

City of Bellevue - Budget One

2017-2018 CIP Budget Proposal

Section 1: Proposal Descriptors

Project Title: Replacement of Aging Water Infrastructure

Outcome: Healthy and Sustainable Environment

Proposal Number: 140.02NA

Primary Dept: Utilities

CIP Project Number: Multiple

Proposal Type: Existing

Parent Proposal: None

Project Status:

Dependent Proposal: None

Primary Staff: Pamela Maloney, x4625

Fund: Utility CIP - Water

Section 2: Executive Summary

This proposal 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 almost 6 billion gallons of drinking water to our customers annually. System replacement value is estimated at \$1.1 billion, 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.

Section 2b: Performance Narrative

Performance Indicators are established to measure the rate of system failure against established targets for acceptable service levels. An upward failure trend would point to higher required investment. Other indicators measure progress toward timely replacement or rehabilitation of pipes, pump stations, and reservoirs. Timely asset replacement reduces the potential for catastrophic failure, unplanned customer service interruptions, and costly damage claims.

Section 3: Responsiveness to Request For Results

This proposal funds replacement of water system components as they approach the end of their functional life, or rehabilitates facilities to maximize their service life. This proposal is entirely supported by utility rates. It assumes 2.0% inflation per year for 2017-23, consistent with regional cost indices for public works engineering and construction. Most programs in this proposal were included in the adopted 2015-2021 CIP; two new projects are included (W-109 and W-110). No significant scope changes to existing programs are proposed however some project recosting is significant. W-16 continues implementation of the council-approved plan to ramp up the water pipe replacement rate to a sustainable 5 miles/year by 2018. Revenue has been collected since 2008 to support acceleration of that program. Included:

- W-16 Small Diameter Water Main Replacement
- W-67 Pressure Reducing Valve (PRV) Rehabilitation
- W-69 Minor (Small) Water Capital Improvement Projects
- W-82 Fire Hydrant Standardization
- W-85 Reservoir Rehabilitation or Replacement
- W-91 Water Pump Station Rehabilitation or Replacement
- W-98 Replacement of Large Commercial Water Meters
- W-99 Water Service Line and Service Saddle Replacement Program
- W-109 Richards Road Inlet Supply Station Improvements (NEW)
- W-110 NE 40th and Enatai Water Supply Inlet Station Improvements (NEW)

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Bellevue's water system is a complex network of 620 miles of pressurized pipes, 29 in-use water storage reservoirs (including five shared with other jurisdictions), 23 pump stations (including two shared with other jurisdictions), 13 active supply inlet stations, and various other components required to deliver almost 6 billion gallons of drinking water annually. System replacement value is estimated at \$1.1 Billion, or about \$7600 for each of the 145,000+ customers who receive water service. Most of the system is more than halfway through its useful life; many pipes are approaching the end of their service lives and are at increasing risk of failure. Utilities Financial Policies (adopted by Council) require appropriate capital investment for asset replacement. These are long term renewal and replacement programs, with individual programs for each major type of water system component (a.k.a. asset class). Each program is right-sized for sustainable, cost effective water system management. Water infrastructure rehabilitation and replacement is based on asset criticality and business risk, per industry best practices.

This proposal supports Council Strategic Target Areas, Community Values, and Healthy and Sustainable Environment (HSE) Factors. Council Strategic Target Areas: Timely replacement of water system infrastructure supports a HIGH QUALITY BUILT ENVIRONMENT and HIGH PERFORMANCE GOVERNMENT by ensuring reliable public infrastructure to deliver quality drinking water that ensures public health and protects the environment.

Community Values are reflected by using sustainable best practices that improve water infrastructure to support healthy living, and demonstrated resource stewardship by managing to lowest responsible life cycle cost for current and future generations.

Built and Natural Environment primary factors of HSE are addressed by this proposal:

- Built Environment: Replacement of aging water infrastructure ensures an EFFICIENTLY MANAGED SUPPLY OF CLEAN DRINKING WATER, RELIABLY AVAILABLE and in sufficient quantity for homes and businesses.
- Natural Environment: CLEAN WATER AND HEALTHY OPEN SPACES result from minimizing water system failures, which reduces environmental damage from flooding and erosion of lakes, streams, and wetlands.
- Resource Conservation: Timely replacement of aging water pipes and appurtenances reduces the volume of treated, potable water lost to leakage into the ground or following system breaks.

HSE Purchasing Strategies: These programs replace aging drinking water infrastructure to ensure the delivery of safe drinking water in an environmentally sensitive and sustainable way by minimizing the cost of service over the life of assets, while maintaining expected service delivery. They are right-sized to assure assets aren't prematurely replaced, and reflect proactive system management, rather than responding after systems fail. These capital programs implement water system management that looks to the future, incorporating a 75-year forecast of resources needed for system replacement, considering inter-generational cost equity, and precluding sharp rate increases. They reduce the chance of failure and minimize the likelihood of large damage claims. Maximizing asset component life means efficient system replacement, avoiding wasting materials.

City-wide purchasing strategies: This proposal delivers best value and considers long- and short-term financial impacts. Life cycle cost analyses that consider economic, environmental and social (triple bottom line) costs and benefits are used to evaluate project alternatives so that the best value, not only in pure economic terms but also in terms of the environment and "quality of life," is identified. Life cycle cost includes design, construction, operations, maintenance, risk (failure costs), and decommissioning.

Other best value activities: Bellevue participated in a Water Research Foundation project to identify optimum strategies for AC pipe replacement which confirmed that AC pipe installed prior to 1950 should be prioritized for replacement. Various saddle materials (e.g., stainless steel, bronze, brass, or epoxy coated) are being evaluated to determine which provides the most value.

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This proposal supports other Primary Outcomes: Responsive Government requires that services are delivered efficiently and effectively. Economic Growth & Competitiveness relies on a high quality utility infrastructure. A Safe Community relies on properly maintained infrastructure.

Customer impacts: In the short term, these programs reduce the likelihood of catastrophic system failures, unanticipated service interruptions, damage claims to the city, and sharp rate increases to react to system failures rather than proactive system replacement. In the long term, timely replacement or repair of water facility 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.

Appropriate service levels: The proposed annual program budgets are established to minimize the total life-cycle cost of ownership while meeting established service level targets. Underfunding any of the programs will increase the total cost of system replacement over time. Proposed investment for each program was developed based on Asset Management Program recommendations to minimize the life-cycle cost of ownership/operation of the water utility system, and to assure assets aren't prematurely replaced if repair and maintenance is more cost effective. For example, the sustainable rate of 5 miles/year for water main replacement (W-16) is based on a presumed water main asset life of 100-125 years.

Efficiencies/Innovations: New repair and replacement technologies and asset management strategies are identified, evaluated and (when appropriate) implemented. For example, in 2015 Bellevue piloted the use of acoustic testing to analyze water main condition. Based on successful results, pipes planned for replacement in 2017-18 were re-prioritized, and acoustic testing will now be considered a mainline condition assessment tool. Acoustic testing is a non-destructive way to help determine remaining asset life, by measuring sound wave speed along a pipe section. The results determine average minimum pipe wall thickness or stiffness, and help forecast remaining life.

Partnerships and coordination: Utilities coordinates with Transportation to assure utility work in public rights-of-way is completed prior to planned street resurfacing. Utilities also partners with Transportation to combine asphalt pavement restoration over pipeline replacement into a single large contract for cost savings. W-16 replaces 4-5 miles of water main each year, mostly under streets. Selection of which pipes to replace and which streets to overlay is a collaborative, iterative inter-departmental process to achieve both programs' objectives. Utilities also coordinates in-street work with other jurisdictions (Medina, Hunts Point, Yarrow Point, Clyde Hill, Kirkland, Issaquah, and King Co.) in Bellevue's water service area.

Scaleability: If this proposal was not funded, there would be:

- A marked increase in sudden failures requiring emergency response and repair at a higher total cost;
- Increased likelihood of drinking water flooding private and public facilities, and damaging streams, lakes, and other sensitive areas;
- Increased risk of claims and associated poor customer service;
- Increased risk of regulatory action; and
- Increased operations and maintenance costs.

Funding this program at a lower rate would have similar consequences, although less severe. The recommended levels of repair and replacement are intended to minimize the life-cycle cost of system ownership and operation.

Section 4: Performance Measures and Targets

Code	Performance Measure	Frequency	2014	2015	2016	2017	2018
			Actual	Actual	Target	Target	Target
140.0082f	Utilities: Condition related water main failures per 100 miles of water main	Years	4.53	3.23	1.25		

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140.0088f	Utilities: Percentage of reservoirs without significant structural deficiencies	Years	84%	84%	80%	80%	80%
140.0107	Utilities: Number of miles of water pipe replaced	Years	3.02	3.34	0.98	4.4	5
140.0212f	Utilities: Unplanned water service interruptions per 1,000 customer accounts	Years	1.85	1.91	0.75	3	3
140.0246	Utilities: Number of water service repairs	Years	277	284	250	250	250

Section 5: CIP

5A: Description and Scope

5B: Rationale

5C: Environmental Impacts

5D: Location/Address

5E: CIP Summary

<u>140.02NA</u>	<u>ITD 2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Total</u>
Expenditure									
W-16	63,175,885	10,325,000	9,542,000	9,722,000	9,916,000	10,114,000	10,317,000	10,358,000	133,469,885
W-67	8,456,971	545,000	400,000	281,000	541,000	424,000	433,000	441,000	11,521,971
W-69	5,498,619	216,000	253,000	223,000	206,000	119,000	245,000	250,000	7,010,619
W-82	1,296,965	2,532	315,000	0	254,000	0	0	0	1,868,497
W-85	11,465,705	61,772	423,000	1,888,000	715,000	777,000	1,382,000	2,011,000	18,723,477
W-91	8,026,238	1,345,235	838,000	2,997,000	2,131,000	2,880,000	2,782,000	2,312,000	23,311,473
W-98	2,979,308	119,855	550,000	0	573,000	584,000	596,000	608,000	6,010,163
W-99	2,416,932	72,568	253,000	258,000	263,000	269,000	274,000	280,000	4,086,500
W-109	0	500,000	0	0	0	0	0	0	500,000
W-110	0	200,000	0	0	0	0	0	0	200,000
Expenditure	103,316,623	13,387,962	12,574,000	15,369,000	14,599,000	15,167,000	16,029,000	16,260,000	206,702,585
Revenue									
W-16	63,175,885	10,325,000	9,542,000	9,722,000	9,916,000	10,114,000	10,317,000	10,358,000	133,469,885
W-67	8,456,971	545,000	400,000	281,000	541,000	424,000	433,000	441,000	11,521,971
W-69	5,498,619	216,000	253,000	223,000	206,000	119,000	245,000	250,000	7,010,619
W-82	1,296,965	2,532	315,000	0	254,000	0	0	0	1,868,497
W-85	11,465,705	61,772	423,000	1,888,000	715,000	777,000	1,382,000	2,011,000	18,723,477
W-91	8,026,238	1,345,235	838,000	2,997,000	2,131,000	2,880,000	2,782,000	2,312,000	23,311,473
W-98	2,979,308	119,855	550,000	0	573,000	584,000	596,000	608,000	6,010,163
W-99	2,416,932	72,568	253,000	258,000	263,000	269,000	274,000	280,000	4,086,500
W-109	0	500,000	0	0	0	0	0	0	500,000
W-110	0	200,000	0	0	0	0	0	0	200,000
Revenue	103,316,623	13,387,962	12,574,000	15,369,000	14,599,000	15,167,000	16,029,000	16,260,000	206,702,585

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Section 1: Proposal Descriptors

Project Title: Replacement of Aging Sewer Infrastructure

Outcome: Healthy and Sustainable Environment

Proposal Number: 140.03NA

Primary Dept: Utilities

CIP Project Number: Multiple

Proposal Type: Existing

Parent Proposal: None

Project Status:

Dependent Proposal: None

Primary Staff: Pamela Maloney, x4625

Fund: Utility CIP - Sewer

Section 2: Executive Summary

This proposal funds replacement or rehabilitation of sanitary sewer system infrastructure. Bellevue's wastewater system is comprised of pipes and pump stations that remove 11 million gallons of sewage from homes and businesses every day, and convey it safely to King County's regional system for treatment and disposal. System replacement value is estimated at \$1.4 Billion, and most of the system is more than halfway through its useful life. Ongoing inspection of sewer asset condition and claims experience trends provide evidence that much of the system requires significant repair or will soon need to be replaced. This proposal implements Utilities' long term sanitary sewer renewal and replacement strategy by funding CIP programs for each type of major sewer system component, each right-sized for proactive, sustainable wastewater system management to maintain acceptable service levels at the lowest life-cycle cost.

Section 2b: Performance Narrative

Performance Indicators are established to measure the rate of system failures against established targets, and the number of sewage overflows caused by asset failure. An upward trend would point to higher required investment. Others measure progress toward timely replacement or rehabilitation of pipes and pump stations. Timely asset replacement reduces the potential for catastrophic failure, unplanned customer service interruptions, environmental damage, and costly damage claims.

Section 3: Responsiveness to Request For Results

This proposal funds replacement of sewer system components as they approach the end of their functional life, or rehabilitates facilities to maximize their service life. This proposal is entirely supported by utility rates. It assumes 2.0% inflation per year for 2017-23, consistent with regional cost indices for public works engineering and construction. All programs in this proposal were included in the adopted 2015-2021 CIP. Included:

- S-16 Sewer Pump Station Improvements
- S-24 Sewer System Pipeline Major Repairs
- S-32 Minor (Small) Sewer Capital Improvements Projects
- S-58 Lake Washington Sewer Lake Line Assessment Program
- S-66 Sewer System Pipeline Replacement
- S-67 Inflow and Infiltration Investigations and Flow Monitoring
- S-68 Sewer Force Main Condition Assessment
- S-69 Meydenbauer Bay Park Sewer Lake Line Replacement

Bellevue's wastewater system is comprised of over 650 miles of pipe and 46 pump and flush stations which reliably remove 11 million gallons of sewage every day (on average) from homes and businesses, and convey it safely to King County's regional system for treatment and disposal. System replacement value is estimated at \$1.4 Billion, or about \$9,600 for each of 145,000+ residential population served. Most of the system is more than halfway through its useful life. Ongoing inspection of pipe condition reveals that many pipes require significant repair, or will soon need to be replaced. Failures and claims experience trends provide further

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evidence.

Utilities Financial Policies (adopted by Council) require appropriate capital investment for asset replacement. The Washington Depts. of Ecology and Health require sewer system operators to minimize overflows to surface water bodies. Repeated overflows can lead to enforcement action or state-mandated capital projects. (WAC 173 240 060) Bellevue's NPDES Permit (Western Washington Phase II Municipal Stormwater Permit) requires Bellevue to reduce the discharge of pollutants to surface water to the maximum extent practicable.

This proposal supports Council Strategic Target Areas, Community Values, and Healthy and Sustainable Environment (HSE) Factors. Council Strategic Target Areas: Timely replacement of sewer system infrastructure supports a HIGH QUALITY BUILT AND NATURAL ENVIRONMENT, and HIGH PERFORMANCE GOVERNMENT by ensuring reliable public infrastructure to safely manage sewage, and ensures public health and protects the environment.

Community Values are reflected by embracing sustainable business practices, minimizing damage to environmentally sensitive areas, and improving infrastructure systems to support healthy living.

Built and Natural Environment primary factors of HSE are addressed by this proposal.

- Built Environment: Timely replacement of aging wastewater infrastructure demonstrates RELIABLE AND EFFICIENT (WASTE)WATER MANAGEMENT
- Natural Environment: A reliable wastewater system supports CLEAN WATER AND HEALTHY OPEN SPACES by minimizing wastewater system failures, which can pollute surface waters and backup into homes, compromising public health.

HSE Purchasing Strategies: These CIP programs replace aging wastewater infrastructure to ensure the continued removal of wastewater in an environmentally sensitive and sustainable way by minimizing the cost of service over the life of assets, while maintaining expected service delivery. They are right-sized to assure assets aren't prematurely replaced if they should be repaired and maintained. They reflect proactive system management, rather than responding after systems fail. They reduce the chance of failure and minimize the likelihood of large damage claims. Maximizing asset component life means efficient system replacement, avoiding wasting materials.

Citywide Purchasing Strategies: This proposal delivers best value and considers long- and short-term financial impacts. Life cycle cost analyses that consider triple bottom line costs and benefits (economic, environmental, and social) are used to evaluate project alternatives so that the best value, not only in pure economic terms but also in terms of the environment and "quality of life" is identified. Life cycle cost analyses are used to assess project alternatives. Life cycle includes design, construction, operations and maintenance, risk (failure cost) and decommissioning costs.

This proposal supports other Primary Outcomes: Responsive Government requires that services are delivered efficiently and effectively. Economic Growth & Competitiveness relies on a high quality utility infrastructure. A Safe Community relies on properly maintained infrastructure.

Customer impacts: In the short term, these programs reduce the likelihood of catastrophic system failures, damage claims, and unpredictable rate increases to react to failures rather than proactively managing the system. In the long term, timely replacement or repair of wastewater facilities keeps customer rates as low as practical by managing the system at the lowest life-cycle cost, while maintaining service levels and meeting regulatory requirements.

Appropriate Service Levels: The proposed annual program budgets are established to minimize the total life-

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cycle cost of ownership. Underfunding any of the programs will increase the total cost of system replacement over time. Proposed investment for each program was developed based on Utility Asset Management Program recommendations to minimize the life-cycle cost of ownership/operation of the water utility system, and to assure assets aren't prematurely replaced if repair and maintenance is more cost effective. Underfunding any of the programs will increase the total cost of system ownership, over time.

Efficiencies/Innovations: Less expensive sewer pipeline repair techniques are being evaluated for feasibility (S-24). (E.g. root saws that can travel up stubs from the sewer main line and the use of herbicides to retard root growth.) Innovative and Creative strategies and methods are evaluated for cost-effective sewer infrastructure replacement (S-66, S-58). (e.g. non-traditional alternatives such as vacuum wastewater systems are being considered for lake line replacement, and pipe bursting is being considered for replacing concrete sewer pipe.) Force mains are sewer pipes operating under pressure in a severe environment, with high risk and consequence of failure. Rather than removing all force mains from service or using destructive testing techniques, Utilities is using a risk-based assessment approach to determine how much resource should be expended for individual force main condition assessments (S-68).

Partnerships and Coordination: Utilities partners with Transportation to combine asphalt pavement restoration into a single large contract for lower bids. Sewer pipes under Bellevue streets which are scheduled for resurfacing are video-inspected up to two years ahead of Transportation's planned street work, to assure that repairs or replacement that require street cutting and patching (S-24 and S-66) are completed cost-effectively ahead of resurfacing. Utilities coordinates in-street work with other jurisdictions in Bellevue's sewer service area (Medina, Clyde Hill, Hunts Pt., Yarrow Pt., Beaux Arts, Issaquah, and King Co.) (S-24 and S-66) Utilities is coordinating with Parks to design and construct the sewer main under Meydenbauer Beach Park. (S-69). S-66 replaces or re-lines sewer pipes when that is a more cost effective solution than continued repair and extraordinary maintenance.

Scaleability: If this proposal was not funded, aging sewer infrastructure would fail with increasing frequency, potentially catastrophically, resulting in damage to property and the environment and leading to damage claims and lawsuits and the potential for violation of Bellevue's NPDES municipal stormwater permit.

Significant consequences of deferred wastewater system replacement or repair include

- Increased likelihood of sewage overflow into private and public facilities, or polluting streams, lakes, beaches, and other sensitive areas;
- Increase in sudden failures requiring emergency response and repair at a higher total cost;
- Increased risk of regulatory action;
- Increased risk of claims and associated poor perception of customer service; and Increased operations and maintenance costs.

Funding this program at a lower rate would have similar consequences, although less severe. The recommended levels of repair and replacement are intended to minimize the life-cycle cost of system ownership and operation. One time projects (S-58, S-68, and S-69) are not scaleable.

Section 4: Performance Measures and Targets

<u>Code</u>	<u>Performance Measure</u>	<u>Frequency</u>	<u>2014 Actual</u>	<u>2015 Actual</u>	<u>2016 Target</u>	<u>2017 Target</u>	<u>2018 Target</u>
140.0091	Utilities: Wastewater overflows caused by pipeline failures	Years	5	1	2	2	2
140.0092f	Utilities: Percentage of sewer pump stations rehabilitated within their useful life (25 years)	Years	58.7%	58.7%	65%	65%	65%
140.0095	Utilities: Wastewater pipeline defects corrected via CIP	Years	50	48	59	52	52

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140.0096	Utilities: Miles of wastewater pipe replaced or rehabilitated	Years	2.12	0.19	0.5	0.5	0.5
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Section 5: CIP

5A: Description and Scope

5B: Rationale

5C: Environmental Impacts

5D: Location/Address

5E: CIP Summary

<u>140.03NA</u>	<u>ITD 2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Total</u>
Expenditure									
S-16	14,033,491	40,664	1,815,000	1,095,000	1,118,000	1,110,000	1,013,000	1,212,000	21,437,155
S-24	21,014,785	1,890,000	1,952,000	1,991,000	2,031,000	2,072,000	2,113,000	2,155,000	35,218,785
S-32	2,364,323	102,000	110,000	112,000	115,000	117,000	119,000	122,000	3,161,323
S-58	1,801,400	117,555	0	0	0	0	0	0	1,918,955
S-66	3,404,100	2,732,789	677,000	2,419,000	1,745,000	1,219,000	1,157,000	1,770,000	15,123,889
S-67	470,000	256,382	230,000	223,000	96,000	0	0	0	1,275,382
S-68	522,000	236,879	20,000	0	0	0	0	0	778,879
S-69	348,000	3,832,000	0	0	0	0	0	0	4,180,000
Expenditure	43,958,099	9,208,269	4,804,000	5,840,000	5,105,000	4,518,000	4,402,000	5,259,000	83,094,368
Revenue									
S-16	14,033,491	40,664	1,815,000	1,095,000	1,118,000	1,110,000	1,013,000	1,212,000	21,437,155
S-24	21,014,785	1,890,000	1,952,000	1,991,000	2,031,000	2,072,000	2,113,000	2,155,000	35,218,785
S-32	2,364,323	102,000	110,000	112,000	115,000	117,000	119,000	122,000	3,161,323
S-58	1,801,400	117,555	0	0	0	0	0	0	1,918,955
S-66	3,404,100	2,732,789	677,000	2,419,000	1,745,000	1,219,000	1,157,000	1,770,000	15,123,889
S-67	470,000	256,382	230,000	223,000	96,000	0	0	0	1,275,382
S-68	522,000	236,879	20,000	0	0	0	0	0	778,879
S-69	348,000	3,832,000	0	0	0	0	0	0	4,180,000
Revenue	43,958,099	9,208,269	4,804,000	5,840,000	5,105,000	4,518,000	4,402,000	5,259,000	83,094,368

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Section 1: Proposal Descriptors

Project Title: Replacement of Aging Storm Infrastructure

Outcome: Healthy and Sustainable Environment

Proposal Number: 140.04NA

Primary Dept: Utilities

CIP Project Number: Multiple

Proposal Type: Existing

Parent Proposal: None

Project Status:

Dependent Proposal: None

Primary Staff: Pamela Maloney, x4625

Fund: Utility CIP - Drainage

Section 2: Executive Summary

This proposal funds replacement or rehabilitation of aging stormwater system infrastructure. Bellevue's stormwater system is comprised of regional detention facilities, pipes, culverts and open streams that convey stormwater runoff to eventual outfall into Lake Washington or Lake Sammamish. The constructed portions of the system, estimated replacement value \$1 Billion, are managed to prevent failures that cause flooding, erosion and traffic disruption, and to protect streams, lakes and wetlands as much as practicable from high velocity, erosive stream flows and pollution. Replacement of infrastructure prior to failure precludes property and environmental damage. This proposal implements Utilities' long term stormwater management strategy by funding CIP programs for the replacement and rehabilitation of Storm infrastructure at the least life-cycle cost, while maintaining acceptable service levels, for sustainable storm system management.

Section 2b: Performance Narrative

Performance Indicators are established to monitor the frequency of flooding incidents caused by drainage system failure. An upward trend would point to higher required investment. Other indicators demonstrate progress toward identification and timely repair of defective drainage pipes. Timely repair of stormwater system infrastructure reduces the potential for catastrophic failure, environmental damage, and damage claims.

Section 3: Responsiveness to Request For Results

This proposal funds replacement or rehabilitation of the constructed portions (pipes, ponds, vaults) of Bellevue's aging stormwater system. This program is entirely supported by utility rates. 2.0% inflation per year is assumed for 2017-23, consistent with regional cost indices for public works engineering and construction. All of the programs in this proposal were included in the 2015-2021 CIP. Budget adjustments (explained below) were made to D-59 and D-105. Included:

- D-59 Minor Storm and Surface Water Capital Improvement Projects
- D-64 Storm Water System Conveyance Infrastructure Rehabilitation
- D-103 Replace the Coal Creek Parkway Culvert at Coal Creek
- D-105 Replace the NE 8th Street Culvert at Kelsey Creek
- D-107 Stormwater Pipeline Video Inspection Enhancement

Bellevue's stormwater system includes 410 miles of pipes and culverts, 11 regional ponds, and over 22,000 catch basins, inlets, and manholes. Replacement of infrastructure prior to failure prevents flooding of public facilities and private property, erosion and traffic disruption, and protects the natural environment (streams, lakes and wetlands) from high velocity, erosive stormwater runoff and detrimental water quality pollutants. This proposal implements a long term strategy to manage storm infrastructure at the least life-cycle cost, while maintaining acceptable service levels. Utilities Financial Policies (adopted by Council) require appropriate capital investment for asset replacement. These are long term renewal and replacement programs. Asset replacement is based on asset criticality and business risk, per industry best practices. Bellevue's NPDES Permit

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(Western Washington Phase II Municipal Stormwater Permit) requires Bellevue to reduce the discharge of pollutants to surface water to the maximum extent practicable.

This proposal supports Council Strategic Target Areas, Community Values, and Healthy and Sustainable Environment (HSE) Factors. Council Strategic Target Areas: Timely replacement of storm system infrastructure supports a HIGH QUALITY BUILT AND NATURAL ENVIRONMENT and HIGH PERFORMANCE GOVERNMENT by ensuring reliable public stormwater infrastructure that functions to protect the environment.

Community Values are reflected by embracing sustainable business practices, minimizing damage to environmentally sensitive areas, and improving infrastructure systems to support healthy living.

Built and Natural Environment primary factors of HSE are addressed by this proposal. In particular, Reliable and Efficient Stormwater Management; Healthy and Quality Open Spaces; Clean Water factors are supported:

- A reliable stormwater system controls stormwater runoff from rain events to minimize flood and erosion damage to public and private property and the environment. Minimizing stormwater system failures reduces environmental damage that results from failures, such as high flow volumes that erode streams and wash out riparian habitat.
- Timely replacement of aging stormwater infrastructure prevents flooding that presents safety and environmental hazards that threaten a community and supports healthy lakes, streams and wetlands and improved wildlife habitat.

HSE Purchasing Strategies: These programs replace aging stormwater infrastructure to ensure the controlled removal of storm runoff in an environmentally sensitive and sustainable way by minimizing the cost of service over the life of assets, while maintaining expected service delivery. They are right-sized to assure we don't prematurely replace assets that would be more cost-effectively repaired and maintained. The strategy for proactive system management, rather than responding after systems fail, reduces the chance of failure (which would cause erosion and flooding) and minimizes the likelihood of large damage claims. This also protects natural surface water environments and the habitats they provide. Maximizing asset component life means efficient system replacement, avoiding material waste.

City-wide purchasing strategies: This proposal delivers best value, and considers long- and short-term financial impacts. Life cycle cost analyses that consider triple bottom line costs and benefits (economic, environmental and social) are used to evaluate project alternatives. The best value, not only in pure economic terms but also in terms of the environment and 'quality of life,' is readily identified. Life cycle includes design, construction, operations and maintenance, risk, and decommissioning costs.

This proposal supports other Primary Outcomes: Responsive Government requires that services are delivered efficiently and effectively. Economic Growth & Competitiveness relies on a high quality utility infrastructure. A safe Community relies on properly maintained infrastructure including control of stormwater runoff resulting in protection from flooding.

Customer impacts: In the short term, these programs and projects reduce the likelihood of catastrophic system failures; traffic disruption due to failed culverts under streets; damage claims to the city; and utility rate spikes to respond to system failures rather than proactively managing the system. In the long term, timely replacement or repair of stormwater facilities keeps customer rates as low as practical by managing the system at the lowest life-cycle cost, while maintaining service levels and meeting regulatory requirements.

Appropriate service levels: The proposed annual investment for each ongoing CIP program in this proposal was developed to minimize the life-cycle cost of ownership/operation of the stormwater utility system. Timely

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replacement of stormwater utility infrastructure reduces the potential for catastrophic failure, which can lead to property and environmental damage, street damage, and claims. Reducing annual program budgets would necessitate maintenance beyond where it is cost effective, increasing the life-cycle cost of system ownership.

Efficiencies/Innovations: Less expensive storm pipe repair techniques and new technologies are continually evaluated and tested for feasibility. Utilities worked with Transportation to develop blanket permits for traffic control plans for stormwater video inspection work—saving significant time (D-107). The volume of contracted video inspection work has reduced the cost of pipe cleaning and inspection from ~\$5/F to ~\$2.40/LF (D-107, which was initiated in 2015.)

Partnerships and coordination: D-64 involves coordination with Transportation to assure any storm pipe defects which require street cuts are completed prior to any planned street resurfacing. D-103 and D-105 also involve collaboration with Transportation; the new bridges that replace existing culverts will become a part of the City’s arterial system. Utilities coordinates with external agencies for utility relocations. Utilities recently partnered with Parks to design a storm water treatment facility as part of the Downtown Park project to “finish the circle” (D-59).

Scaleability: If not funded there would be significant legal consequences and customer impacts:

- Increased potential for flooding of private and public facilities, traffic disruption, and downstream damage to streams, lakes, and other sensitive areas;
- Increase in sudden failures requiring emergency response and repair at a higher total cost
- Increased risk of claims and associated poor perception of customer service
- Increased risk of regulatory action (NPDES violations); and
- Increased O&M resource to maintain facilities that have exceeded their service lives.

Reduced funding would have proportionately less severe consequences for the ongoing programs. One-time projects (D-103 and D-105) are not scalable. For ongoing programs, funding less than the cost of system repair and replacement that has been determined to minimize the life-cycle cost of system ownership and operation will cost more over time.

Section 4: Performance Measures and Targets

Code	Performance Measure	Frequency	<u>2014</u> Actual	<u>2015</u> Actual	<u>2016</u> Target	<u>2017</u> Target	<u>2018</u> Target
140.0097	Utilities: Drainage system pipeline failures	Years	4	1	5	5	5
140.0098	Utilities: Drainage pipeline defects corrected via CIP	Years	1	20	6	6	6
140.0294	Utilities: Number of surface water pipe defects identified through condition assessment activities requiring repair or replacement	Years	41	3	25	25	25
140.0295f	Utilities: Percent of surface water system video inspected	Years	2.36%	3.27%	0.59%	2.36%	2.36%

Section 5: CIP

5A: Description and Scope

5B: Rationale

5C: Environmental Impacts

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5D: Location/Address

5E: CIP Summary

<u>140.04NA</u>	<u>ITD 2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Total</u>
Expenditure									
D-59	3,201,286	0	221,000	218,000	237,000	242,000	246,000	251,000	4,616,286
D-64	13,921,231	1,886,000	1,373,000	1,241,000	1,330,000	1,424,000	1,524,000	1,633,000	24,332,231
D-103	5,235,250	13,000	13,000	13,000	0	0	0	0	5,274,250
D-105	336,000	733,000	2,778,000	16,000	8,000	8,000	8,000	8,000	3,895,000
D-107	913,000	963,000	459,000	246,000	0	0	0	0	2,581,000
Expenditure	23,606,767	3,595,000	4,844,000	1,734,000	1,575,000	1,674,000	1,778,000	1,892,000	40,698,767
Revenue									
D-59	3,201,286	0	221,000	218,000	237,000	242,000	246,000	251,000	4,616,286
D-64	13,921,231	1,886,000	1,373,000	1,241,000	1,330,000	1,424,000	1,524,000	1,633,000	24,332,231
D-103	5,235,250	13,000	13,000	13,000	0	0	0	0	5,274,250
D-105	336,000	733,000	2,778,000	16,000	8,000	8,000	8,000	8,000	3,895,000
D-107	913,000	963,000	459,000	246,000	0	0	0	0	2,581,000
Revenue	23,606,767	3,595,000	4,844,000	1,734,000	1,575,000	1,674,000	1,778,000	1,892,000	40,698,767

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Section 1: Proposal Descriptors

Project Title: Utility Capacity for Growth

Outcome: Healthy and Sustainable Environment

Proposal Number: 140.05NA **Primary Dept:** Utilities

CIP Project Number: Multiple **Proposal Type:** Existing

Parent Proposal: None **Project Status:**

Dependent Proposal: None **Primary Staff:** Pamela Maloney, x4625

Fund: Proposal Uses More Than One Fund

Section 2: Executive Summary

This proposal funds construction of additional utility system capacity so that development and re-development projects are not delayed. Planned population growth of residents and workers in downtown, the Bel-Red Corridor, and the Wilburton Area will require more drinking water storage, more water from our regional system supplier, more sewer pump station capacity, and added water and sewer pipe capacity to meet state minimum requirements. Existing facilities are at or near capacity to serve the current population. The initial cost of growth-driven projects will be recovered via capital recovery charges and via direct facilities connection charges to benefited properties.

Section 2b: Performance Narrative

Several significant sewer capacity projects funded by this proposal were completed in the last biennium. (total budgets shown):

S-52 East CBD Sewer Trunkline Improvements \$3,769,045

S-53 Bellefield Pump Station Capacity Improvement \$10,115,681

S-60 Wilburton Sewer Capacity Upgrade \$9,862,599 (complete except for required post-construction monitoring)

S-61 Midlakes Pump Station Capacity Improvements \$4,069,715

Performance Indicators are established to monitor the number of development projects delayed awaiting water and sewer system capacity, and measure the environmental consequence of insufficient sewage conveyance and pumping capacity. Sewer overflows due to capacity limitations would indicate that sufficient conveyance and/or pumping capacity has not been provided for growth that has occurred. (Sewer Capacity programs within this proposal have been completed—but ongoing monitoring of this metric is a best practice.) A new metric has been added to monitor that the volume of drinking water storage is sufficient for Bellevue's residents and workers.

Section 3: Responsiveness to Request For Results

Planned growth (primarily) downtown and in the Bel-Red Corridor and Wilburton areas will need additional water facilities to assure a reliable, safe supply of drinking water for daily use and to meet emergencies, and sufficient sewer capacity to safely convey sewage from homes and businesses. Insufficient water and sewer system capacity (storage, supply, and conveyance) can result in development moratoriums imposed by the Washington State Departments of Health or Ecology, so they must be built before development. Sufficient sewer system capacity prevents sewer overflows to surface waters, resulting in a Healthy and Sustainable Environment. Included:

- W-103 Increase Drinking Water Storage Availability for the West Operating Area
- W-104 New Water Inlet Station
- S-60 Wilburton Sewer Capacity Upgrade

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All projects were included in the adopted 2015-2021 CIP. Council approved water and sewer rate increases to pay for these projects when they approved the prior budgets; revenue has been collected since then toward construction of those projects. 2.0 % inflation per year is assumed for 2017-23, consistent with regional cost indices for public works engineering and construction. Other projects to add Sewer System Capacity were completed in the 15-16 biennium, as described in Scope Changes below.

Utility capacity projects for growth are required by state mandate and city policy: Insufficient water and sewer system capacity (storage, supply, and conveyance) can result in development moratoriums imposed by the Washington State Department of Health or Ecology. Minimum water storage volume and supply availability based on population are established by state law: WAC 246-290-222(6) and 246-290-235 Sewer system management to preclude overflows is regulated by state law: WAC 173-221-010, WAC 173-240-060, and WAC 246-271-020

Construction of utility capacity improvement projects is initially paid from utility rate revenue. The initial project costs associated with growth are subsequently recovered through Capital Recovery Charges and Direct Facility Connection Charges proportional to benefit received, collected when properties develop or redevelop. Revenue collected from connection charges pays for future utility system replacement, helping to keep utility rates lower in the future. Portions of projects associated with replacing aging facilities or adding system redundancy are not recovered through connection charges, but rather through general utility rates. Operations and maintenance costs of new facilities are also recovered through general utility rates.

This proposal supports Council Strategic Target Areas, Community Values, and Healthy and Sustainable Environment (HSE) Factors. Council Strategic Target Areas: This proposal supports excellent and reliable infrastructure in support of a HIGH QUALITY BUILT ENVIRONMENT, provides superb public infrastructure and ensures a safe, clean city that promotes healthy living for a HIGH PERFORMANCE GOVERNMENT.

Community Values are supported: This proposal provides water and sewer infrastructure that reliably ensures public health and protects the environment.

Built and Natural Environment primary factors of HSE are addressed by this proposal. Projects for growth are all future-focused, necessary to meet the water and wastewater needs of planned population and employment growth without detrimental impact to the environment. The need for each was identified during comprehensive planning efforts and targeted studies for proposed changes in land use. This proposal ensures a safe, reliable supply of drinking water to and removal of wastewater from homes and businesses as Bellevue grows. Lakes, streams, and wetlands will be protected from sewage overflows, avoiding pollution and protecting the environment for plants and wildlife. New reservoirs and pump stations are more energy efficient, reducing greenhouse gas emissions. Building utility capacity in time for planned growth is proactive, allowing time for alternatives analyses that consider life-cycle costs and consider costs and benefits using triple bottom line principles of environmental, fiscal, and social.

HSE Purchasing Strategies:

- Sufficient sewer capacity protects Bellevue's open spaces and the natural environment by preventing sewer overflows, in direct support of a health environment.
- Sufficient water storage and conveyance means safe drinking water is available for people in Bellevue reliably and sustainably.
- Utility capacity project plan for future demands on the built environment that will occur as population and employment growth occurs.
- Adding water transmission capacity between the east and west sides of Bellevue, and making improvements at the Clyde Hill Reservoir to access all of the existing storage provides additional storage for emergencies to

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the growing areas of Bellevue at minimal cost. Construction of new storage can be deferred beyond this CIP window, maximizing the efficiency and value of today's systems and planning for future needs.

Citywide Purchasing Strategies: Proactive planning and pre-design assure the added capacity is right-sized. Building capacity 'just in time' is cost effective, minimizing financial impacts in the short term; recovery of the investment from developing properties keeps utility rates lower in the long term, providing best value. Collaboration with Cascade, King Co. Metro, Transportation, and Parks results in lower construction and ownership costs, and may provide opportunities for multi-purpose uses of public property. Life-cycle cost analysis of alternatives that incorporates triple bottom line principles for each project is a best practice that assures sound management of utility fiscal resources

This proposal supports other Primary Outcomes: Quality Neighborhoods and Safe Communities need reliable drinking water service and wastewater removal to protect public health. The water system capacity provided by these projects will ensure our continued ability to respond to fire and water supply emergencies. Economic growth and thriving business districts rely on robust utility systems, and cannot tolerate state-imposed development moratoriums. City Policy UT-7 states "Base the extension and sizing of system components on the land use plan of the area. System capacity will not determine land use." Bellevue's continued Economic Growth and Competitiveness is assured by constructing these facilities in time to avoid delaying proposed development activity.

Customer Impacts: In the short term, this proposal means utility capacity will be available without delaying development and redevelopment projects. In the long term, recovering the cost of projects via Capacity Recovery Charges (CRCs) and Direct Facilities Charges, as appropriate, from developing properties will reduce future rate increases to pay for utility system replacement.

Appropriate Service Levels: The proposed service level is to build facilities that meet state requirements for water and wastewater systems, constructed in time to prevent costly delays of development or redevelopment projects. These capacity projects are not scalable.

Efficiencies/Innovations: During preliminary design work for adding drinking water storage (W-103), an alternative solution was identified. Improving the water transmission capability between the east and west sides of the water system will make excess reservoir storage from the east side of Bellevue available to the west side in an emergency. This solution has the added benefit of improving the water system's reliability and flexibility of operation, and deferring the need for (and cost of) additional drinking water storage beyond this CIP window.

Partnerships and Coordination: W-104 involves collaboration with Cascade Water Alliance regarding regional water supply to Bellevue. All projects that affect street rights-of-way involve collaboration with Transportation Dept. to coordinate any planned street work, assuring utility work is completed prior to surface road improvements. Utilities partners with Transportation to combine similar types of asphalt pavement restoration into a single contract, typically resulting in lower bids.

Scaleability: If this proposal was not funded, there would be legal implications and customer impacts. Insufficient water and sewer system capacity (storage, supply, and conveyance) can result in development moratoriums imposed by the Washington State Department of Health or Ecology. Cost consequences to Bellevue (lost revenue) if development was halted awaiting utility capacity projects. **Customer Impacts:** Development projects could be denied pending water and sewer system capacity that meets state law. Sewer overflows pollute surface waters and result in restricted access to streams or beaches. In order to preserve storage for emergencies such as fires or supply outages, mandatory water use restrictions may be imposed.

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Section 4: Performance Measures and Targets

<u>Code</u>	<u>Performance Measure</u>	<u>Frequency</u>	<u>2014 Actual</u>	<u>2015 Actual</u>	<u>2016 Target</u>	<u>2017 Target</u>	<u>2018 Target</u>
140.0074	Utilities: Number of Wastewater Overflows due to System Capacity	Years	2	0	0	0	0
140.0467	Utilities: Downtown/Bel-Red reservoir volume above required minimum (in MG)	Years	1.5	1.1	2	2	2

Section 5: CIP

5A: Description and Scope

5B: Rationale

5C: Environmental Impacts

5D: Location/Address

5E: CIP Summary

<u>140.05NA</u>	<u>ITD 2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Total</u>
Expenditure									
S-30	0	0	0	0	0	0	0	0	0
S-52	3,994,045	0	0	0	0	0	0	0	3,994,045
S-53	10,415,681	0	0	0	0	0	0	0	10,415,681
S-55	41,001	0	0	0	0	0	0	0	41,001
S-56	1,576,000	0	0	0	0	0	0	0	1,576,000
S-60	9,862,599	568,000	11,000	11,000	11,000	11,000	12,000	0	10,486,599
S-61	4,069,715	301,980	0	0	0	0	0	0	4,371,695
W-102	1,138,000	0	0	0	0	0	0	0	1,138,000
W-103	779,547	342,539	641,000	654,000	0	0	0	0	2,417,086
W-104	0	637,000	2,273,000	2,319,000	0	0	0	0	5,229,000
Expenditure	31,876,588	1,849,519	2,925,000	2,984,000	11,000	11,000	12,000	0	39,669,107
Revenue									
S-30	0	0	0	0	0	0	0	0	0
S-52	3,994,045	0	0	0	0	0	0	0	3,994,045
S-53	10,415,681	0	0	0	0	0	0	0	10,415,681
S-55	41,001	0	0	0	0	0	0	0	41,001
S-56	1,576,000	0	0	0	0	0	0	0	1,576,000
S-60	9,862,599	568,000	11,000	11,000	11,000	11,000	12,000	0	10,486,599
S-61	4,069,715	301,980	0	0	0	0	0	0	4,371,695
W-102	1,138,000	0	0	0	0	0	0	0	1,138,000
W-103	779,547	342,539	641,000	654,000	0	0	0	0	2,417,086
W-104	0	637,000	2,273,000	2,319,000	0	0	0	0	5,229,000
Revenue	31,876,588	1,849,519	2,925,000	2,984,000	11,000	11,000	12,000	0	39,669,107

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Section 1: Proposal Descriptors

Project Title: Environmental Preservation

Outcome: Healthy and Sustainable Environment

Proposal Number: 140.08NA

Primary Dept: Utilities

CIP Project Number: Multiple

Proposal Type: Existing

Parent Proposal: None

Project Status:

Dependent Proposal: None

Primary Staff: Pamela Maloney, x4625

Fund: Proposal Uses More Than One Fund

Section 2: Executive Summary

This proposal funds Utility CIP projects focused on environmental preservation or restoration. It includes on-going programs and one-time projects intended to restore stream health and environmental habitat, or to prevent pollution of stream and habitat resources. These projects guard against harmful environmental impacts from City operations or repair environmental damage on public lands or lands with public responsibilities.

Section 2b: Performance Narrative

Performance Indicators are established to:

- Measure progress toward elimination of fish passage blockages (D-81)
- Measure the number of flooding claims (D-94 and D-106)
- Measure the number of sewer overflows as a result of power outages (S-59)

D-109 is a pilot program to investigate whether new technologies could improve water quality sufficiently to sustain fish in Kelsey Creek. Performance Indicators (PI's) and service levels will be proposed if the technologies prove viable and appropriate for Bellevue.

Section 3: Responsiveness to Request For Results

This proposal is for Utility CIP projects with environmental preservation or restoration as the primary goal. It includes programs and projects intended to restore stream health and environmental habitat or prevent pollution of those resources. These projects guard against detrimental impacts from city operations or repair environmental damage on public lands or lands with public responsibilities, such as easement obligations and at past project sites. Included:

- D-81 Fish Passage Improvement Program
- D-86 Stream Channel Modification Program
- D-94 Flood Control Program (funded in part by KCFZD)
- D-104 Stream Restoration for Mobility and Infrastructure Initiative
- D-106 Lower Coal Creek Flood Hazard Reduction Phase 1 (funded in whole by KCFZD)
- D-109 Storm Water Quality Retrofit in Kelsey Creek (NEW)
- S-59 Add On-site Power Generation Capability at Sewer Pump Stations (Scope Change)

D-106 is funded entirely by the King Co. Flood Control Zone District (KCFZD) as a regional priority flood control project. D-94 is funded in part (~55%) by the KCFZD. All other proposed investments are paid by utility rates.

All but one of the programs in this proposal are included in the adopted 2015-2021 CIP. D-109 is a new project to install water quality retrofit improvements using new technologies to treat stormwater runoff from roadways. A scope reduction (described below) is proposed for S-59 because engineering cost estimates were significantly higher than expected. Council approved rate increases to pay for D-104 and S-59 as part of the 2009-10 budget; revenues have been collected for that purpose since that time. 2.0% inflation per year is

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assumed for 2017-23, consistent with regional cost indices for public works engineering and construction.

Mandates and Contractual Agreements for environmental projects: Council directive for the Mobility and Infrastructure Initiative, December 2008 (D-104) RCW 77.57.030 and WAC 22-110-070 require fish passage for all water crossing structures, including culverts. (D-81). Those statutes give WDFW the authority to resolve problems and bill local governments, if necessary. WAC 173-24.060 regarding sewage overflow requirements (S-59) Western Washington Phase II Municipal Stormwater Permit (effective Aug 1, 2013) regulating surface water quality. (aka NPDES permit) (S-59, D-109)

This proposal supports Council Strategic Target Areas, Community Values, and Healthy and Sustainable Environment (HSE) Factors. Council Strategic Target Areas: This proposal supports protection and restoration of a HIGH QUALITY NATURAL ENVIRONMENT. The projects in this proposal align support stewardship of the environment, consistent with Comprehensive Plan direction to build a healthy, green, and sustainable future for generations to come.

Community Values are supported: This proposal is for infrastructure that reliably ensures public health and protects the environment; a healthy natural environment that supports biodiversity; a nature experience in which to live, work and play.

The Natural Environment HSE factor of HEALTHY AND QUALITY OPEN SPACES, and CLEAN WATER, are addressed by this proposal: Project-specific objectives are to enhance and preserve the functions and values of Bellevue's surface waters. Ongoing investment and effort is necessary to maintain water quality and habitat for streams in an urban environment. These projects protect water quality by reducing the potential for sewer overflows to sensitive surface waters, reducing sediment that chokes stream habitat, restoring degraded stream reaches, and removing barriers that prevent fish from accessing healthy stream habitat.

- S-59, D-86, and D-94 will result in reduced pollutants (sewage spills and sediment transport) to Bellevue's surface water resources, demonstrating good stewardship.
- Healthy lakes, streams and wetlands and improved wildlife habitat: S-59, D-81, D-86, D-104, and D-106 will preserve and restore streams and surface waters that provide critical habitat for salmon, other fish and riparian animals, and plants.
- D-94 and D-106 reduce flooding, which can damage sensitive areas, and D-104 will provide recreational benefits.
- Preserving, maintaining, restoring and reestablishing natural areas and open space: S-59, D-81, and D-104 in particular will support preservation of lakes, streams, and wetlands for the enjoyment of Bellevue citizens.

HSE Purchasing Strategies:

- S-59 is a proactive measure to protect Bellevue's open spaces and natural environment by safely removing wastewater from homes and businesses, by preventing sewer overflows during power outages, and complying with environmental regulations.
- D-94 and D-106 demonstrate management of (storm and surface) water by controlling runoff to minimize the impacts of flooding and erosion.
- D-81, D-86, D-104, and D-106 will manage, maintain, and restore Bellevue's streams to ensure their continued viability to support salmon and other species (biodiversity).
- D-104 will create new green spaces for recreation by restoring streams that currently flow through pipes, restoring Bellevue's open spaces.

Citywide purchasing strategies: This proposal leverages resources from KCFZD to provide Bellevue citizens reduced flooding and better environmental outcomes for their ratepayer dollars. All Utility CIP designs undergo alternatives analysis using triple bottom line principles (financial, environmental and social costs and

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benefits) and total life cycle cost considerations (best practices), to assure best value in design and efficient resource investment for the long term. This proposal is focused on protection and stewardship of environmental resources.

This proposal supports other Primary Outcomes: S-59 results in a Safer Community by reducing the chance of sewage overflow into Bellevue's streams and lakes, which contaminates stream water quality and can result in beach closures to protect public health. D-94 and D 106 will support Safer Community by reducing flooding hazards. D-104 directly supports Improved Mobility by making improvements to streams in the BelRed Corridor in conjunction with planned street improvements of Bellevue's Mobility and Infrastructure Initiative, and supports Economic Growth and Competitiveness by funding stream restoration that will enhance and encourage redevelopment of high quality attractive residential and commercial urban areas.

Benefits/Customer Impacts: Each project results in immediate benefits by making streams accessible to and habitable for salmon, reducing and removing habitat-choking and flood-causing sediment, and reducing flooding at homes and businesses, or which blocks roads. Even more important, this proposal will lead to long term, measurable and sustainable improvement of water quality and valuable habitat of Bellevue's surface waters.

Appropriate service levels:

D-81: Projects are proposed where a public culvert creates a partial or total barrier to salmon migration or potential spawning habitat. Fish passage is required under WAC 220-110-070 and RCW 77-57.030.

D-86: Projects are proposed to resolve stream instability where publicly owned stream habitat is actively used by salmon, but where physical conditions are degraded and impair spawning, or where the channel upstream of publicly owned streams is degraded sufficiently to cause impact to the publicly owned stream condition.

D-94: Levels of service for flood protection prescribe flood control projects whenever there is recurring structural flooding or flooding of primary roads, which impacts public health and safety. Consideration is given to the economic consequence of recurring flooding and the vulnerability of affected populations.

D-104: The Council created this reserve fund to meet specific outcomes associated with the Council Vision for Bel-Red Corridor environmental improvements. Outcomes include: creation of 5 acres of wetlands and riparian area; daylighting West Tributary of Kelsey and Goff Creeks; Improve 200 feet of existing channel habitat; Replace culverts at Bel-Red Road (for fish passage) on the West Tributary and Goff Creeks. The intent is to provide open space/natural area amenities in this highly urban area to encourage redevelopment; to provide trails and passive recreational opportunities; to restore salmon access and aquatic life; and to increase tree canopy.

D-106: This project is to resolve flooding of regional significance, as determined by the KCFZD.

D-109: This is a pilot program to investigate whether new technologies could improve water quality sufficiently to sustain fish in Kelsey Creek. Service levels will be proposed if the technologies prove viable and appropriate.

S-59: This program is intended to eliminate sewer overflows caused by power outages, by lessening reliance on portable equipment.

Efficiencies/Innovations and Cost Avoidance: Each ongoing program uses criteria specific to the program objective to prioritize projects within it. Specific project designs are selected after evaluating alternative designs and considering financial, environmental, and social costs and benefits (triple-bottom line), which incorporates life cycle cost analysis of the alternatives. Steady progress toward stream restoration projects that benefit salmon reduce the likelihood of third-party lawsuits under the Endangered Species Act. D-94 and D-106 remove flood hazards that might otherwise result in damage claims to the City.

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Partnerships and Coordination: Bellevue Parks Department and Sound Transit (D-104) King County Flood Control Zone District (KCFZD) (D-94; D-106) Various granting agencies (especially D-81, D-86, and D-109)

Not funding this proposal would have legal and customer impacts:

Legal: Increased likelihood of third-party lawsuits for non-compliance with state requirements or court order; Potential fines by Washington Department of Fisheries; Risk of mandated capital projects by the Washington Departments of Ecology or Health; and State resource agencies less likely to issue permits to Bellevue if we don't fulfill permit obligations.

Customer Impact: Reduced amenities in Bel-Red Corridor to attract redevelopment; Salmon would never be able to access almost two miles of restored habitat in Goff Creek or West Tributary; Bellevue citizens would have increasingly reduced opportunity to enjoy fish and other riparian species in the 80+ miles of open streams that meander through their neighborhoods; Higher utility rates resulting from state agency fines and for mandated corrective actions; and Continued flooding and access restrictions at known locations affecting homes and businesses.

Scaleability: Consequence of reduced funding:

D-106 is fully funded by KCFZD to reduce flooding in the Newport Shores area; scaling doesn't make sense.

S-59 is a one-time project to add power generation capability at three wastewater pump stations, to reduce sewer overflow events. Scaling back to one or two is possible, with proportionally less benefit. In fact, scaling back to two stations is being considered due to unanticipated high cost of implementation at the third station.

D-81, D-86, D-94 and D-104 are ongoing programs; reducing funding to the proposal would have similar consequences as described for no funding at all, but proportionately less severe.

D-109 is a pilot program, with a very small scope. Reducing it would not provide viable data about the success of the new techniques.

Section 4: Performance Measures and Targets

<u>Code</u>	<u>Performance Measure</u>	<u>Frequency</u>	<u>2014 Actual</u>	<u>2015 Actual</u>	<u>2016 Target</u>	<u>2017 Target</u>	<u>2018 Target</u>
140.0042f	Utilities: Percentage of scheduled culvert fish passage retrofits completed	Years	100%	100%	100%	100%	100%
140.0053	Utilities: Number of FEMA flood claims	Years	2	0	0	0	0
140.0468	Utilities: Number of power outages > 1 hour at sewage pump stations without on-site power generation	Years	62	48	20	20	20

Section 5: CIP

5A: Description and Scope

5B: Rationale

5C: Environmental Impacts

5D: Location/Address

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5E: CIP Summary

<u>140.08NA</u>	<u>ITD 2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Total</u>
Expenditure									
D-81	4,783,895	418,000	461,000	174,000	467,000	236,000	607,000	507,000	7,653,895
D-86	4,686,568	388,000	303,000	544,000	365,000	423,000	298,000	552,000	7,559,568
D-94	7,591,973	0	3,683,000	1,294,000	906,000	957,000	714,000	864,000	16,009,973
D-95	608,000	0	0	0	0	0	0	0	608,000
D-100	776,000	0	0	0	0	0	0	0	776,000
D-101	815,000	0	0	0	0	0	0	0	815,000
D-104	0	110,000	112,000	5,000	6,000	6,000	0	0	239,000
D-104-B	8,194,188	2,231,300	2,522,167	0	0	0	0	0	12,947,655
D-106	1,366,889	2,515,000	2,475,000	2,311,000	10,000	10,000	0	0	8,687,889
D-109	0	90,000	125,000	128,000	0	0	0	0	343,000
S-59	224,981	1,013	77,000	587,000	270,000	0	0	0	1,159,994
Expenditure	29,047,494	5,753,313	9,758,167	5,043,000	2,024,000	1,632,000	1,619,000	1,923,000	56,799,974
Revenue									
D-81	4,783,895	418,000	461,000	174,000	467,000	236,000	607,000	507,000	7,653,895
D-86	4,686,568	388,000	303,000	544,000	365,000	423,000	298,000	552,000	7,559,568
D-94	7,591,973	0	3,683,000	1,294,000	906,000	957,000	714,000	864,000	16,009,973
D-95	608,000	0	0	0	0	0	0	0	608,000
D-100	776,000	0	0	0	0	0	0	0	776,000
D-101	815,000	0	0	0	0	0	0	0	815,000
D-104	0	110,000	112,000	5,000	6,000	6,000	0	0	239,000
D-104-B	8,194,188	2,231,300	2,522,167	0	0	0	0	0	12,947,655
D-106	1,366,889	2,515,000	2,475,000	2,311,000	10,000	10,000	0	0	8,687,889
D-109	0	90,000	125,000	128,000	0	0	0	0	343,000
S-59	224,981	1,013	77,000	587,000	270,000	0	0	0	1,159,994
Revenue	29,047,494	5,753,313	9,758,167	5,043,000	2,024,000	1,632,000	1,619,000	1,923,000	56,799,974

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Section 1: Proposal Descriptors

Project Title: Water Facilities for NE Spring Blvd Multi-Modal Corridor

Outcome: Healthy and Sustainable Environment

Proposal Number: 140.54DA **Primary Dept:** Utilities

CIP Project Number: Multiple **Proposal Type:** Existing

Parent Proposal: None **Project Status:**

Dependent Proposal: None **Primary Staff:** Pam Maloney, x4625

Fund: Utility CIP - Water

Section 2: Executive Summary

This proposal is for design and construction of new water pipes under the new NE Spring Boulevard Multi Modal Corridor, where they will be needed to provide water service for redeveloping properties in the Bel-Red Corridor. This proposal is required as a result of Transportation's proposal 130.52PA, R-163 NE 15th St Multi-Modal Corridor – 116th Ave NE at NE 12th St to 136th Pl NE at Northup Way, and is therefore developed to complement that proposal's scope. No new sewer pipes are needed in this section of the corridor.

Section 2b: Performance Narrative

This budget proposal is a Dependent of a budget proposal housed in another City Department. See Performance Metrics for parent proposal.

Section 3: Responsiveness to Request For Results

This proposal is supported by utility rates, and was originally included in the adopted 2013-19 CIP. The timing of the work is not known, but will be implemented to align with the Parent Proposal. The utility investment associated with redevelopment of the Bel-Red Corridor will be recouped from development via Capital Recovery Charges or Direct Facilities Connection Charges. No scope or budget changes since the last budget cycle, except to identify anticipated expenditures in this CIP Window and show revenue for the new program years.

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.

Specific improvements include design and construction of water facilities needed in the NE Spring Boulevard Multi Modal Corridor, between 116th Ave. NE and 136th Pl NE. A new 16" water pipe would be installed from 116th Avenue NE to approximately 128th Ave NE. Between 120th and 124th, costs will be shared between the developer (to provide local service) and CIP (for incremental upsizing.) From 128th Avenue NE east to 136th Place NE and then north in 136th Pl NE to Northup Way, two parallel 12" water pipes would be installed, one on each side of the proposed Sound Transit Light Rail tracks, to limit track crossings. One pipe would be relocation and up-sizing, the other would be a new pipe. This CIP will fund the cost of the upsizing and the cost of the new pipe. Relocation costs will be borne by the Sound Transit project.

Total cost of design and construction for the water pipes is estimated at \$4.4 million. This includes improvements that will be constructed beyond this CIP window (cost is provided in 2016 constant dollars.)

This proposal involves close collaboration between Transportation and Utilities to assure the design and

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construction of utility facilities is done in coordination with the corridor design and construction.

Benefits of this proposal: This proposal will collect resources to assure that design and construction of utility facilities can be coordinated with construction of the corridor. Design and construction of these utilities will be foundational to eventual construction of the primary mobility corridor through the Bel-Red Corridor.

The service level proposed will provide design and construction for utility facilities concurrent with design of planned street, bikeway, pedestrian and light rail improvements.

This proposal supports a Healthy and Sustainable Environment by designing facilities that will deliver clean drinking water to residents and businesses along and near the multi-modal corridor. (Built Environment--Reliable and Efficient Water Management, Clean Water). Well-designed utility facilities minimize the opportunities for pipe failures, protecting the streams, wetlands, and lakes in the Bel-Red Corridor from pollution and erosion. (Natural Environment—Healthy and Quality Open Spaces). Designing sufficient utility capacity for the planned population is proactive and results in least life cycle cost for pipelines, which last 125 years (Built Environment--Sustainable Building Practices)

This proposal also supports Improved Mobility and Connectivity Factors and Purchasing Strategies:

- Existing and Future Infrastructure. Planning and design of utility facilities concurrent with design of the street corridor supports integration of the infrastructure that will be needed to meet the City’s vision for the Bel-Red Corridor. Much as the surface improvements will provide the ‘backbone’ for mobility through the redeveloping residential/commercial district, the large diameter water pipes will provide the primary water pipes for moving water from the regional inlet supply station through the corridor.
- Traffic Flow. Design of utility facilities concurrent with the road design supports coordinated construction of utilities with the surface improvements, so that construction impacts are minimized. The water infrastructure will be designed with sufficient capacity to accommodate future population demand, based on land use. New water pipes are expected to last 125 years, on average, so pipes sized for ultimate capacity will be constructed.
- Built Environment: Utility facilities designed to deliver safe, reliable utility service are part of the Built Environment, and promote and support the city’s economic vitality.

City-wide Purchasing Strategies:

- Design of utilities concurrent with the road improvements requires close collaboration between Utilities and Transportation, as well as Sound Transit for coordination with light rail construction plans. It provides best value for the community by identifying and resolving potential design conflict issues. Selection of a consultant or team of consultants for coordinated road and utility design may result in lower design costs. (short term financial benefits) The design will assure right-sized utilities that will provide water services appropriate for the planned land use, and results in lowest life-cycle cost by building capacity appropriate to the expected 125+year life of the facilities (long term financial benefits), which is a sound resource management strategy.

Consequence of not funding this proposal: Construction of multi-modal surface improvements could be delayed awaiting utility facilities; or newly paved surfaces will need to be dug up for utility facility construction. Development projects may be delayed awaiting availability of utility service.

Consequence of funding at a lower level: Utility facilities could not be constructed for the full extent of the planned multi-modal corridor.

Section 4: Performance Measures and Targets

Code	Performance Measure	Frequency	2014 Actual	2015 Actual	2016 Target	2017 Target	2018 Target
140.Depen	This Budget Proposal is a Dependent of a Budget	Months	N/A	N/A			

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dent Proposal housed in another City Department.

Section 5: CIP

5A: Description and Scope

5B: Rationale

5C: Environmental Impacts

5D: Location/Address

5E: CIP Summary

<u>140.54DA</u>	<u>ITD 2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Total</u>
Expenditure									
W-105	0	387,000	0	364,000	333,000	0	0	0	1,084,000
W-105-B	1,073,957	231,000	236,000	0	0	250,000	255,000	260,000	2,305,957
Expenditure	1,073,957	618,000	236,000	364,000	333,000	250,000	255,000	260,000	3,389,957
Revenue									
W-105	0	387,000	0	364,000	333,000	0	0	0	1,084,000
W-105-B	1,073,957	231,000	236,000	0	0	250,000	255,000	260,000	2,305,957
Revenue	1,073,957	618,000	236,000	364,000	333,000	250,000	255,000	260,000	3,389,957

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2017-2018 CIP Budget Proposal

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Section 1: Proposal Descriptors

Project Title: Advanced Metering Infrastructure (AMI) Implementation

Outcome: Healthy and Sustainable Environment

Proposal Number: 140.69NA **Primary Dept:** Utilities

CIP Project Number: Multiple **Proposal Type:** New

Parent Proposal: None **Project Status:**

Dependent Proposal: None **Primary Staff:** Andrew Lee, x7675

Fund: Utility CIP - Water

Section 2: Executive Summary

This proposal is for selection and implementation of Advanced Metering Infrastructure (AMI). Adding smart workforce AMI automation technology will address utilities' aging meter infrastructure as well as reduce total service costs. Replacement of Bellevue's water meters with AMI technology will immediately result in Financial, Social, and Environmental benefits as follows: Financial: Improved billing and meter accuracy, reduced labor costs, reduced time between meter reads, reduced capital expenditures for meter reader vehicles and inventory, reduced manual processing of data, improved local water use data for modeling and system planning. Social: Increased responsiveness to customers, more accurate and timely billing, ability to manage water use data, rapid leak detection and reporting, improved staff and customer alarms and notifications. Environmental: Improved water conservation through timely detection of leaks; improved backflow detection; reduced motor vehicle emissions.

Section 2b: Performance Narrative

Performance measures specific to AMI are to be developed as part of the AMI technology selection and implementation initiative. In order to develop realistic performance measures we will need to know the exact meter technology and its capabilities, new meter reading processes and standards, and type of data collection and availability. We expect that PMs will reflect

Increase in revenue from improved meter registration 140.0473

Reduced number of billing adjustments for leaks 140.0469

Reduced system water losses 140.0215

Reduced cost per meter read 140.0401f

Improved customer access to water use data

Reduced green house gas consumption by elimination of meter reader vehicles

Section 3: Responsiveness to Request For Results

This proposal is for a new Utilities CIP Program: W-108, Implementation of Advanced Metering Infrastructure throughout Bellevue's water service area. Implementation involves:

- Replacing almost all Utilities meters, total of 39,436 out of 40,804
- Replacing half of the meter boxes, approximately 20,000 out of 40,804
- Replacing the lids for the other half of the meter boxes, approximately 20,000 lids.
- Installing Meter Interface Units (MIU);
- Installing Communication equipment, 100 collectors and 25 repeaters;
- Implementation of an AMI Meter Data Management Software (MDMS);
- Systems Integration and Implementation services.

W-108 Will be funded 70% by water and 30% by sewer rates. The budget is based on a 2015 AMI feasibility study. Rapid implementation is planned to realize the maximum benefit from labor savings that will be realized by replacing the current manually-read meters, to minimize the time two systems need to be supported, and to deliver a common service level to all customers as rapidly as possible.

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This proposal supports Council Strategic Target Areas, Community Values, and Healthy and Sustainable Environment (HSE) Factors.

Community Values and Council Vision: Community Values and Council Vision are supported by providing reliable, efficient water infrastructure that ensure public health and protects the environment. The risk of drinking water contamination will be reduced by rapidly detecting backflow or negative pressures. Improved system planning will result from more granular water use data, which will inform decisions related to the size of infrastructure and programs. Reduced fossil fuel purchases, carbon emissions, and greenhouse gases will result from fewer miles driven by meter reading vehicles. In addition, any effort to reduce water consumption and reduce water loss helps for delaying the need for development of a new water supply. AMI is a smart technology solution that will allow customers and utilities access to real time data. This is aligned with Council's Smart City priorities and High Performing Government strategy.

Built and Natural Environment HSE Factors are addressed by this proposal:

Built Environment: AMI provides improved reliability and supports efficient water management. Bellevue's current manual meter reading program poses several challenges. Meters are manually read bi-monthly; real time data is not available to allow customers to self-monitor water use information. It can take up to two months to discover a customer leak, resulting in high customer bills and frequent requests for billing adjustments. The manual meter reading process is labor intensive. A total of 6 meter reading staff are responsible for meter reading and associated functions. Current meters are 10-20 years old; as meters age they record less flow and current technology does not capture low flows. Installing new meters and AMI technology for meter reading will allow for more reliable and efficient water management by enabling real time meter reading and leak detection, reduced labor for meter reading and data analysis- from 6 to 3, improved meter registration and use of detailed consumption information for system modeling. AMI is a sustainable building practice that reduces water leakage (resource conservation).

Natural Environment: AMI technology helps ensure delivery of safe and high quality drinking water to Bellevue citizens. AMI allows detection of backflow and negative pressure, facilitating more rapid identification and response to drinking water quality threats. Reduced meter reading vehicle miles will reduce green gas emissions and improved air quality.

HSE Purchasing Strategies are addressed: The decision to propose AMI as a better meter reading solution was made after several AMI technology and financial studies completed over the last 20 years. Today's AMI technology has matured, costs have come down, and the timing is right. 2015-2016 AMI feasibility studies included financial modeling and Net Present Value (NPV) calculations for three available AMI solutions (Standard, High Power, and Cellular). The study concludes that the Standard AMI system solution is financially viable and has a positive NPV of \$1.6 million when compared to the current manual meter reading program.

Provides water in a reliable, efficient and environmentally sustainable manner.

The AMI technology will provide more environmentally friendly meter reading and water management practices. The AMI system will result in process improvements related to: 1. Meter reading – automated vs manual; 2. Leak detection and resolution as soon as it happens vs two months later; 3. Improved system modeling; 4. Customer self service via a web portal; 5. Faster customer issues resolutions; 6. On-demand remote reads vs driving to the meter; 7. Distribution system monitoring using zone metering and systems alarms. 8) Better efficiency of service delivery will be accomplished since fewer leaks mean fewer high bills and associated customer complaints. Bellevue currently receives ~ 200 customer calls/year related to water leaks and associated high bills.

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Encourages waste reduction and conserves resources: AMI system will help us conserve water, one of the most precious resources we have. The AMI system will include a customer web portal. This improved access to consumption data and profiles will enable customers to monitor water usage, raise awareness, and modify behavior resulting in water conservation. Water conservation will also be achieved by reducing water lost to leaks. With current meter reading and billing practices, a customer could have a leak for up to 60 days before noticing a high-use bill. Additionally, some customers likely have continuous low-flow leaks in faucets, toilet, or sprinkler systems that could have gone unnoticed for months or years. AMI automatic leak detection and notification is expected to drastically reduce both types of leaks, reducing water loss.

Citywide Purchasing Strategies: The AMI feasibility and costs analysis concluded that implementation of AMI would be more beneficial and cost effective than current manual meter reading practices. It will lead to positive outcomes that would support Utilities overall operational and customer service objectives. The following steps, consistent with citywide purchasing strategies, will be taken to implement AMI:

Develop a Comprehensive RFP for AMI— Proceed with development and issuance of a comprehensive RFP for AMI that includes clear functional requirements and evaluation criteria that support best value determination for the business requirements. The RFP will provide detailed cost information to further explore meter technology alternatives and implementation cost elements, refine the implementation schedule, and provide network design for meeting the specific propagation requirements of the service area, and result in selection of a specific vendor.

Develop a Resourcing Plan— A preliminary AMI implementation plan will be prepared to establish the project schedule and resourcing plan for project management and AMI installation. This important step will move the project forward quickly and confirm key decisions related to preferred procurement and installation strategies. This preliminary plan will be refined to arrive at the necessary installation resource requirements once the AMI RFP process produces a specific vendor selection.

Engage Customers— Customers will be engaged early and often in order to keep them informed and to streamline implementation. Customer engagement will facilitate determining optimal web portal features to incorporate and will establish the new technology as an improvement in customer service rather than an impingement on privacy or other factors that can erode customer acceptance. A customer engagement and communications plan will be developed to proactively address potential issues that might arise during meter implementation, new billing cycles, new bill presentation, etc.

Develop an AMI IT Plan— A detailed IT integration plan will be developed prior to implementation of an AMI solution. Much of the value in AMI results through optimizing use of data to improve operations, make better decisions, and provide customers with better service. These benefits require the integration of existing IT applications and possibly the development of new ones. and will influence the degree of success AMI investment brings to Bellevue.

Complete AMI implementation - AMI Implementation involves: Replacing meters (and boxes or lids); Installing Meter Interface Units (MIU); Installing Communication equipment; Implementation of an AMI Meter Data Management Software (MDMS); and Systems Integration. Additional staffing resources include 1.0 new Project Manager FTE and 2.5 new LTEs (2.0LTE Customer Service Representatives and 0.5LTE Systems Analyst). These positions are required to oversee the implementation of AMI and to address anticipated customer questions during implementation.

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This proposal supports other Primary Outcomes: AMI implementation supports the Responsive Government Outcome, by providing customer focused services that are more accurate and accessible, and demonstrates Stewardship of Public Trust by providing an improved system with a positive Net Present Value of \$1.6Million compared to the current manual meter reading program. AMI improves business practices by eliminating manual meter reads, improving data management and integration, and more timely customer support.

Appropriate Service Levels:

Partnerships/Coordination: Utilities is partnering with Bellevue’s Smart City Initiative Team to coordinate efforts for infrastructure planning and economic development. The Smart City team and Bellevue’s IT Department have been involved in every step of the AMI feasibility project and have provided valuable feedback and suggestions.

Scalability: If this proposal is not funded we will not achieve the AMI benefits of improved customer services, increased meter reading and billing processes efficiency, improved water modeling, and reduced greenhouse gas emissions. The AMI solution provides us with the opportunity to improve one of our most essential programs – meter reading and billing. Meter reading is essential to accurate billing; AMI is the way to make it better, more cost effective, more customer and environmentally friendly.

Partial implementation of AMI system is not practical nor financially viable. Partial implementation would not fully realize AMI benefits. It would require maintaining two meter reading practices and systems, reducing efficiency and resulting in customer service inequality (data accessibility, low flow registration, leak detection). Increasing the manual meter reading frequency to at least monthly was considered (to improve customer service) but was found to be cost prohibitive since it doubles meter reading costs and would require a significant rate increase.

Section 4: Performance Measures and Targets

<u>Code</u>	<u>Performance Measure</u>	<u>Frequency</u>	<u>2014 Actual</u>	<u>2015 Actual</u>	<u>2016 Target</u>	<u>2017 Target</u>	<u>2018 Target</u>
140.0469	Utilities: Number of Water Leak Billing Adjustments	Years	330	355	300	300	200
140.0473	Utilities: Increased water revenue from improved meter registration						

Section 5: CIP

5A: Description and Scope

5B: Rationale

5C: Environmental Impacts

5D: Location/Address

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5E: CIP Summary

<u>140.69NA</u>	<u>ITD 2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>Total</u>
Expenditure									
S-108	0	90,000	2,419,200	4,417,500	0	0	0	0	6,926,700
W-108	0	210,000	5,644,800	10,307,500	0	0	0	0	16,162,300
Expenditure	0	300,000	8,064,000	14,725,000	0	0	0	0	23,089,000
Revenue									
S-108	0	90,000	2,419,200	4,417,500	0	0	0	0	6,926,700
W-108	0	210,000	5,644,800	10,307,500	0	0	0	0	16,162,300
Revenue	0	300,000	8,064,000	14,725,000	0	0	0	0	23,089,000

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