. The water system continues to be analyzed on an ongoing basis to identify pressure, capacity, and storage needs to inform future capital projects.

The 2021-2027 CIP Plan recognizes that significant investments are needed to maintain aging systems and replace components that are reaching the end of their useful life. The Water CIP also includes investments that are necessary to meet system capacity needs in response to growth and demand in the system.

2021-2027 Adopted CIP: Healthy and Sustainable Environment - Water

Funded CIP Projects

		\$	in 0	00s
CIP Plan Number	Project Title	2021-202' Project Co		Total Estimated Cost
W-16	Small Diameter Water Main Replacement	\$ 81,29	0 \$	189,687
W-67	Pressure Reducing Valve (PRV) Rehabilitation	6,00	0	15,402
W-69	Minor (Small) Water Capital Improvement Projects	1,29	0	9,042
W-82	Fire Hydrant Standardization	-		1,877
W-85	Resevoir Rehabilitation or Replacement	23,38	0	41,199
W-91	Water Pump Station Rehabilitation or Replacement	7,04	0	25,821
W-98	Replacement of Large Commercial Water Meters	3,35	0	7,119
W-99	Water Service Line and Saddle Replacement	64	0	3,646
W-103	Increase Drinking Water Storage Availability for West Op Area	4,08	0	8,019
W-104	New Water Inlet Station	-		5,229
W-105	Water Facilities for NE 15th Multi Modal Corridor	2,85	0	4,364
W-105-B	Water Facilities for NE 15th Multi Modal Corridor (Bank)	-		1,517
W-108	Advanced Metering Infrastructure (AMI) Implementation (Water)	-		16,162
W-109	Richards Road Inlet Supply Saturation Improvements	-		500
W-110	NE 40th and Enatai Inlet Water Station	-		2,314
W-111	Operations and Maintenance Land Acquisition - Water	2,66	7	8,000
W-115	SCADA Upgrades - Water	1,41	0	1,410
W-117	170th PI Pressure Improvements	1,08	0	1,080
		\$ 135,07	7 \$	342,388

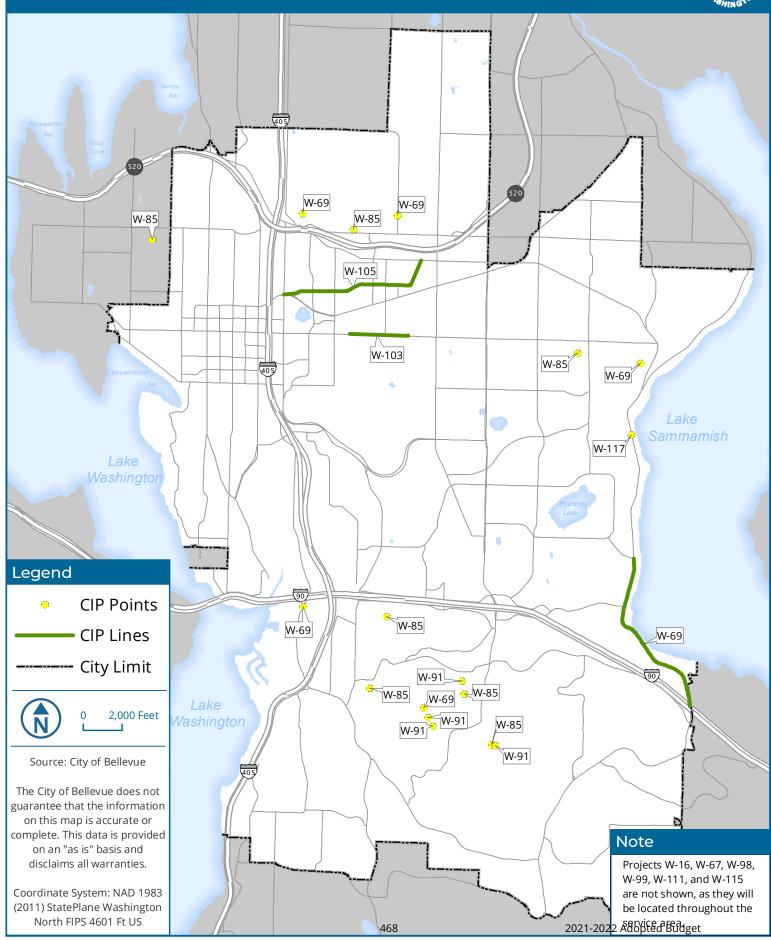
2021-2027 Adopted CIP: Healthy and Sustainable Environment - Water

Combined, Completed Projects

		\$ in 000s
		Total
CIP Plan Number	Project Title	Estimated
		Cost
NONE		
Total Combined, Com	pleted Projects	-

2021-2027 Water CIP Projects





W-16 Small Diameter Water Main Replacement

Category: High Quality Built & Natural Env Status: Ongoing

Department: Utilities Location: Water Service Area

Programmed Expenditures							
Programmed Appropriated	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures To Date	Budget	_Budget_	_Budget_	_Budget_	_Budget_	Budget	Budget
189,686,885 108,396,885	6,320,000	12,820,000	9,860,000	12,680,000	12,730,000	12,770,000	14,110,000
Description and Spans							

This program focuses primarily on replacing small diameter asbestos cement (AC) pipe that has reached its useful life. A secondary benefit is increasing the emergency fireflow available to neighborhoods. This investment will ramp up water pipeline replacement to 5 miles/year by 2018, and then be adjusted with inflation to maintain the 5 miles per year replacement rate. At that rate, water pipe will need to last on average 100-125 years. Pipes are selected for replacement based on risk of failure (likelihood and consequence), failure history, and coordination with other construction, such as planned street overlays (which reduce restoration costs). Project costs include a 2.8 percent cost increase reflecting actual bid experience for pipe replacement.

Rationale

In the short term, this program reduces the likelihood of catastrophic system failures, unplanned service interruptions, damage claims to the city, and sharp rate increases to react to system failures rather than proactively managing the system. In the long term, timely replacement or repair of water system assets keeps customer rates as low as practical by managing the system at the least life-cycle cost while maintaining target service levels and meeting regulatory requirements.

Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

405 405

Project Map

Schedule of Activities

Project Activities	From - 10	Amount		
Project Costs	Ongoing	189,686,885		

189,686,885 **Total Budgetary Cost Estimate:** Means of Financing **Funding Source Amount**

Utility Rates/Fees 189,686,885

> **Total Programmed Funding:** 189,686,885 **Future Funding Requirements:**

Comments

0

W-67 Pressure Reducing Valve (PRV) Station Rehabilitation

Category: High Quality Built & Natural Env Status: Ongoing

Department: Utilities Location: Water Service Area

Programmed Expenditures							
Programmed Appropri	iated FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures To Da	te Budget	Budget	Budget	Budget	Budget	Budget	Budget
15,401,971 9,401,	971 430,000	240,000	350,000	790,000	1,000,000	1,790,000	1,400,000
		Do	carintian and S	Coope			

This ongoing program is to rehabilitate or replace old and deteriorating pressure reducing valves (PRVs) throughout the water service area. The number of pressure reducing valves 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 PRVs per year. Replacement criteria include service requirements, safety, maintenance history, age, and availability of replacement parts.

Rationale

In the short term, this program reduces the likelihood of catastrophic system failures, unplanned service interruptions, damage claims to the city, and sharp rate increases to react to system failures rather than proactively managing the system. In the long term, timely replacement or repair of water system assets keeps customer rates as low as practical by managing the system at the least life-cycle cost while maintaining target service levels and meeting regulatory requirements.

Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map Schedule of Activities

Project Costs

Project Activities



Total Budgetary Cost Estimate:	15,401,971

Means of Financing

From - To

Ongoing

Amount

15,401,971

Funding Source	Amount
Utility Rates/Fees	15,401,971

Total Programmed Funding: 15,401,971 **Future Funding Requirements:** 0

W-69 Minor (Small) Water Capital Improvement Projects

Category: High Quality Built & Natural Env Status: Ongoing

Department: Utilities Location: Water Service Area

			Progr	ammed Expen	ditures			
Programmed A	Appropriated	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures	To Date	Budget	Budget	<u>Budget</u>	Budget	Budget	Budget	Budget
9,041,619	7,751,619	700,000	270,000	130,000	-	-	-	190,000
Description and Scope								

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

Rationale

In the short term, this program reduces the likelihood of catastrophic system failures, unplanned service interruptions, damage claims to the city, and sharp rate increases to react to system failures rather than proactively managing the system. In the long term, timely replacement or repair of water system assets keeps customer rates as low as practical by managing the system at the least life-cycle cost while maintaining target service levels and meeting regulatory requirements.

Environmental Impacts

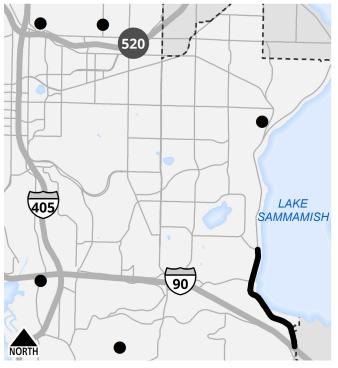
This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map Schedule of Activities Project Activities From - To

Project Costs



Total Budgetary Cost Estimate:	9,041,619
Means of Financing	
Funding Source	Amount
Utility Rates/Fees	9,041,619

Ongoing

Total Programmed Funding: 9,041,619 **Future Funding Requirements:** 0

Comments

Amount

9,041,619

W-85 Reservoir Rehabilitation or Replacement

Category: High Quality Built & Natural Env Status: Ongoing

Department: Utilities Location: Water Service Area

Programmed Expenditures								
Programmed Appropriate	d FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	
Expenditures To Date	Budget	Budget	<u>Budget</u>	Budget	Budget	Budget	Budget	
41,199,477 17,819,477	7,680,000	3,250,000	2,570,000	890,000	600,000	2,880,000	5,510,000	
Description and Scope								

This program funds retrofit or replacement of drinking water reservoirs to avoid or mitigate earthquake damage, and reservoir rehabilitation for age or use related deterioration. Bellevue operates and maintains 25 drinking water reservoirs in the system with a combined capacity of 40.6 million gallons. A 1993 reservoir study evaluated the seismic vulnerability of 21 of the reservoirs and recommended further evaluation and/or upgrade for 12 of these reservoirs. Remaining work at Horizon View #1, Somerset #1, Pikes Peak Reservoir, and Horizon View #2 reservoirs will be completed during this CIP window. A new study of the other reservoirs will determine upcoming needs and priorities for asset rehabilitation and replacement.

Rationale

In the short term, this program reduces the likelihood of catastrophic system failures, unplanned service interruptions, damage claims to the city, and sharp rate increases to react to system failures rather than proactively managing the system. In the long term, timely replacement or repair of water system assets keeps customer rates as low as practical by managing the system at the least life-cycle cost while maintaining target service levels and meeting regulatory requirements.

Environmental Impacts

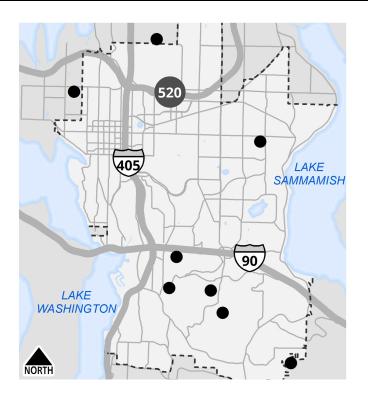
This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map Schedule of Activities

Project Activities



Froject Activities	110111-10	Amount
Project Costs	Ongoing	41,199,477

Total Budgetary Cost Estimate:	41,199,477
Means of Financing	
Funding Source	Amount
Utility Rates/Fees	41.199.477

Total Programmed Funding: 41,199,477
Future Funding Requirements: 0

Comments

A mount

W-91 Water Pump Station Rehabilitation or Replacement

Category: High Quality Built & Natural Env Status: Ongoing

Department: Utilities Location: Water Service Area

Programmed Expenditures							
Programmed Appropriated	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures To Date	Budget	Budget	Budget	Budget	Budget	Budget	Budget
25,821,473 18,781,473	-	-	1,460,000	2,780,000	980,000	790,000	1,030,000
		Do	carintian and (Saana			

This program was established in 2005 to rehabilitate Bellevue's twenty-one water pump stations. Based on a needs assessment of each pump station, improvements can range from basic improvements to complete reconstruction. The rehabilitation work always includes replacing the mechanical and electrical equipment, adds on-site emergency power generation as needed, and resolves structural deficiencies and life/safety issues as needed. In 2015-21 these pump stations will be rehabilitated or replaced: Horizon View #3, Horizon View #1, Cougar Mtn. #3, Pikes Peak, Cougar Mtn. #2, Clyde Hill P.S., Cougar Mtn. #1, and Horizon View #2.

Rationale

In the short term, this program reduces the likelihood of catastrophic system failures, unplanned service interruptions, damage claims to the city, and sharp rate increases to react to system failures rather than proactively managing the system. In the long term, timely replacement or repair of water system assets keeps customer rates as low as practical by managing the system at the least life-cycle cost while maintaining target service levels and meeting regulatory requirements.

Environmental Impacts

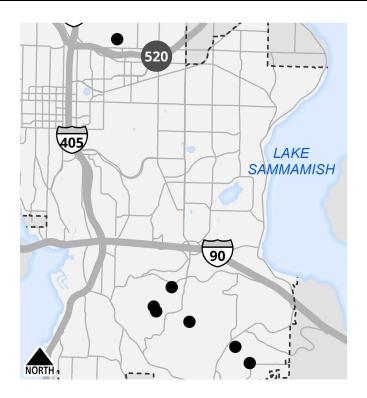
This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map Schedule of Activities

Project Activities



Project Activities	FIOIII - 10	Alliount
Project Costs	Ongoing	25,821,473

Total Budgetary Cost Estimate:	25,821,473
Means of Financing	
Funding Source	Amount
Utility Rates/Fees	25,821,473

Total Programmed Funding: 25,821,473 **Future Funding Requirements:** 0

Comments

A mount

W-98 Replacement of Large Commercial Water Meter Vaults

Category: High Quality Built & Natural Env Status: Ongoing

Department: Utilities Location: Water Service Area

Programmed Expenditures							
Programmed Appropriated	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures To Date	Budget	Budget	Budget	Budget	Budget	Budget	Budget
7,119,163 3,769,163	40,000	340,000	570,000	430,000	700,000	690,000	580,000
		Da	anvintion and C	anna.			

This program systematically replaces older, obsolete high-volume commercial water meters as they wear out. Due to their location and condition, these meters pose safety and access concerns and are generally beyond the ability of O&M crews to change out. Improved performance accuracy is a secondary benefit of the program. This ongoing program replaces approximately 4 commercial meters (and meter vaults, if required) each year.

Rationale

In the short term, this program reduces the likelihood of catastrophic system failures, unplanned service interruptions, damage claims to the city, and sharp rate increases to react to system failures rather than proactively managing the system. In the long term, timely replacement or repair of water system assets keeps customer rates as low as practical by managing the system at the least life-cycle cost while maintaining target service levels and meeting regulatory requirements.

Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map Schedule of Activities



Project Activities	From - To	Amount
Project Costs	Ongoing	7,119,163

Total Budgetary Cost Estimate: 7,119,163

Means of Financing					
Funding Source	Amount				

Utility Rates/Fees 7,119,163

Total Programmed Funding: 7,119,163 **Future Funding Requirements:** 0

W-99 Water Service Line and Service Saddle Replacement Program

Category: High Quality Built & Natural Env Status: Ongoing

Department: Utilities Location: Water Service Area

Programmed Expenditures								
Programmed A	ppropriated	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures	To Date	Budget						
3,645,500	3,005,500	240,000	280,000	120,000	-	-	-	-
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 line), and deteriorating water service lines (the pipes between the city's water main to the customer's water meter), most commonly in advance of planned street improvements. Annual expenditures can vary widely depending on the condition of saddles and service lines where street improvement projects are planned. Due to these uncertainties, level funding based on replacement of 100 service/saddles is proposed for each year in the CIP window, recognizing that some years will be over or under spent.

Rationale

In the short term, this program reduces the likelihood of catastrophic system failures, unplanned service interruptions, damage claims to the city, and sharp rate increases to react to system failures rather than proactively managing the system. In the long term, timely replacement or repair of water system assets keeps customer rates as low as practical by managing the system at the least life-cycle cost while maintaining target service levels and meeting regulatory requirements.

Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map Schedule of Activities

Project Costs

Project Activities



Total Budgetary Cost Estimate:	3,645,500
Means of Financing	

From - To

Ongoing

Amount

Amount

3,645,500

Utility Rates/Fees 3,645,500

Funding Source

Total Programmed Funding: 3,645,500 **Future Funding Requirements:** 0

W-103 Increase Drinking Water Storage Availability for West Operating

Category: High Quality Built & Natural Env Status: Ongoing

Department: Utilities Location: West Operating Area

Programmed Expenditures							
Programmed Appropriate	d FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures To Date	Budget	Budget	Budget	<u>Budget</u>	Budget	Budget	Budget
8,019,086 3,939,086	1,100,000	190,000	-	-	-	1,170,000	1,620,000

Description and Scope

This project is for design and construction of facilities to increase the drinking water storage available for anticipated population growth in Downtown, Bel-Red, and Wilburton areas. System improvements will be made in this CIP window to allow transfer of surplus water stored in East Bellevue to the growth areas, assuring emergency storage is available for near-term growth. These improvements include upgrades to transmission mains in NE 8th Street and at SE 7th and 140th Ave SE, and upgrades to system Pressure Reducing Valves. The project also includes analysis of emergency well capacity to supplement regional supply in case of an outage, which may offset or reduce the need for added storage. The 2015 Water System Plan update analyzed required timing and volume as well as siting considerations for storage to meet the needs of planned growth.

Rationale

In the short term, utility capacity will be available without delaying development and redevelopment projects. In the long term, recovering the cost of projects from growth will reduce future rate increases to pay for utility system replacement.

Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map Schedule of Activities

Project Activities From - To

Project Costs



Total Budgetary Cost Estimate:	8,019,086
Means of Financing	
Funding Source	Amount
Utility Rates/Fees	8,019,086

Ongoing

Total Programmed Funding: 8,019,086 **Future Funding Requirements:** 0

Comments

Amount

8,019,086

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

Category: High Quality Built & Natural Env Status: Ongoing

Department: Utilities Location: NE Spring Boulevard from 116th Ave NE at NE 121

Programmed Expenditures								
Programmed A	ppropriated	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures	To Date	Budget	Budget	Budget	Budget	Budget	Budget	Budget
4,363,822	1,513,822	-	-	-	1,600,000	1,250,000	-	-

Description and Scope

Water pipes will be needed to provide utility services to properties adjacent to the new NE Spring Boulevard Corridor, and to improve water transmission capacity for anticipated growth throughout the Bel-Red Corridor. This project will eventually design and construct approximately 2 miles of 12- and 16-inch water pipe in the new NE Spring Blvd right-of-way. Utility design and construction will be coordinated with corridor design and construction, so that utilities are in place and do not conflict with surface design of street/path/bikeway/light rail.

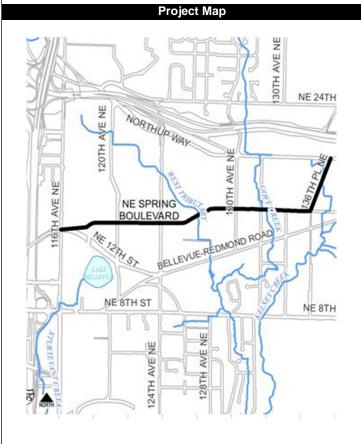
This proposal involves close collaboration between Transportation and Utilities to assure the design and construction of utility facilities is done in coordination with the corridor design and construction.

Rationale

Environmental Impacts

Operating Budget Impacts

Estimated Annual M&O Costs: 0



Project Activities	From - To	Amount
Project Costs	Ongoing	4,363,822

Schedule of Activities

Total Budgetary Cost Estimate:	4,363,822			
Means of Financing				
Funding Source	Amount			
Utility Rates/Fees	4,363,822			

Total Programmed Funding: 4,363,822 **Future Funding Requirements:** 0

W-111 Maintenance and Operations Facility Land Acquisition and

Category: High Quality Built & Natural Env Status: Ongoing Department: Utilities Location: TBD

Programmed Expenditures								
Programmed Appr	ropriated FY	2021 FY	2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures To	o Date Bu	ıdget Bu	ıdget	Budget	Budget	Budget	Budget	Budget
8,000,000 5,3	333,000	-		1,333,500	1,333,500	-	-	-
Description and Scope								

Based on the alternatives analysis within the O&M Facilities Plan, property acquisition and site development is being recommended in the 2021-2027 CIP for the maintenance facility. While a specific site has not been determined, this proposal establishes a budget of \$16.0 million for property acquisition and development. The estimated cost of the land purchase for this CIP Project was funded by excess operating reserves which were allocated in the 2019-2020 biennium. The Design and Construction costs are being proposed as part of the 2021-2027 CIP Plan and will be funded as part of the annual transfer to CIP from Operations.

Rationale

The Utilities Operations and Maintenance Facilities Plan outlines strategic, 20-year investments to address vulnerabilities caused by inadequate, poorly positioned, and deteriorating facilities. Land acquisition and development of the Utilities North End Yard will start the Utility on the path to:

- Build capacity for yard functions and equipment storage on the north end of Bellevue,
- Build right-sized facilities capable of supporting today's operations and future growth, and
- Position facilities so crews can respond efficiently to routine work orders and emergencies

Environmental Impacts

Operating Budget Impacts

Estimated Annual M&O Costs: 0

520 S20 LAKE WASHINGTON LAKE (EELLEVUE (SAMMAMISH LAKE (LAKE (SAMMAMISH LAKE (LAKE) (LAK

Project Map

Schedule of Activities

Project Activities	From - 10	Amount
Project Costs	Ongoing	8,000,000

Total Budgetary Cost Estimate: 8,000,000

Means of Financing
Funding Source Amount

Utility Rates/Fees 8,000,000

Total Programmed Funding: 8,000,000 **Future Funding Requirements:** 0

FY2021-2027 Capital Investment Program

W-115 SCADA Upgrade - Water

Category: High Quality Built & Natural Env Status: New

Department: Utilities Location: Various locations.

Programmed Expenditures								
Programmed A	Appropriated	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures	To Date	Budget	Budget	Budget	Budget	Budget	Budget	Budget
1,410,000	-	-	80,000	1,000,000	330,000	-	-	-
Description and Scope								

This project funds replacement or rehabilitation of drinking water system infrastructure. Bellevue's water system is a complex network of pipes, reservoirs, pump stations, supply inlets, valves and meters that together deliver roughly 6 billion gallons of drinking water to our customers annually. System replacement value is estimated at \$1.6 billion construction cost plus engineering and administration, and most of the system is more than halfway through its useful life. Failure trends and obsolete equipment provides evidence that system components are rapidly approaching the end of their service life and must be replaced. This project implements Utilities' long term water system renewal and replacement strategy by funding CIP programs for each major type of water system component, right-sized for proactive, sustainable water system management, to maintain acceptable service levels at the lowest life-cycle cost.

Rationale

Environmental Impacts

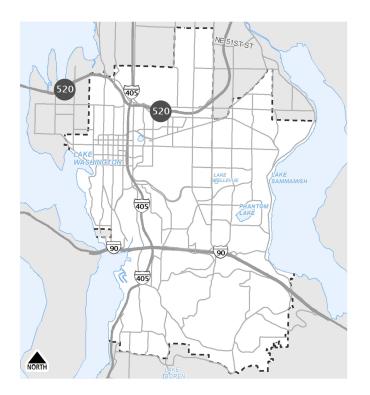
Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map Schedule of Activities

Project Costs

Project Activities



Total Budgetary Cost Estimate:	1,410,000
Maana of Financina	

From - To

2017 - 2023

Amount

Amount

1,410,000

Utility Rates/Fees 1,410,000

Funding Source

Total Programmed Funding: 1,410,000 **Future Funding Requirements:** 0

FY2021-2027 Capital Investment Program

W-117 170th PI Pressure Improvements

Category: **Need to fix**

Status: New

Department: **Utilities**

Location: Various locations.

Programmed Expenditures								
Programmed A	Appropriated	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Expenditures	To Date	Budget						
1,080,000	-	220,000	530,000	330,000	-	-	-	-
Description and Scope								

This project funds replacement or rehabilitation of drinking water system infrastructure. Bellevue's water system is a complex network of pipes, reservoirs, pump stations, supply inlets, valves and meters that together deliver roughly 6 billion gallons of drinking water to our customers annually. System replacement value is estimated at \$1.6 billion construction cost plus engineering and administration, and most of the system is more than halfway through its useful life. Failure trends and obsolete equipment provides evidence that system components are rapidly approaching the end of their service life and must be replaced. This proposal implements Utilities' long term water system renewal and replacement strategy by funding CIP programs for each major type of water system component, right-sized for proactive, sustainable water system management, to maintain acceptable service levels at the lowest life-cycle cost.

Rationale

Environmental Impacts

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map Schedule of Activities

Project Activities



Project Costs	2017 - 2023	1,080,000

From - To

Amount

Total Budgetary Cost Estimate: 1,080,000

Means of Financing
Funding Source Amount

Utility Rates/Fees 1,080,000

Total Programmed Funding: 1,080,000 **Future Funding Requirements:** 0