Drainage & Wastewater Services, Issues, Options

Customer Review Panel 2/14/2020

Seattle Public Utilities

City of Seattle

Agenda

- Part 1 - Background, Financial Overview, and Service Levels
- Part 2 - Review 2018-2023 Action Plans
- Part 3 - Looking Ahead to Strategic Priorities 2021-2026

DWW Statistics

Drainage

- 485 miles of storm drains, 295 storm drain outfalls
- 20,000 catch basins that convey stormwater into storm drains
- 44 miles of creeks within city limits
- 59 miles of ditches, 46 miles of culverts
- 8 miles of green stormwater infrastructure (~1,100 rain gardens and bioretention swales)
- 185 flow control facilities, 18 detention/treatment ponds
- 400 water quality structures

Wastewater

- 368 miles of sanitary sewers
- 1,052 miles of sewers that collect both stormwater and wastewater (“combined sewers”)
- 14,000 catch basins that convey stormwater into combined sewers
- 67 pump stations
- 6 miles of wastewater force mains
- 84 combined sewer overflow (CSO) outfalls
- 42 combined sewage detention tanks/pipes

Definitions

- Combined Sewer Overflow (CSO) – An overflow from one of our 84 permitted CSO outfalls that occurs as a result of rain
- Dry Weather Overflow (DWO) – An overflow from one of our 84 CSO outfalls that occurs when it's not raining
- Sewer Overflow (SSO) - An overflow that occurs anywhere else in the sewer system, whether or not it's raining
- Clean Water Act (CWA), 1972 – Regulates point sources that discharge pollutants to waters of the United States
- National Pollutant Discharge Elimination System (NPDES) Permits – Authorization for wastewater and stormwater, administered by Ecology

Wastewater System Regulation

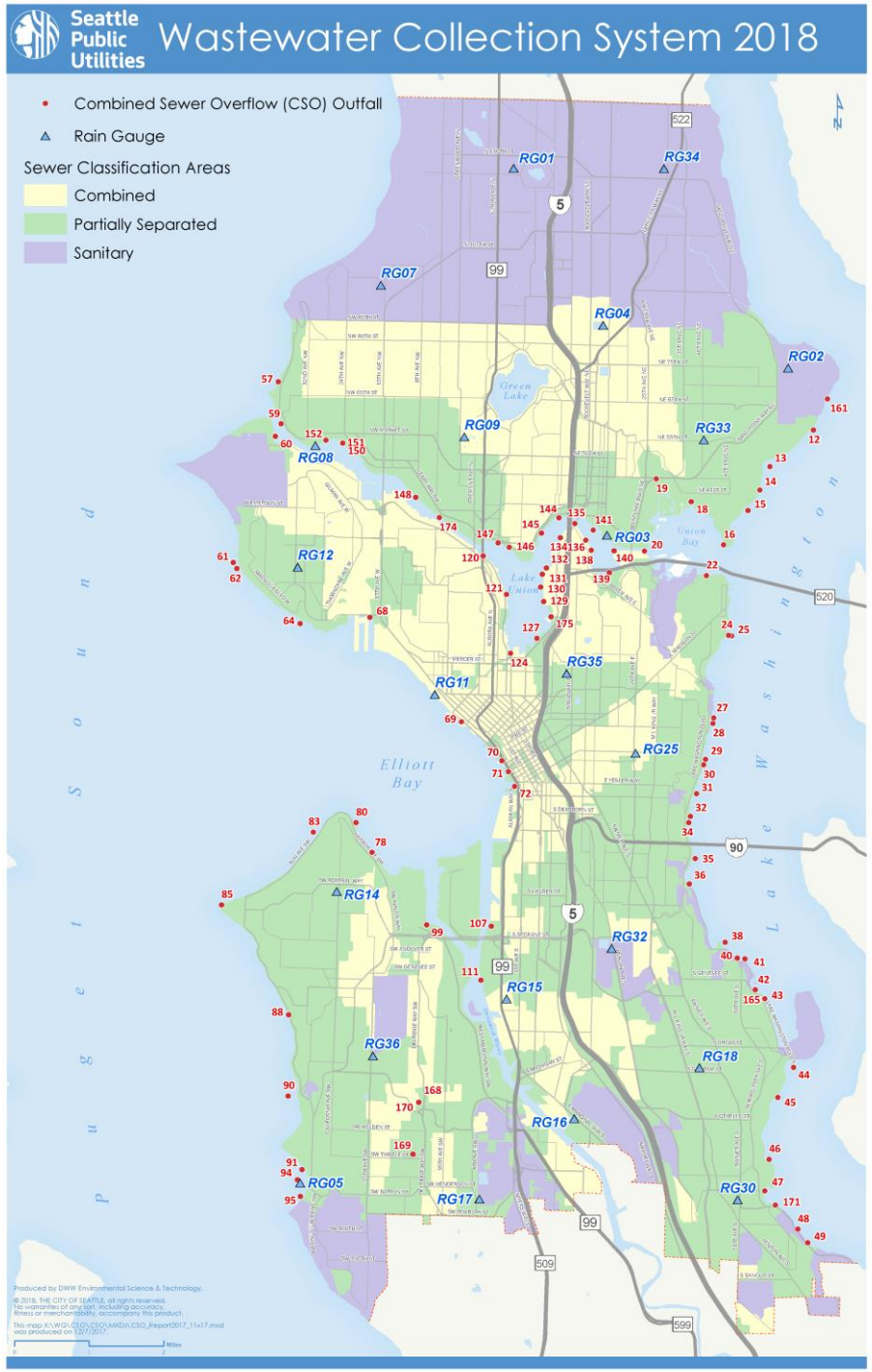
- **City of Seattle**
  - NPDES Permit
    - Issued by Ecology, initially in 1975
    - Authorizes overflows from CSO outfalls (84) during rain events
    - Current permit expires April 2021; application for renewal due October 2020
  - Consent Decree
    - With DOJ, EPA, and Ecology, effective July 2013
    - Requires control of CSO outfalls to State standard (<1/year/outfall on 20-year average)
    - Limits sewer overflows to SSO performance threshold (<4/100 miles on 2-year average)
- **King County**
    - Has 39 CSO outfalls in the City of Seattle
    - Regulated by similar NPDES Permit and Consent Decree requirements

Stormwater System Regulation

- **City of Seattle**
  - NPDES Permit
    - Issued by Ecology, first issued in 1995
    - General Permit that covers Snohomish, King, Pierce and Clark Counties, City of Tacoma, City of Seattle, Port of Seattle and Port of Tacoma
    - Authorizes discharge of stormwater from our municipal stormwater sewer system (MS4)
    - Current Permit expires in July of 2024
    - Permit applies to all City Departments. SPU is designated as the lead department for permit coordination and communication with the Washington Department of Ecology.

Seattle's Wastewater Collection System

- 1/3 separated
  - Wastewater in wastewater system
  - Runoff from private property and roads into drainage system
- 1/3 partially separated
  - Wastewater in wastewater system
  - Runoff from private property directed to combined system
  - Runoff from roads directed to drainage system
- 1/3 combined
  - Wastewater and runoff directed to combined system



King County's Regional System

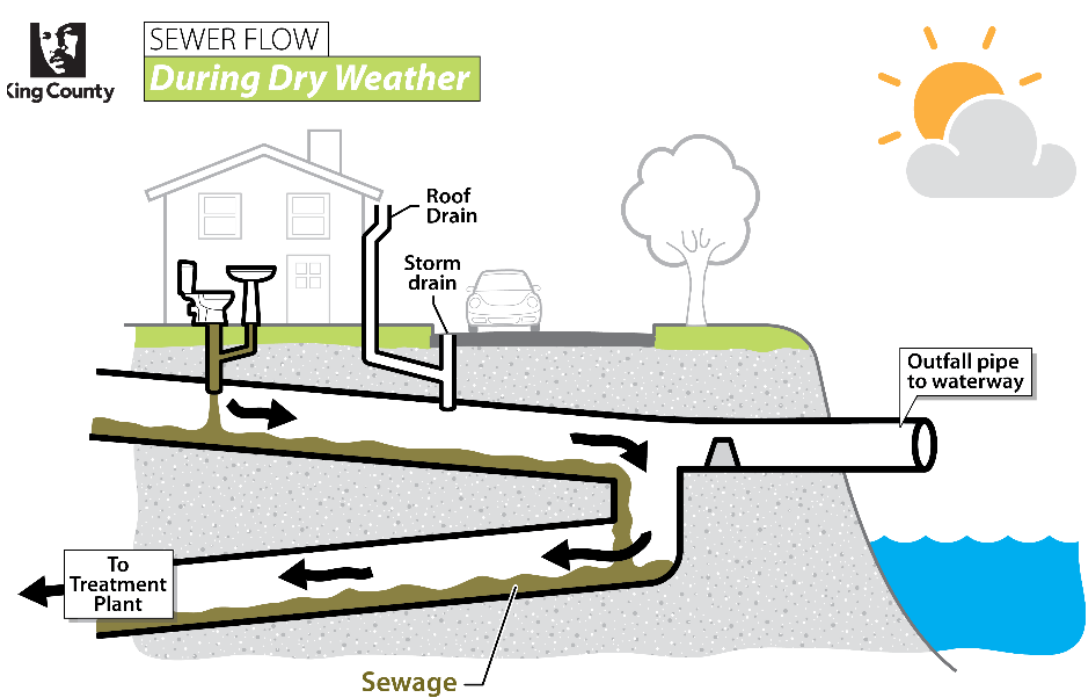
Wastewater transmission and treatment

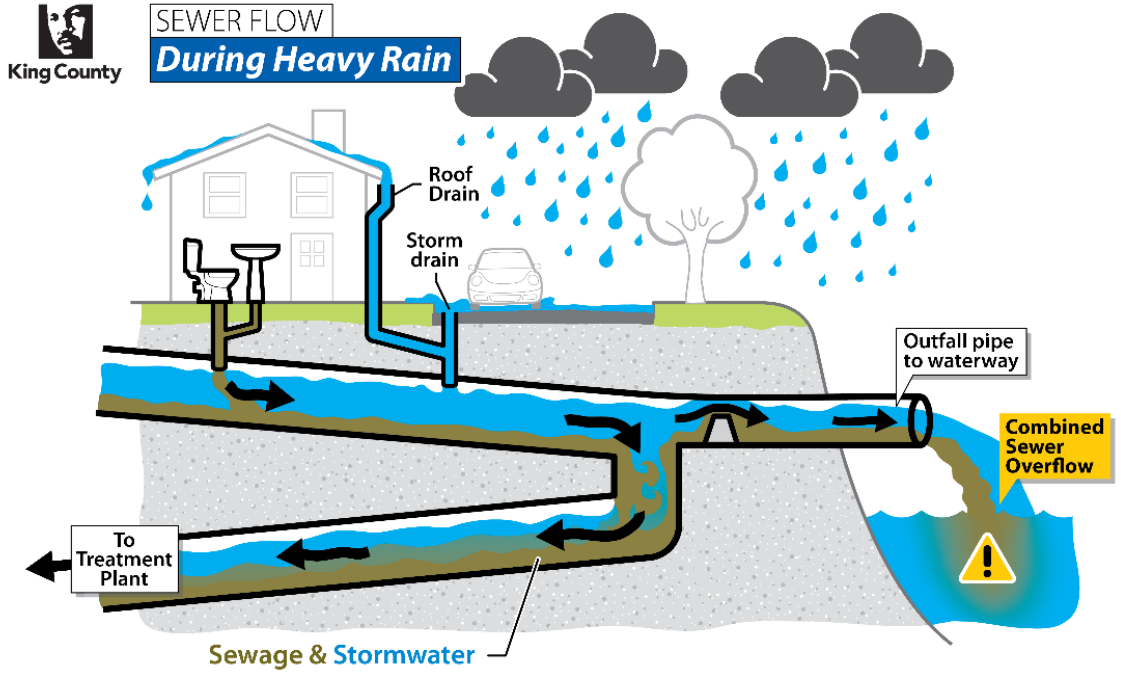
In all systems runoff is a problem

1

2

What is a CSO?


King County
SEWER FLOW
During Dry Weather
Roof Drain
Storm drain
Outfall pipe to waterway
To Treatment Plant
Sewage


King County
SEWER FLOW
During Heavy Rain
Roof Drain
Storm drain
Outfall pipe to waterway
Combined Sewer Overflow
To Treatment Plant
Sewage & Stormwater

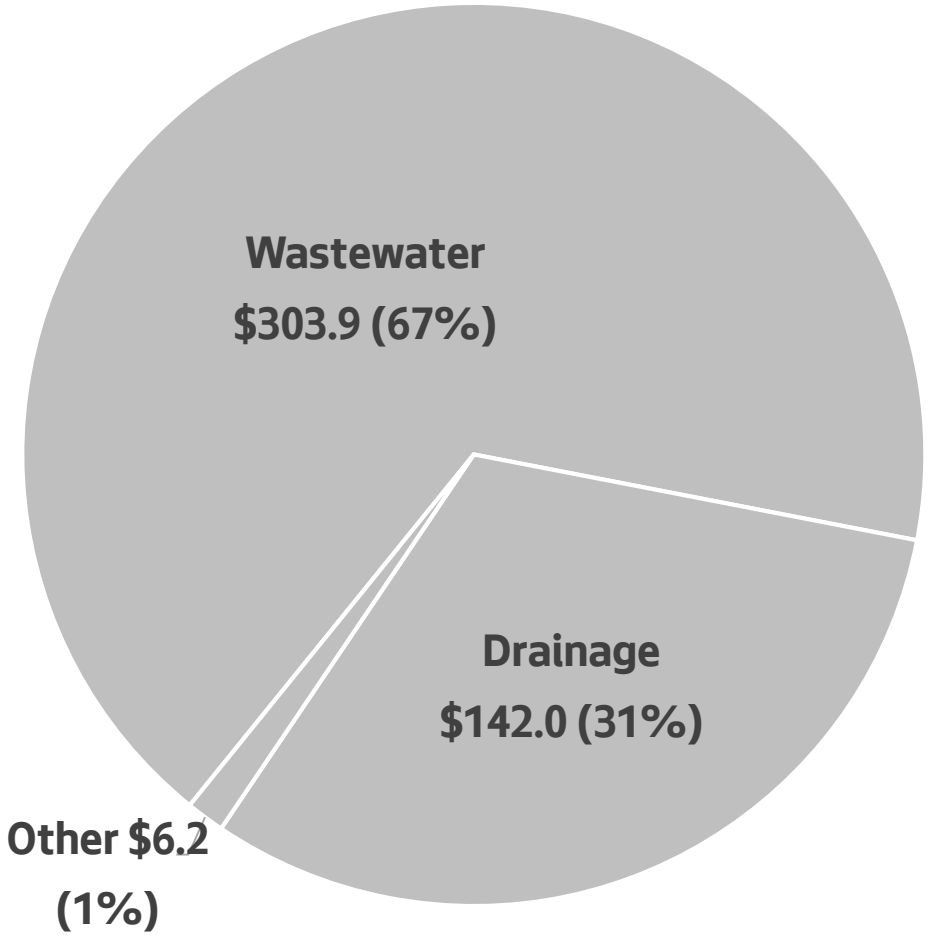
Overview Statistics for Rates and Bills

Rates and Bills

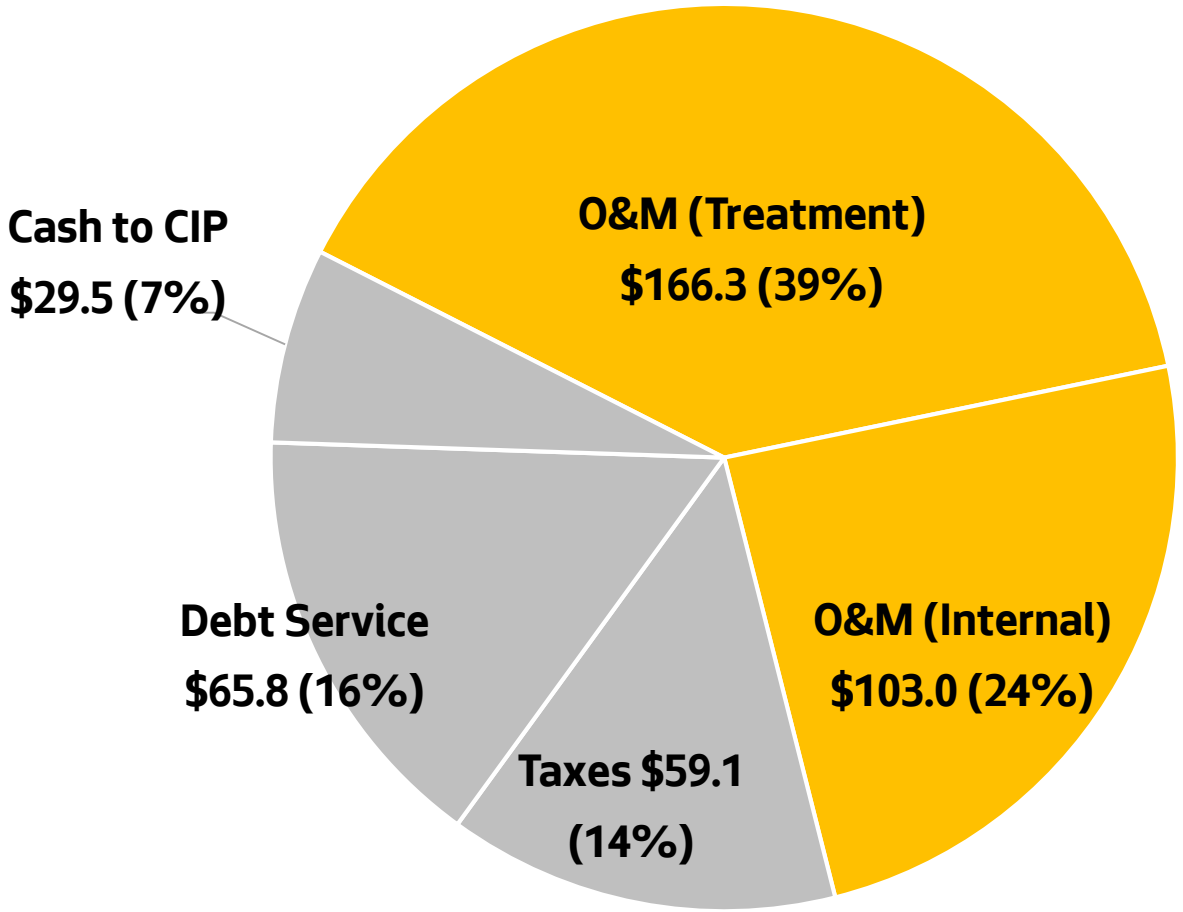
Length of Current Rate Path	3 years; 2019-2021
Billing Mechanism	Sewer: Combined Utility Bill Drainage: King County property tax statement
2019 Operating Revenue:	• Sewer: $304 million • Drainage: $142 million
Number of Customer Accounts:	• Sewer: 174,000; 154,000 residential; 20,000 commercial; Less than 0.1% are outside city limits • Drainage: 220,000 parcels across 61 square miles
Rate Methodology:	• Universal volumetric rate for all customers, all year. • $14.48/CCF (2019), $15.55/CCF (2020) • There is no monthly connection charge, all fixed costs are passed through the volumetric rate to reward conservation. • Rate legislation includes a pass-through mechanism to adjust rates for King County treatment rate changes (typically biannually)
Retail Customer Classes:	• No classes, all customers pay a universal volumetric rate.

DWW Funds, Sources and Uses

2019 Revenue: $452.2 Million



2018 Expenditures: $423.6 Million



DWW Financial Indicators

Drainage and Wastewater Financial Indicators				
Indicator	**Target**	**2019-21 Rate Study Projections**	**Preliminary 2019 Results**	**Notes**
Debt Service Coverage	1.50x	1.58x	2.04x	
Net Income	Generally Positive	$30M	$42M	
Cash Funded CIP	25%, 4-Year Average	30%*	27%*	*Current year
Operating Cash	1-Month Treatment Expense (~$14M)	$140M	$230M	Current planning target of $80M
Debt-to-Asset Ratio	<70%	62%	69%	

DWW Rates and Affordability

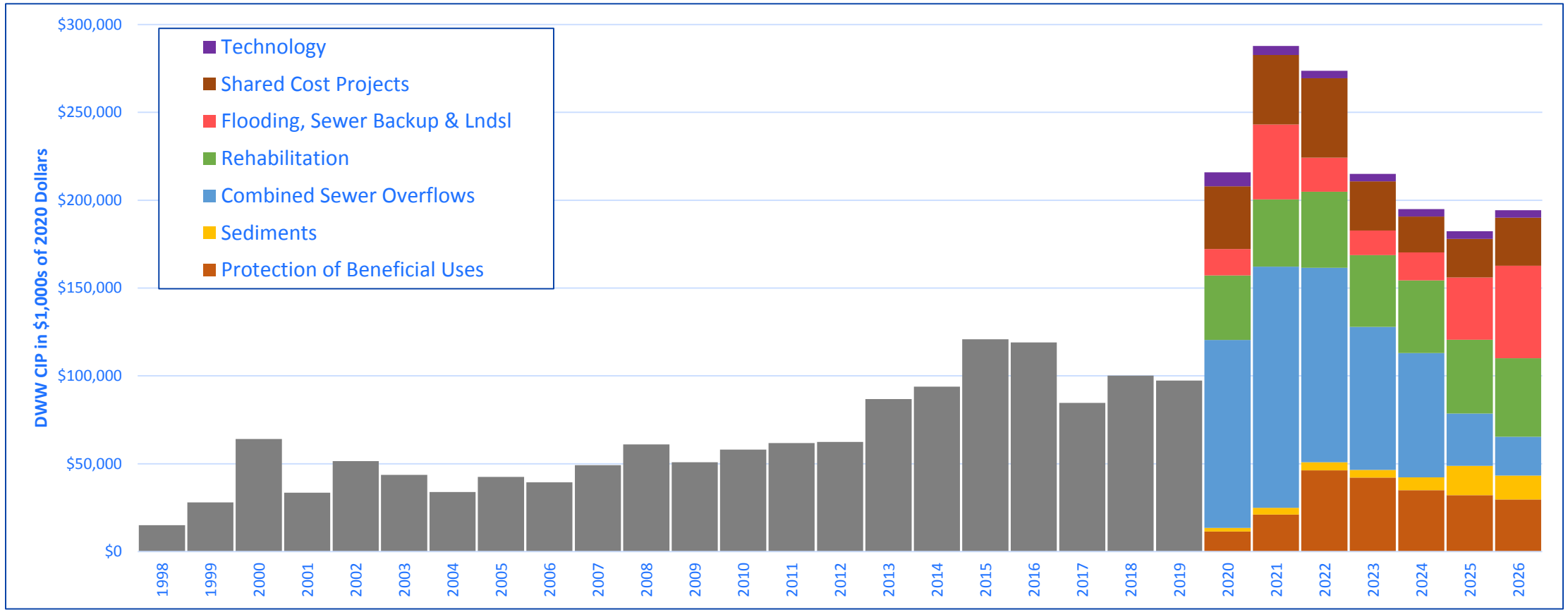
- Rate path

Strategic Business Plan	2018	2019	2020	2021	2022	2023	2018-23
Water	2.0%	2.5%	3.7%	5.0%	4.1%	5.0%	3.7%
Wastewater	**4.1%**	**8.1%**	**9.9%**	**8.9%**	**1.3%**	**2.6%**	**5.8%**
Drainage	**10.7%**	**9.2%**	**9.7%**	**9.9%**	**7.9%**	**4.7%**	**8.7%**
Solid Waste	3.1%	3.3%	4.0%	3.0%	3.8%	2.8%	3.5%
Combined	**4.3%**	**5.7%**	**7.0%**	**6.8%**	**3.7%**	**3.6%**	**5.2%**

Updated	2018	2019	2020	2021	2022	2023	2018-23
Water	2.0%	2.5%	3.7%	5.0%	4.1%	5.0%	3.7%
Wastewater	**4.1%**	**7.4%**	**7.4%**	**7.4%**	**4.5%**	**2.4%**	**5.5%**
Drainage	**10.7%**	**8.0%**	**8.0%**	**8.0%**	**8.0%**	**9.0%**	**8.6%**
Solid Waste*	3.1%	3.3%	3.2%	2.9%	2.9%	3.1%	3.1%
Combined	**4.3%**	**5.3%**	**5.6%**	**5.9%**	**4.6%**	**4.3%**	**5.0%**

- Affordability metrics (being developed)

DWW Capital Program



Major CIP Work, 2020

Capital Projects

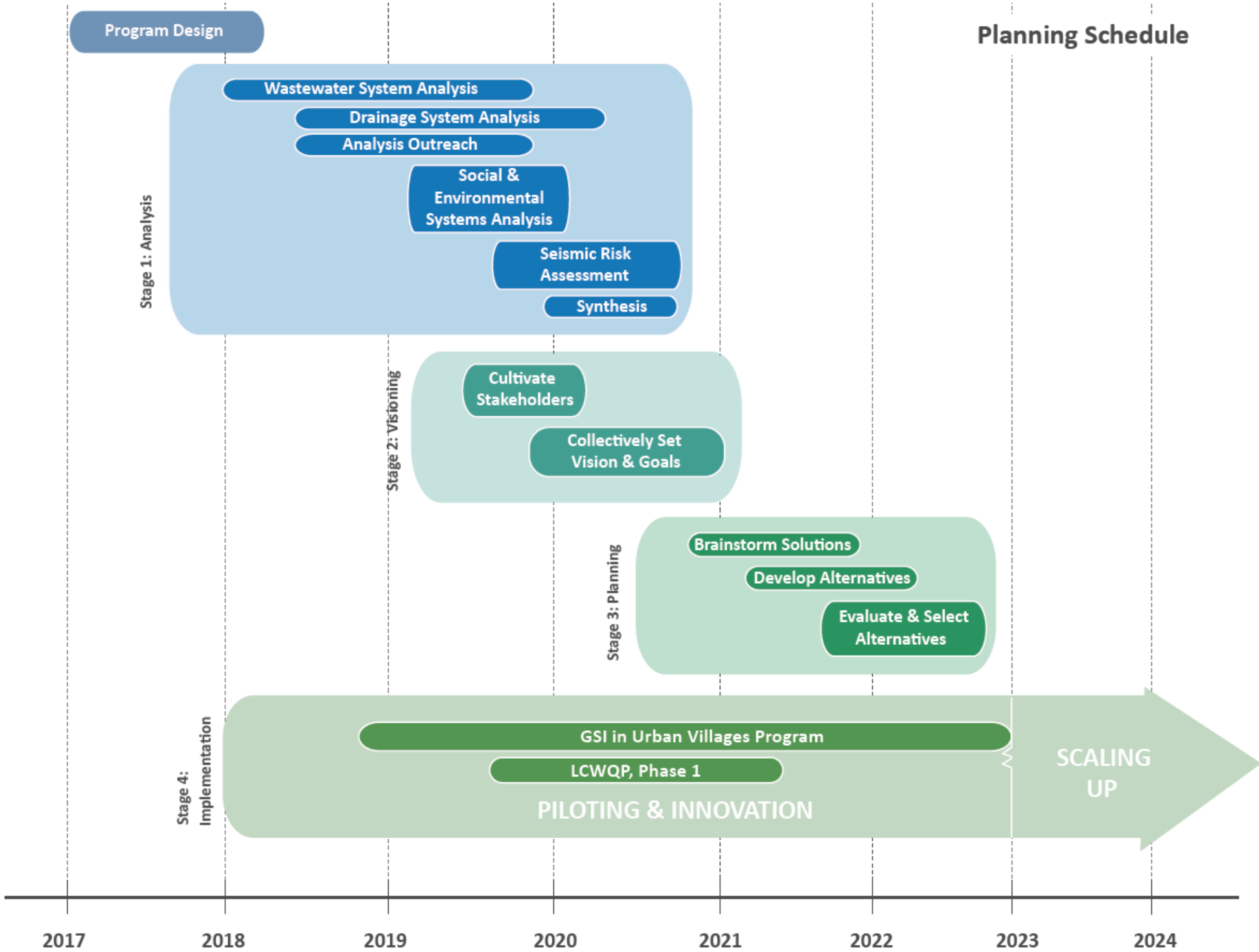
- Ship Canal Water Quality Project
- South Park Pump Station & Drainage Conveyance
- Pearl Street Sewer Overflow Reduction
- Taylor Creek Culvert Replacement
- Broadview Sewer Overflow & Drainage Improvements
- South Operations Complex

Capital Programs

- Transportation project related system improvements (Move Seattle, STS3, etc)
- Wastewater pipe rehabilitation
- Wastewater pump station rehabilitation
- Wastewater outfall rehabilitation
- CSO reduction
- Green stormwater infrastructure
- Sediments

Integrated System Plan

Program Schedule



DWW Goals

- Collect and convey wastewater in our public sanitary and combined sewer systems to protect public health and the environment by preventing sewer back-ups and overflows.
- Manage stormwater and drainage from the public system to reduce flooding, protect and improve receiving water and sediment quality, public safety and the environment.

DWW Service Targets

SPU uses the following service targets as key indicators of quality and success:

- **Drainage Service Targets**
  - To support the city-wide goal of 700 million gallons of runoff managed using Green Stormwater Infrastructure by 2025.
  - No critical services (e.g. hospitals) are inaccessible due to flooding, except during extreme storm events (e.g. events exceeding 100-year, 24-hour storm event)
  - Remove 140 tons of pollutants from roads in 2020 through street sweeping
- **Wastewater Service Targets**
  - Limit sewer overflows to no more than 4 per 100 miles of pipe, on a two-year average
- **Combined Service Targets**
  - Respond to 90% of high priority drainage and wastewater problems within one hour
  - Limit combined sewer overflows to 1 per outfall per year over a 20-year moving average

GSI Performance Metric

Goal: By 2025 managed an average annual volume of 700MG with GSI (1000 gallons per person per year)

Installation Pathways:

Code-Required

Non-Utility Led

Utility Incentives

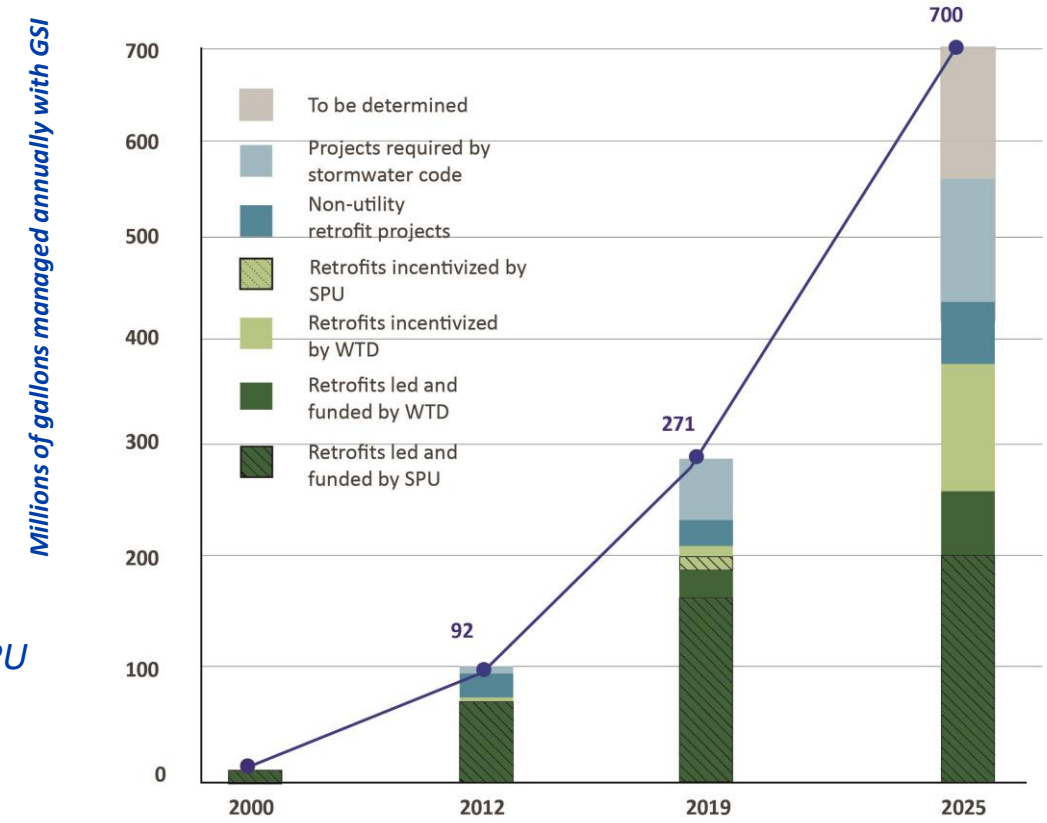
Incentivized by SPU

- *2012: 3.6MG*
- *2020: 15MG*

Utility Capital Investment

SPU initiated:

- *2012: 67MG (72% of total)*
- *2020: 179MG (66% of total)*

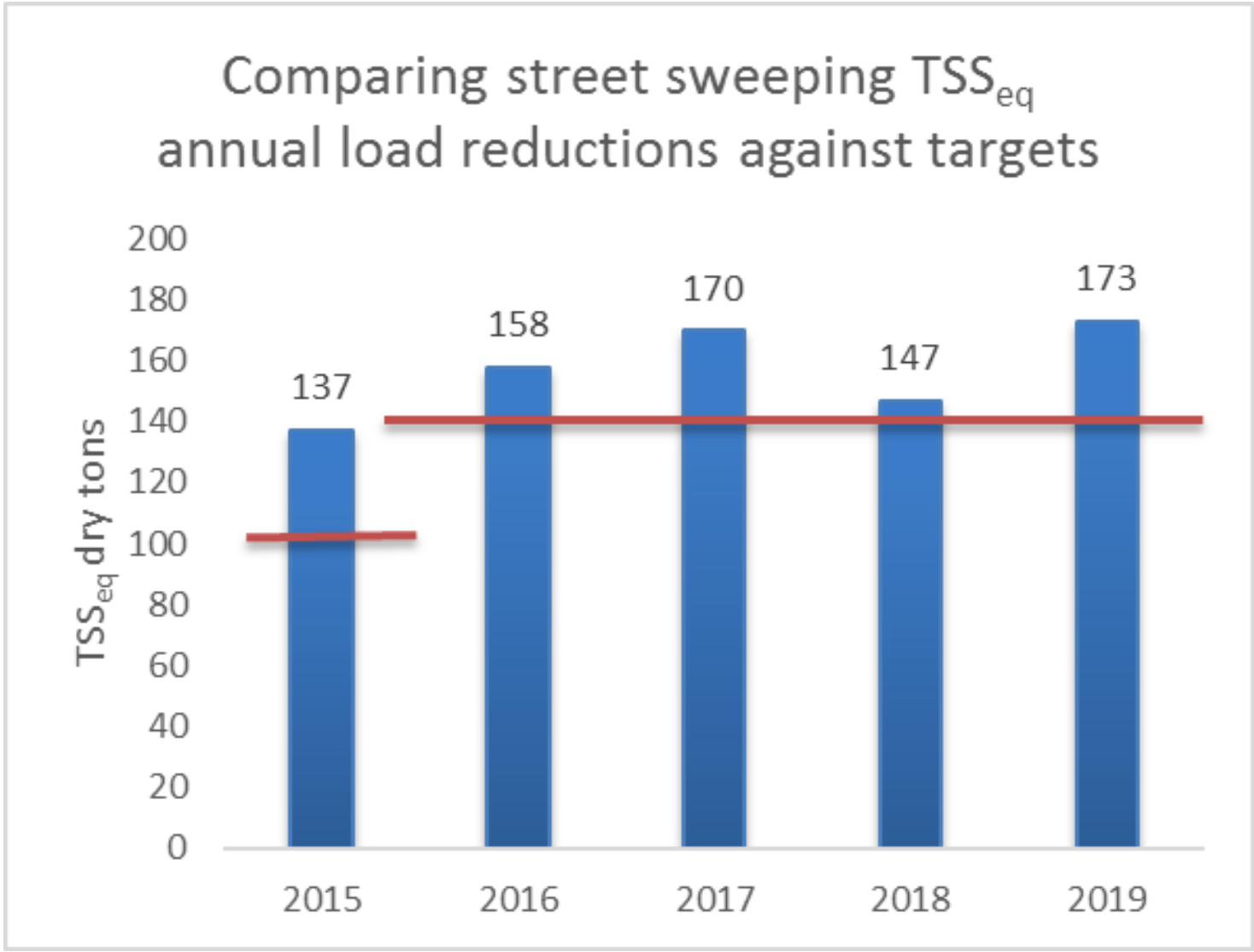


GSI Expansion Initiative intent is to grow installation pathways for GSI and have majority of gallons managed through partners (ie projects initiated beyond SPU)

DWW Service Target

Remove 140 tons of pollutants from roads in 2020

- SPU partners with SDOT to regularly sweep arterials so that we keep waterways clean, business districts healthy, and Seattle moving safely
- In 2016 the partnership expanded the sweeping program under a Strategic Business Plan (SBP) action plan
- The program met all total suspended solids (TSS) pollutant load reduction targets over the last five years



DWW Service Target

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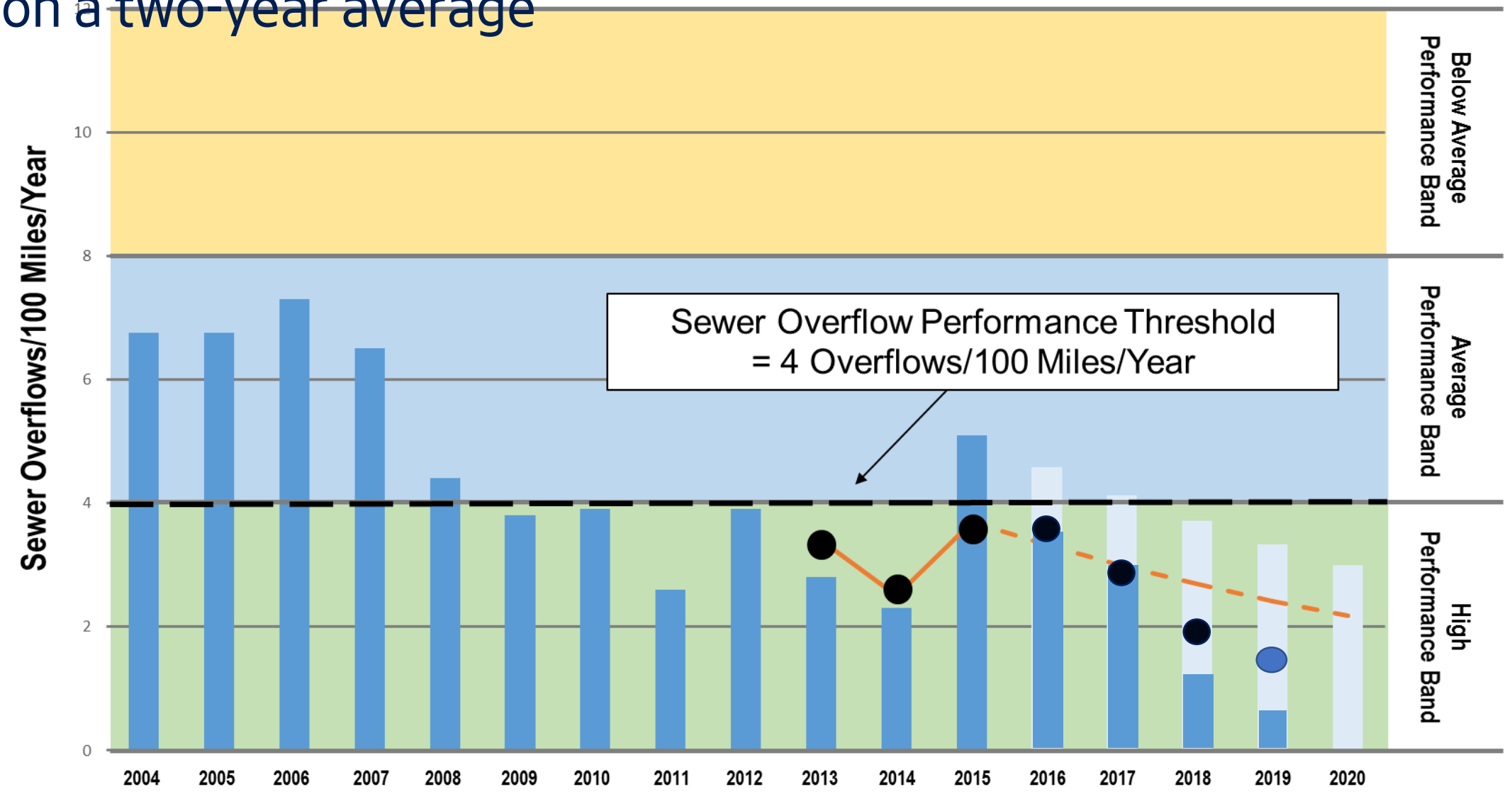
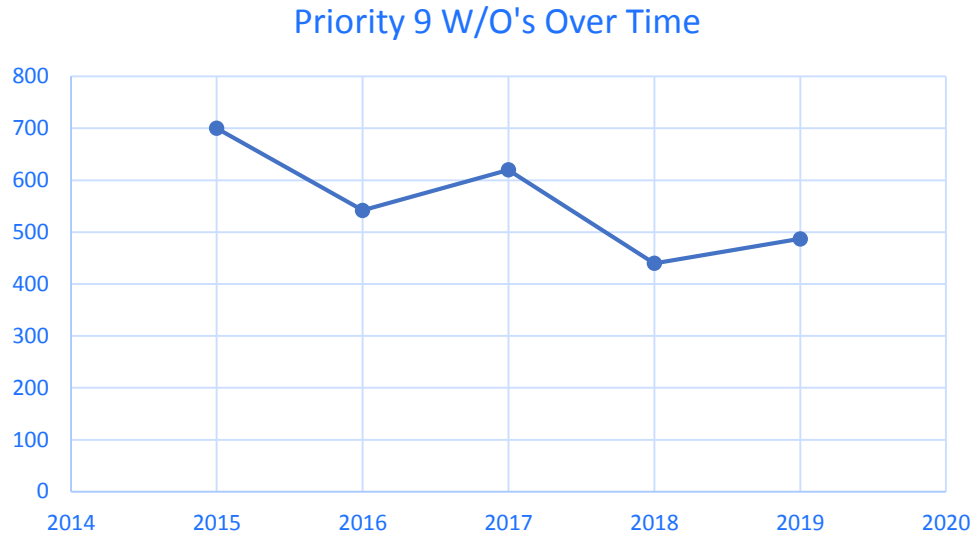
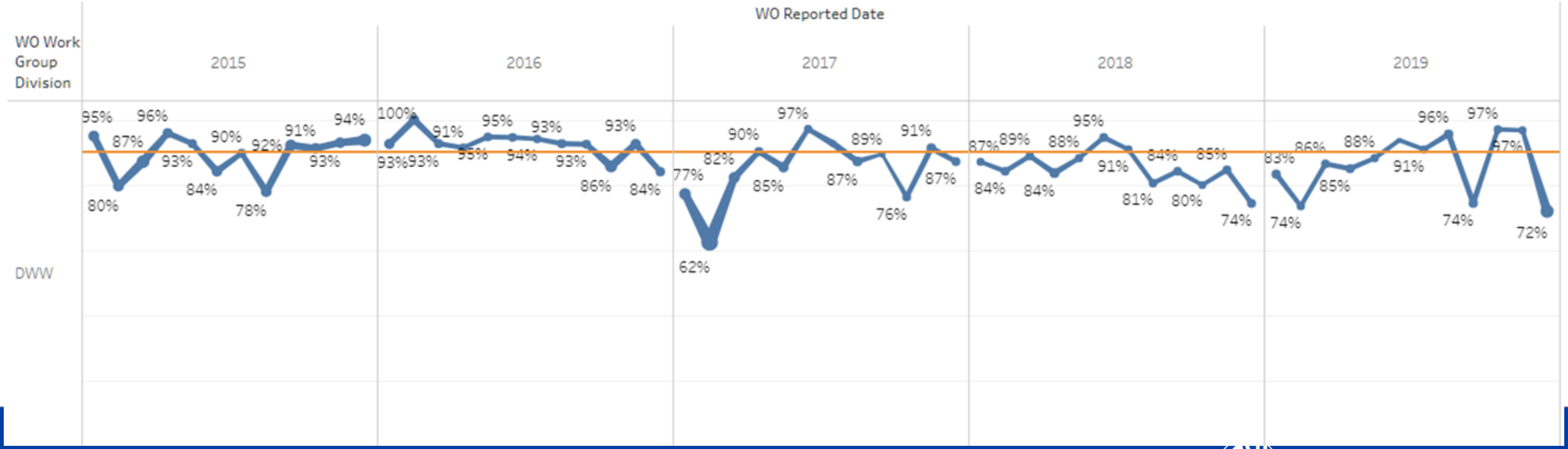


DWW Service Target

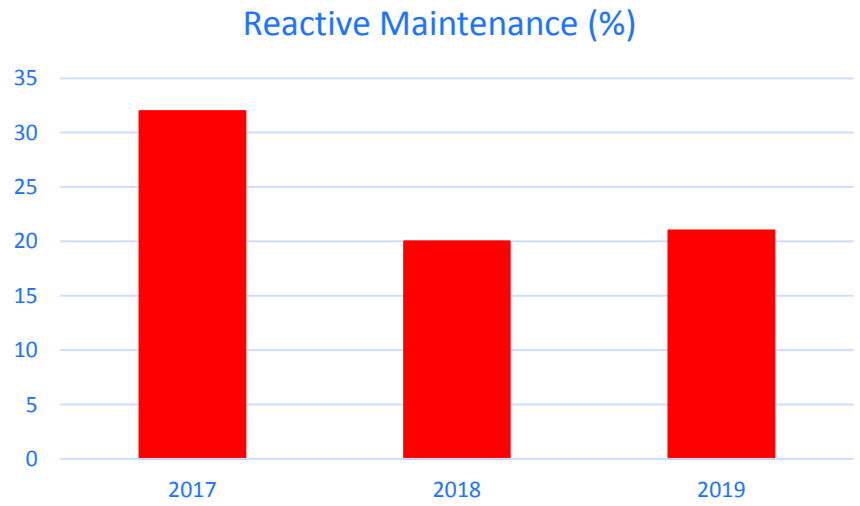
Respond to 90% of high priority drainage and wastewater problems within one hour

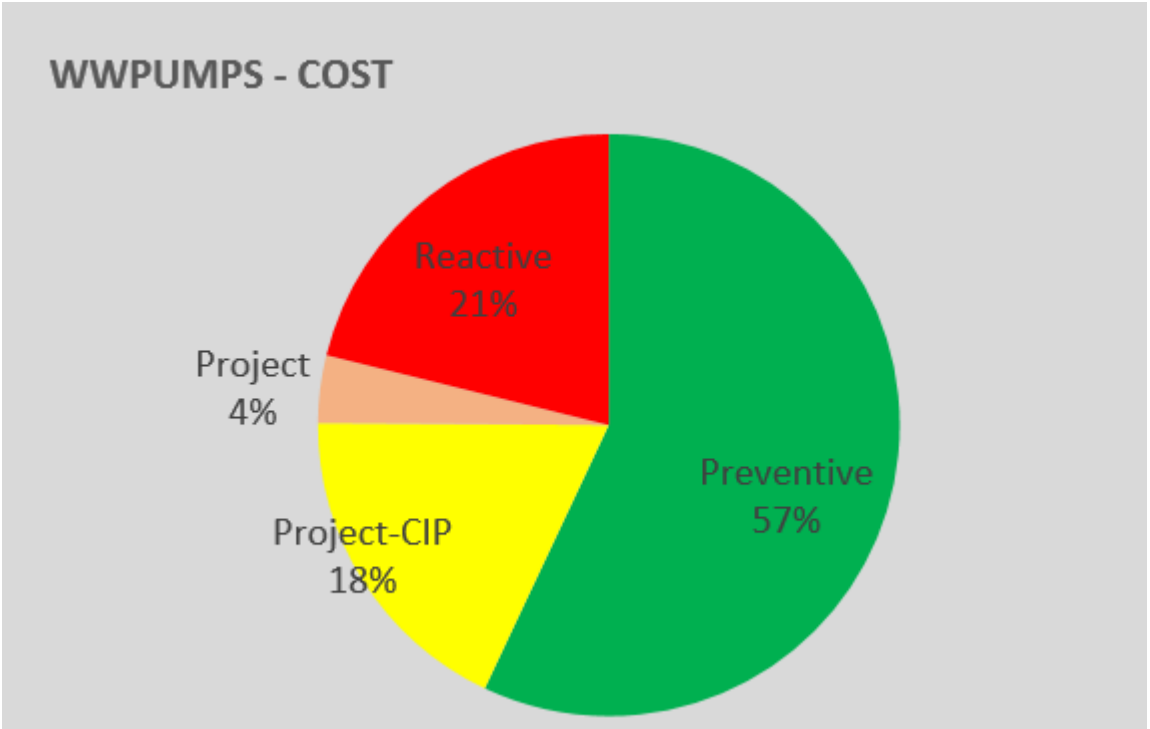




Capital investments reduce reactive work

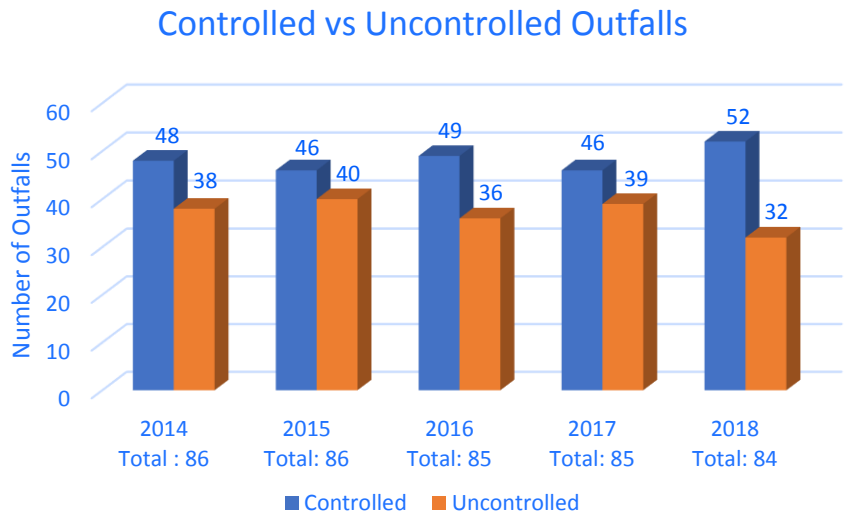
- Reduce reactive maintenance costs over time





DWW Service Target

Limit combined sewer overflows to 1 per outfall per year over a 20-year moving average



DWW Service Target

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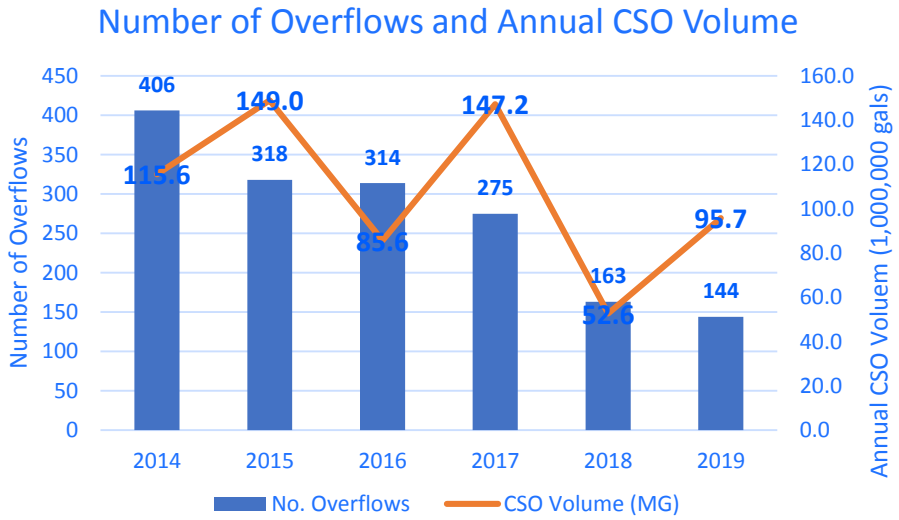
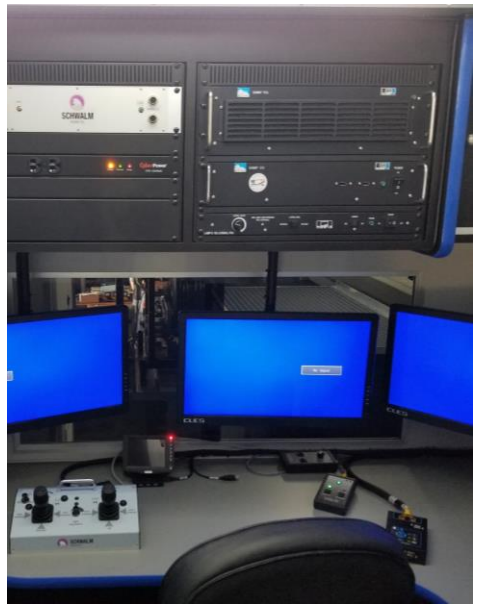


Part 2
Review 2018-2023 Action Plans

#5 Sewer Repair Sewer Lining

- Staff Hired - Lining crew positions hired, assisting with CCTV and Cleaning in interim
- Equipment Purchased - Acquired and currently onboarding CCTV and Lining trailer
- Scheduled to start pipe installation Q1 2020

- Work Continuing. Shift to baseline



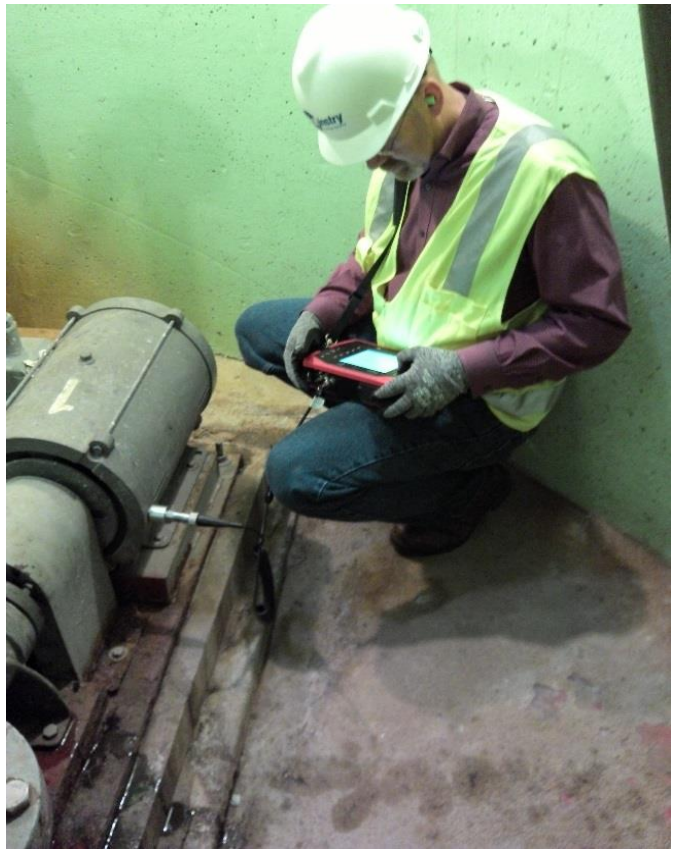
#6 Sanitary Sewer Capacity

- This action plan increased funding to solve sanitary sewer capacity problems.
  - Past development
  - Increased urbanization and density
  - Plan for climate change
- Not funded in the balancing of the full SBP
- Deferred, additional expenditures expected in 2024.

#7 Sewer Rehabilitation
#8 Pump Stations, Force Mains, and Outfalls

- Repair, rehabilitate existing infrastructure

- Request to increase funding
- More information in Part 3



#9 Side Sewer Enforcement

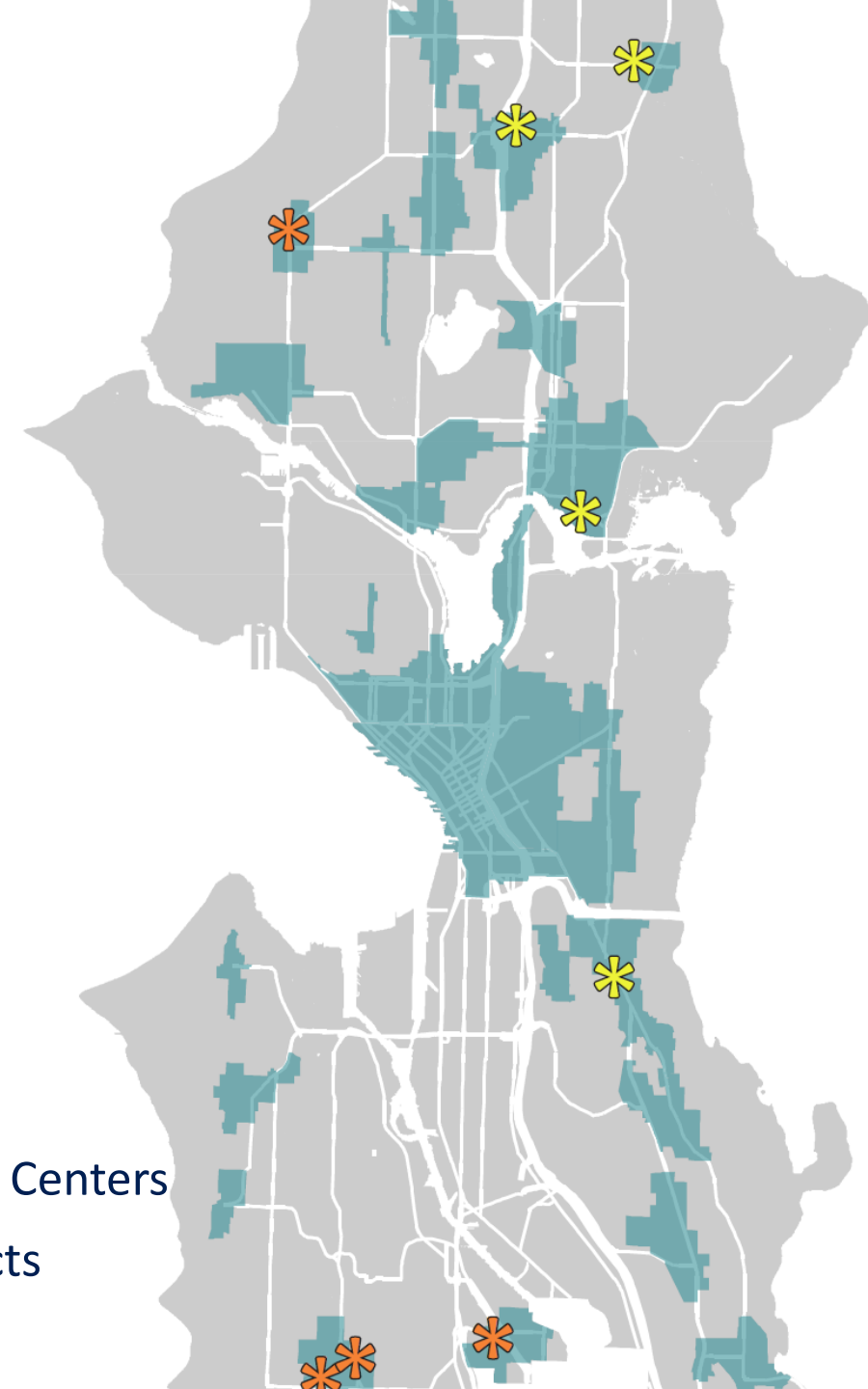
- Side Sewer Program investigates issues where there are potential violations of the “Side Sewer Code”, broken or defective private side sewers.
  - Added one position to improve SPU’s enforcement of side sewer code
  - More work than anticipated. Customer service focus.
- Customer assistance program need identified.

- Continue the work. Move to baseline.

#14 Green Infrastructure in Urban Villages Program

- Developed at City Council's request
- Focus: providing drainage and wastewater system improvements through GSI in fast-growing neighborhoods
- Testing ground for new approaches to GSI, community partnerships, development synergies

- Continue the work.
- No additional funding, shift to baseline into next planning period.



Review 2018-2023 Action Plans

Action Plan	2021 -2026 Recommendations
#5 Sewer Repair (lining crew)	Continue the work. Move to baseline in next planning period.
#6 Sanitary Sewer Capacity	Deferred, additional expenditures expected in 2024
#7 Sewer Rehabilitation	Continue the Action Plan. Increase funding.
#8 Pump Stations, Force Mains, and CSO Outfalls	Continue the Action Plan. Increase funding.
#9 Side Sewer Enforcement	Continue the work. Move to baseline.
#14 Green Stormwater Infrastructure	Continue the work. No additional funding, shift to baseline into next planning period.

Part 3
Looking Ahead to Strategic Priorities

2021-2026 Action Plans

Strategic Priorities

Action Plan	2021 -2026 Recommendations
#7 Sewer Rehabilitation	Continue the Action Plan. Increase funding.
#8 Pump Stations, Force Mains, and CSO Outfalls	Continue the Action Plan. Increase funding.
NEW Drainage Rehabiliation	**New Action Plan**
NEW Side Sewer Assistance Program	**New Action Plan** on financial assistance for customers with side sewer issues (to be presented in march)
NEW Unhoused Population Services	This will not affect rates because it will come from the General Fund (CRP 2/26)

SBP Initiative Summary

Assets	Additional CIP	Additional FTE
Wastewater Pipes	$7.5-10M/year	4 FTE
Pump Stations, Force Main, Outfalls	$4-6M/year	-
Drainage	$2M/year	1.5 FTE
Total	$13.5-18M/year	5.5 FTE

Asset Management - Drainage and Wastewater Rehabilitation Action Plans

Drainage and Wastewater Rehabilitation

Program Objective:

- Rehabilitate, repair and replace aging infrastructure

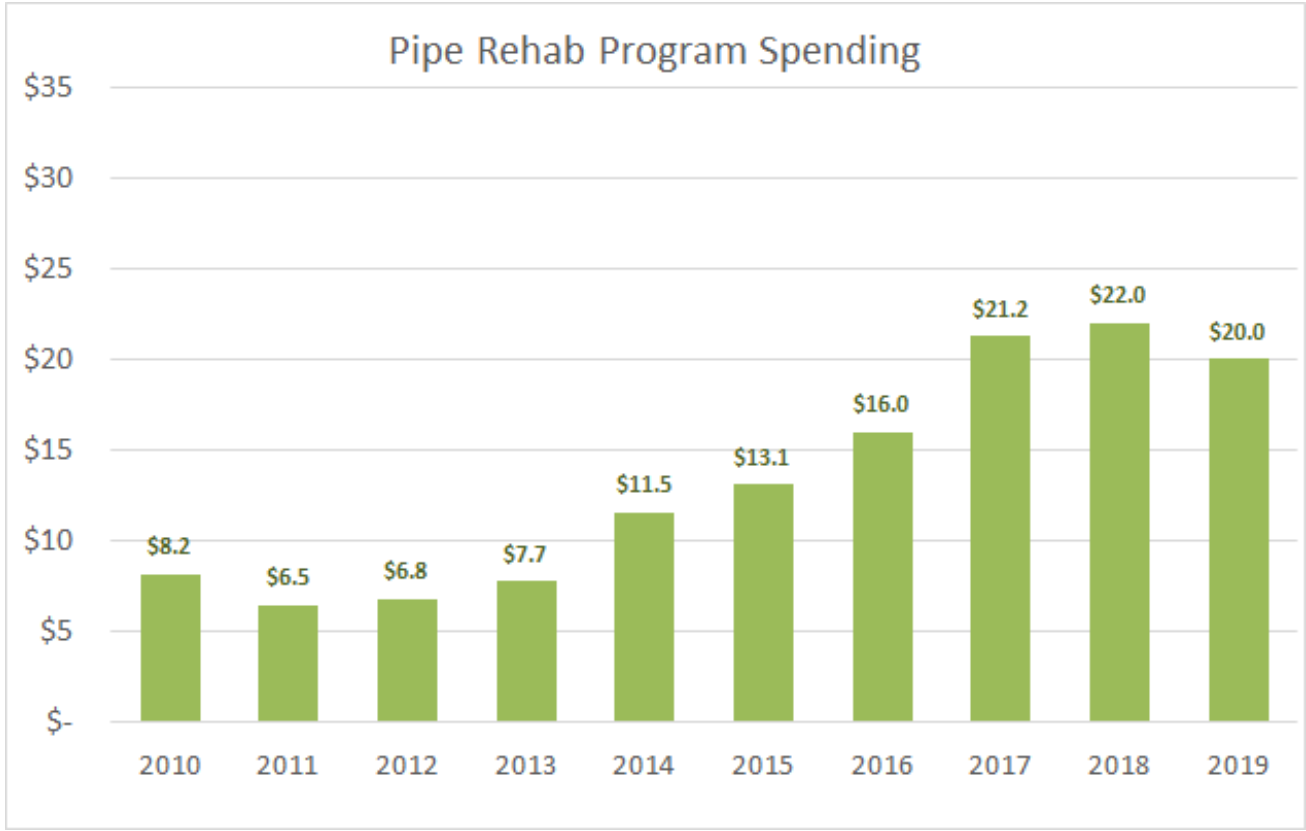
Program Drivers:

- Comply with regulations
- Sustainably replace and repair infrastructure
- Manage risk
- Maintain level of service

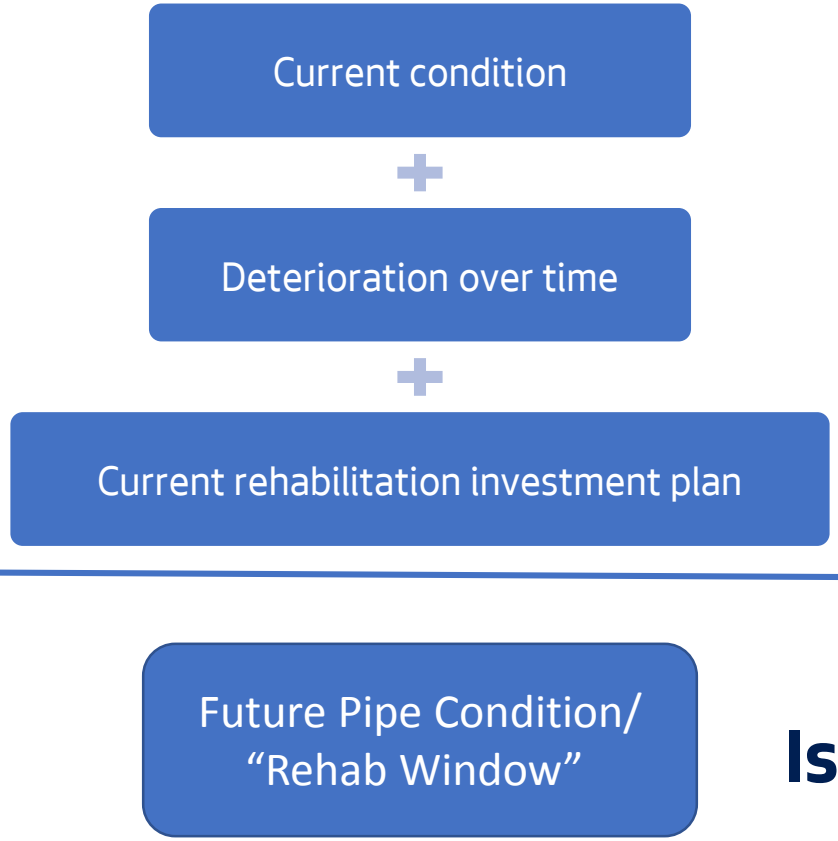
Sewer Rehabilitation

Sewer Rehab over the last 10 years…

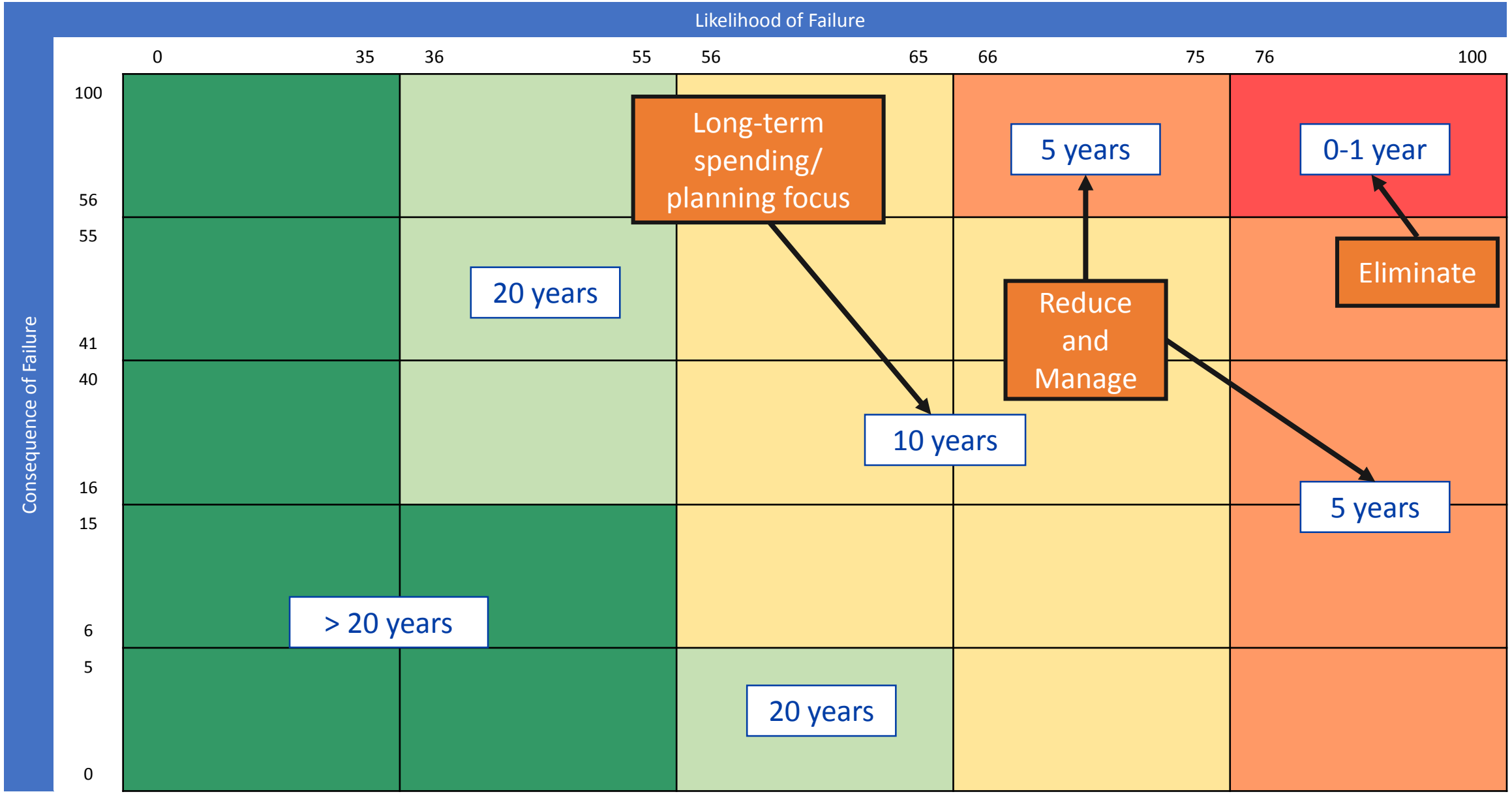
- Most pipes >80 years old, nearing end of life
- Historically low investment
- Since 2013
  - ➢ Increased inspections (CCTV)
  - ➢ Increased capital funding (2015 and 2018 SBPs)
  - ➢ Developing long-term strategy
- Are we doing enough?
  - ➢ 2019 investment analysis



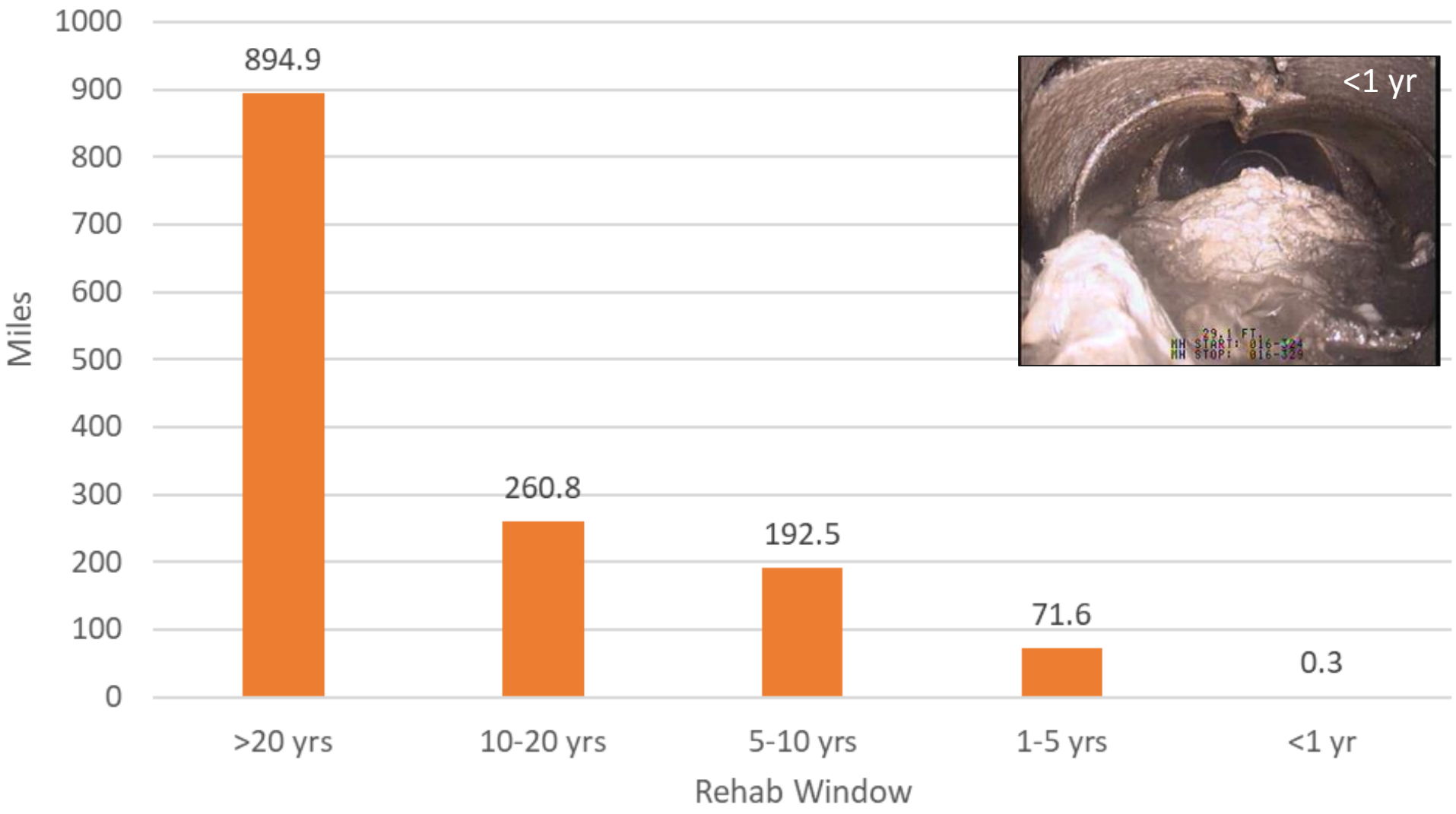
Pipe Rehab Capital Investment Analysis



Is SPU investing enough?

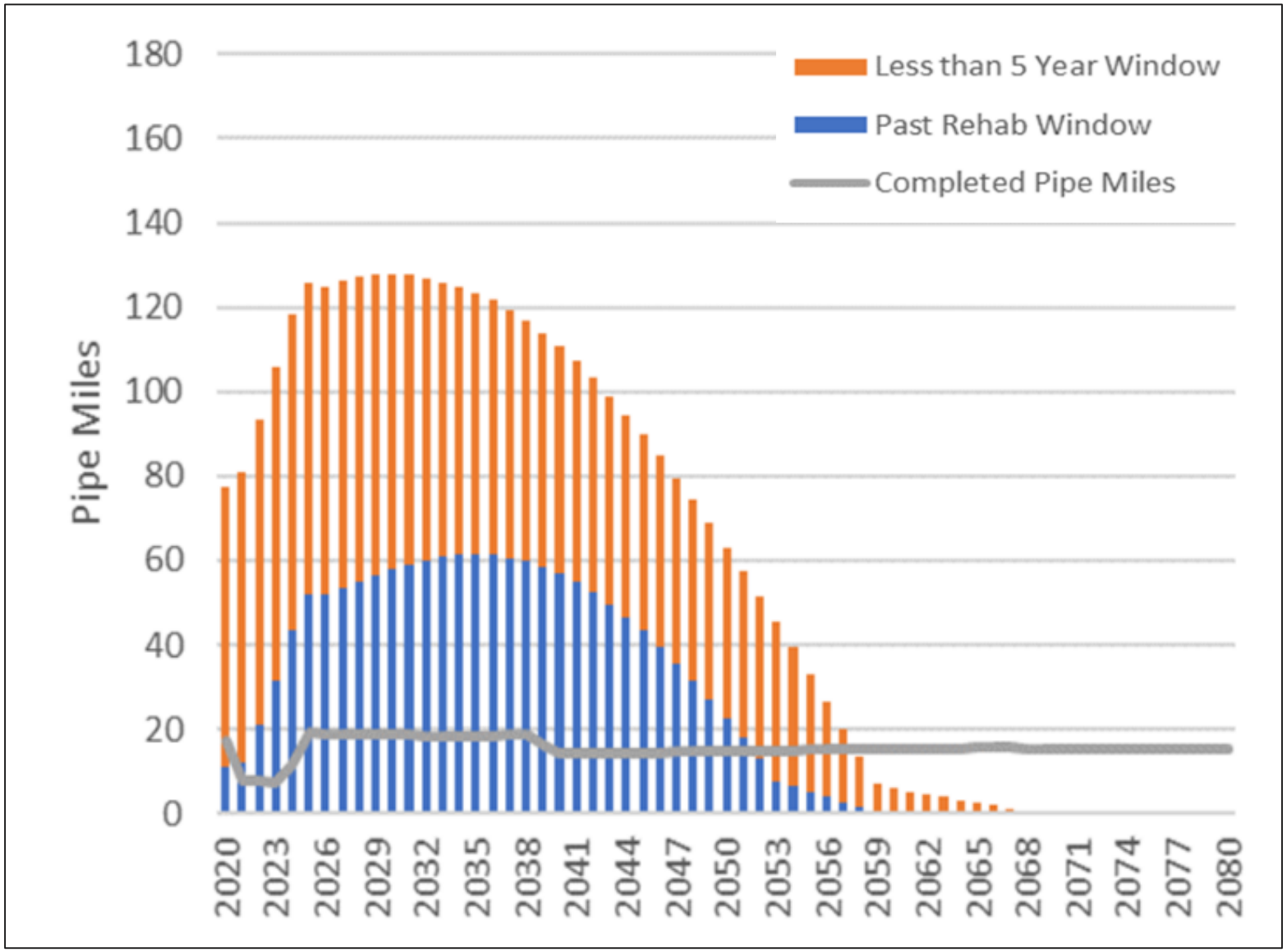

Likelihood of Failure
Consequence of Failure
0
35
36
55
56
65
66
75
76
100
100
56
55
41
40
16
15
6
5
0
Long-term spending/ planning focus
5 years
0-1 year
20 years
Eliminate
Reduce and Manage
10 years
5 years
> 20 years
20 years

Rehab Timing Distribution of Seattle's Wastewater Pipes: 2019



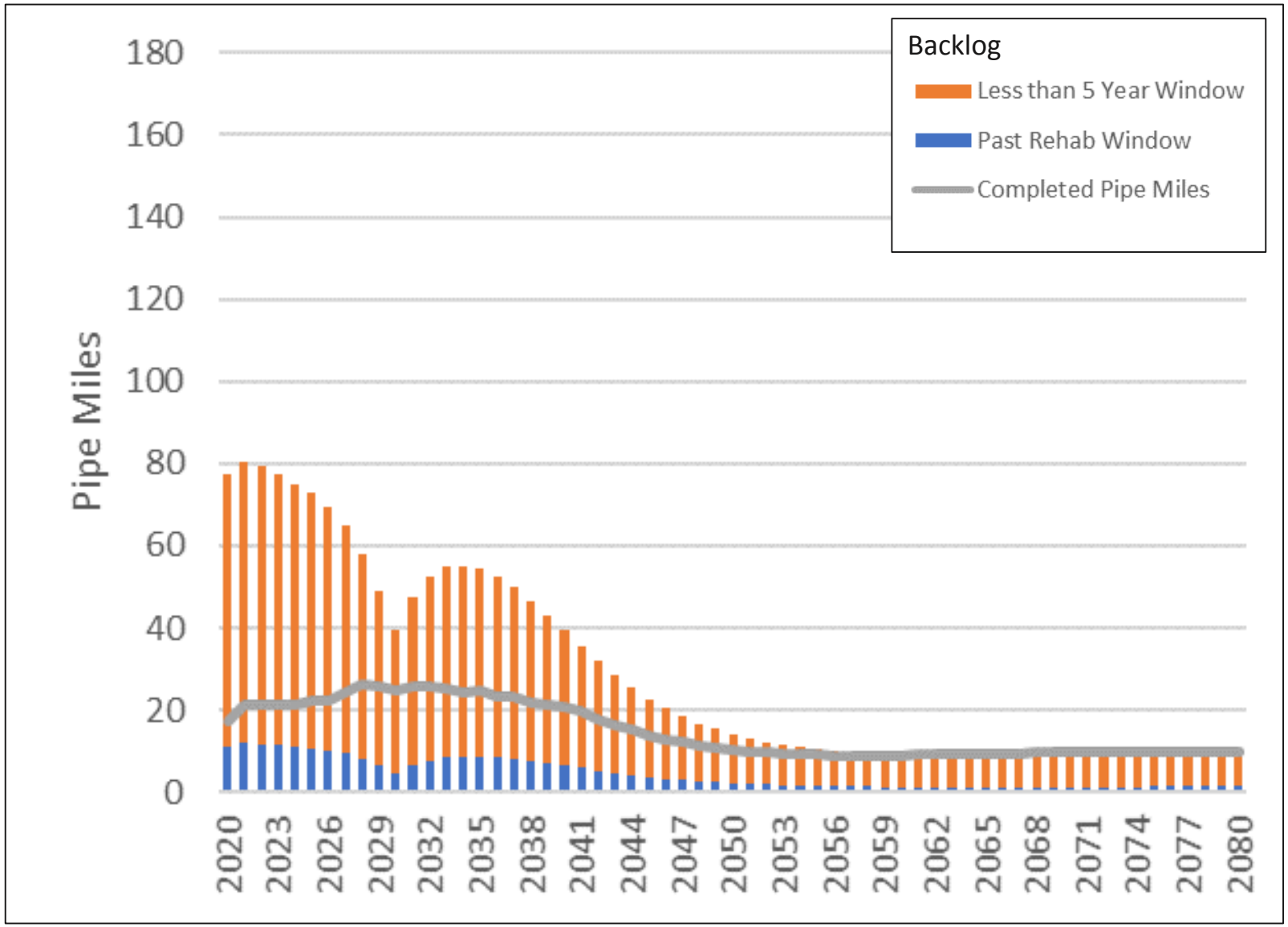
Rehab distribution through time of high-risk pipes- current plan

- Significant increase in rehab backlog
- Impact: $20M annual budget 2021-2024
- Backlog is not managed until after 2050
- Little proactive work possible



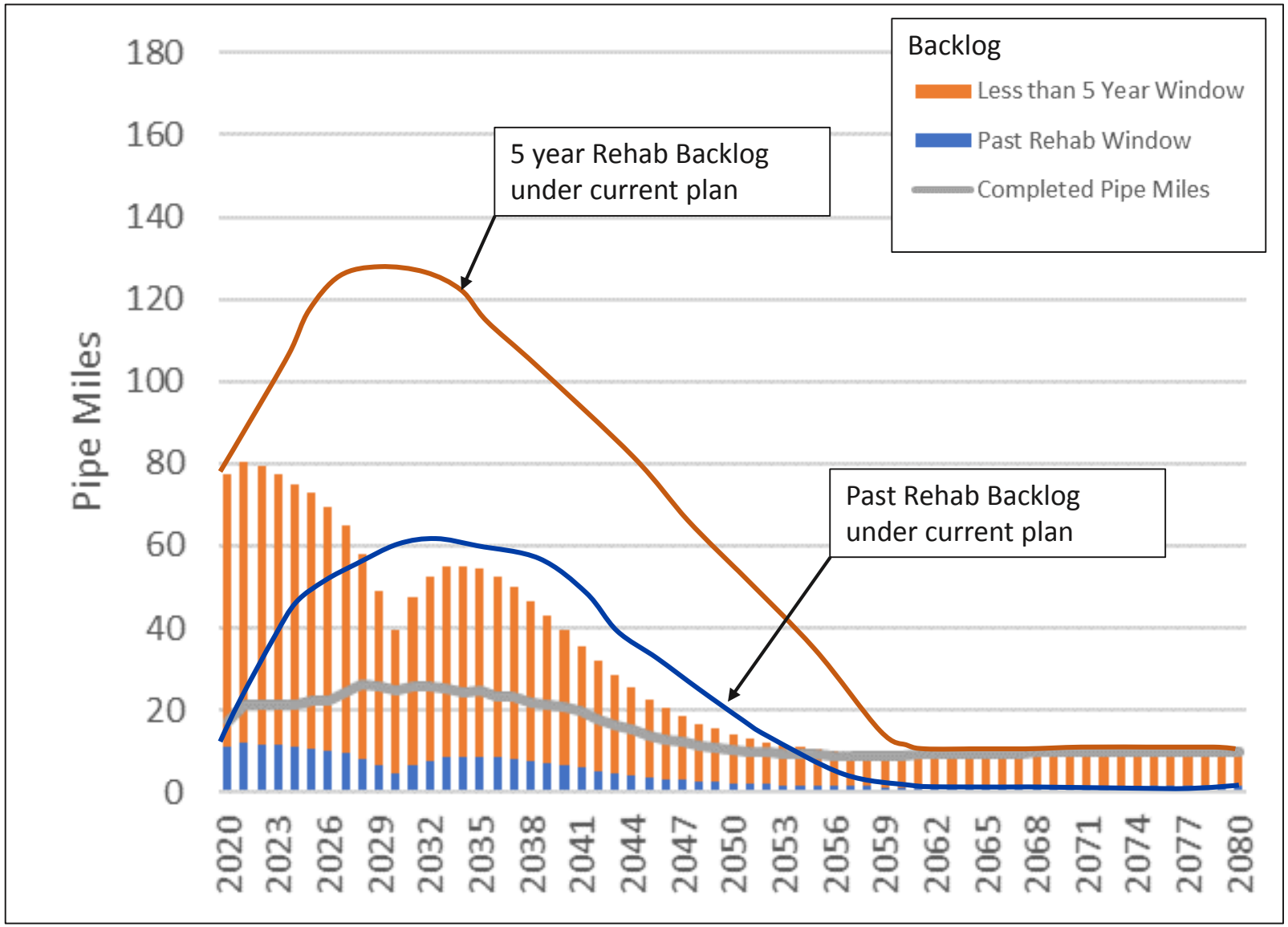
Recommended Scenario

- Eliminate 2021-2024 reduction
- Increase to $30M 2027
- Maintain >$30M until 2041



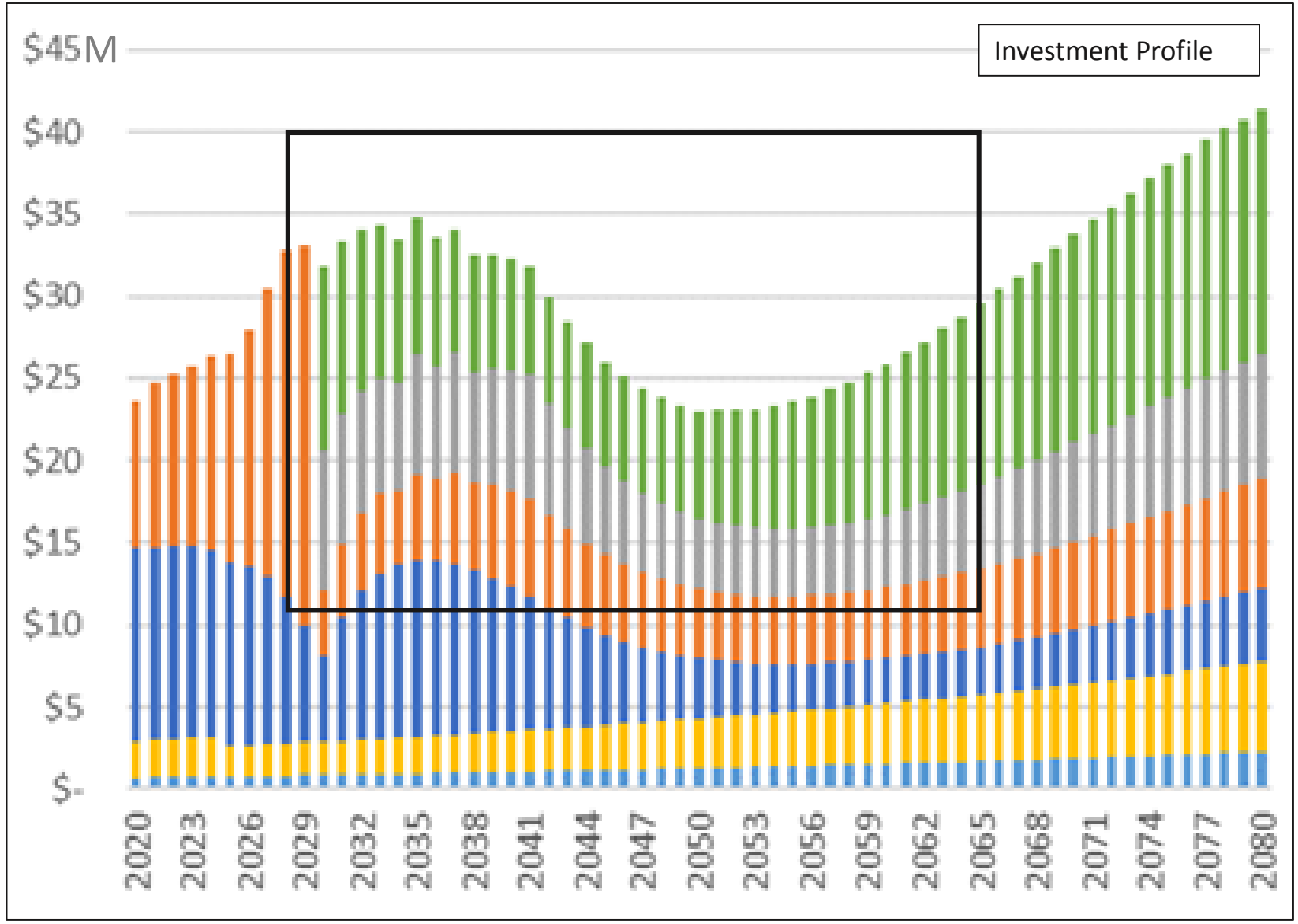
Recommended Scenario

- Backlog is managed much earlier

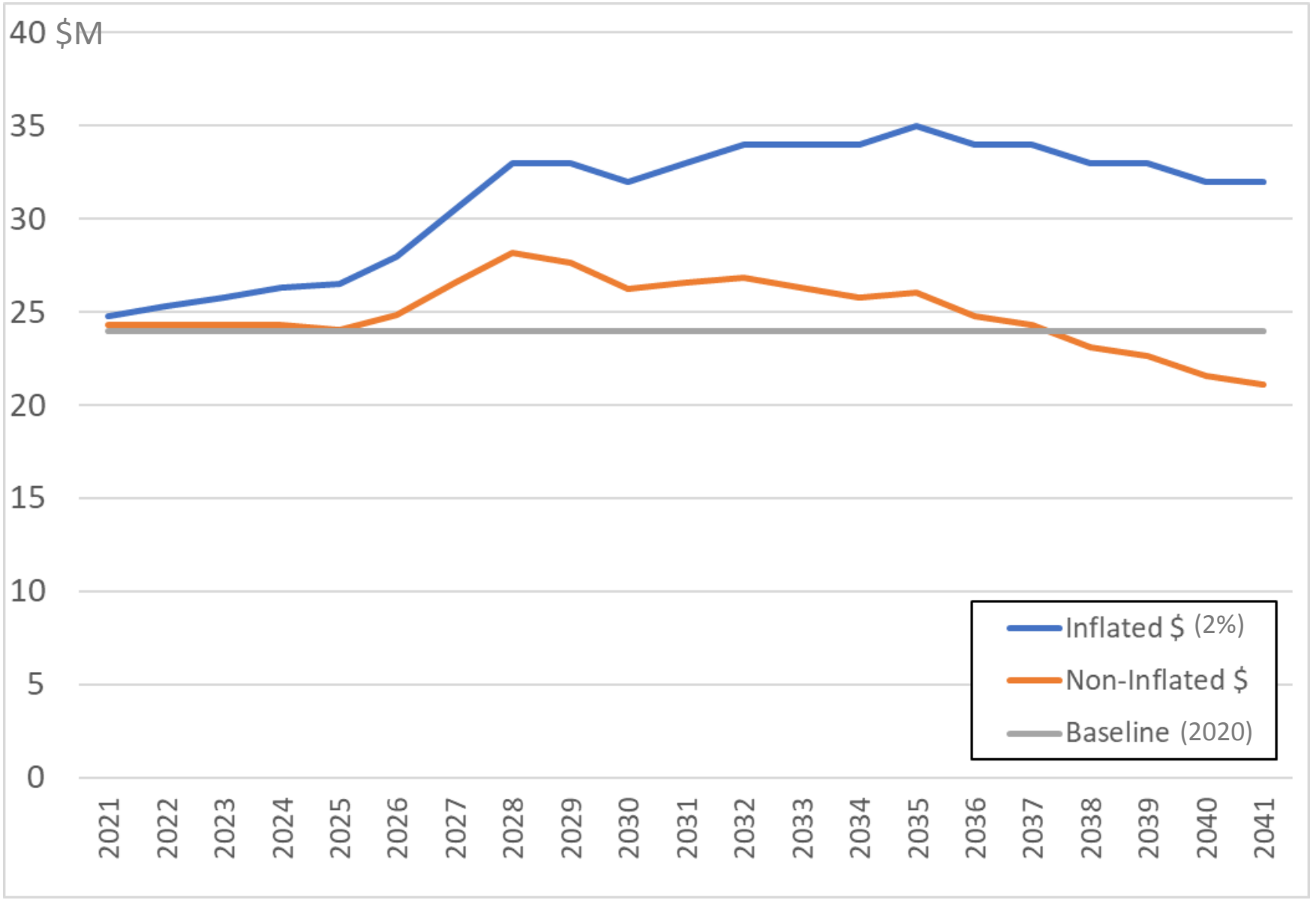


Recommended Scenario

- Start proactive work much sooner



15-year Spending Path



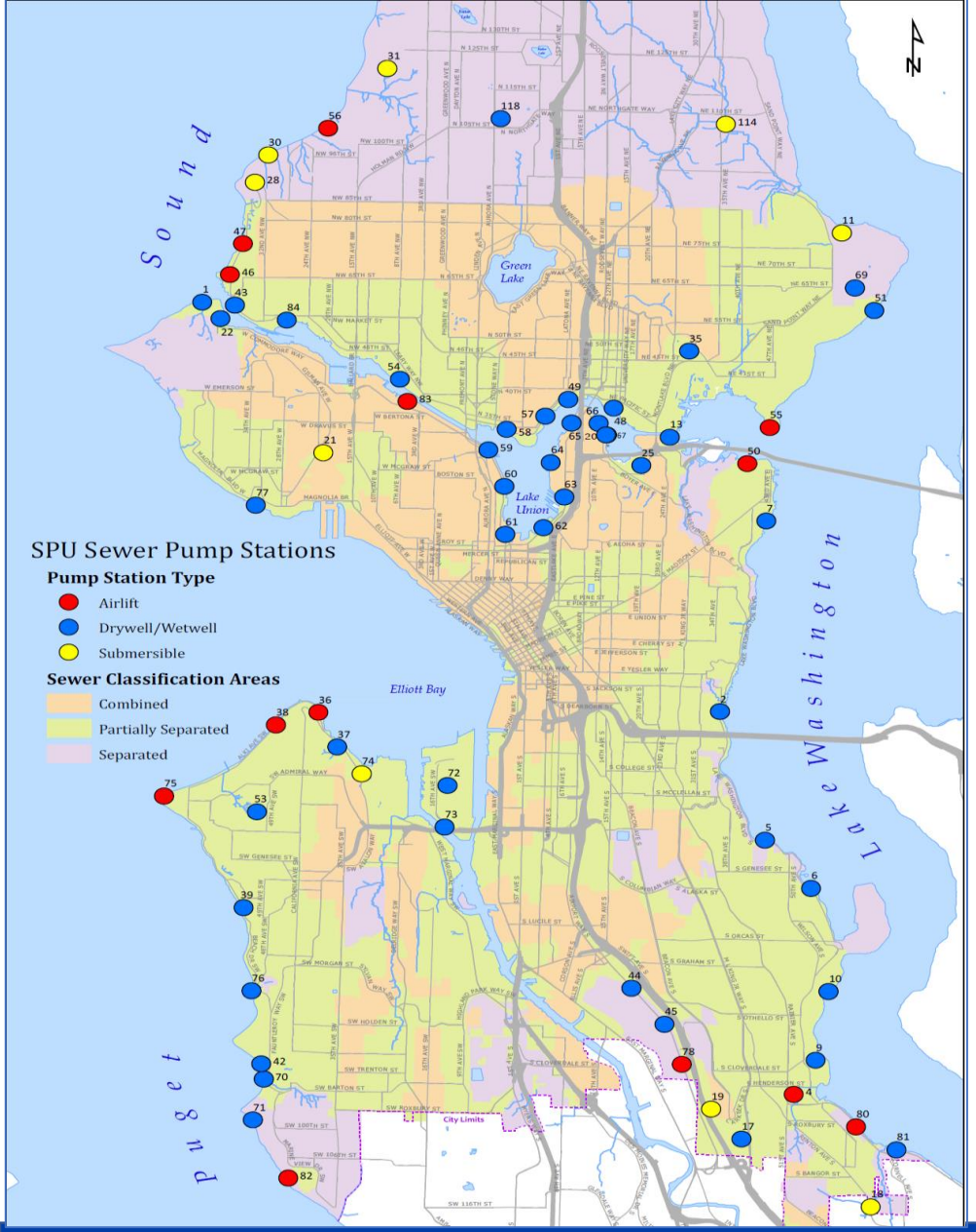
Sewer Rehabilitation Action Plan

Add $5.7-9.5M each year

4 additional FTEs

($M)	2021	2022	2023	2024	2025	2026	Total
O&M $ Amount	0	0	0	0	0	0	0
CIP $ Amount- ADD	7.6	8.9	9.5	6.1	5.7	7.2	45
Total Program CIP with ADD	28.3	29.0	29.6	30.2	30.5	32.1	179.6
FTEs Added/ Changed	3		1				

Pump Stations and Force Mains



SPU owns and operates 68 Pump Stations and associated force mains

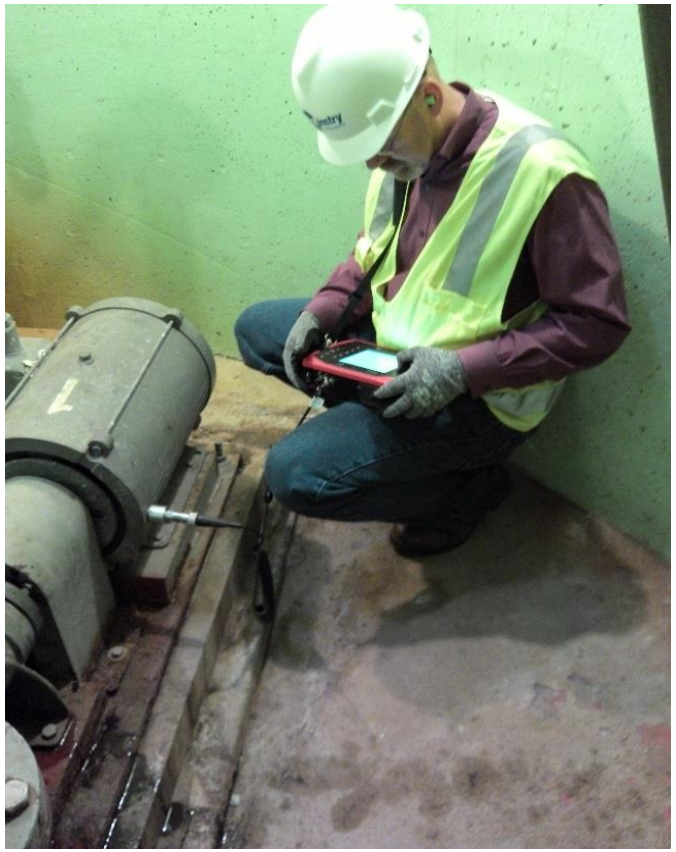
Three different types of Pump Stations

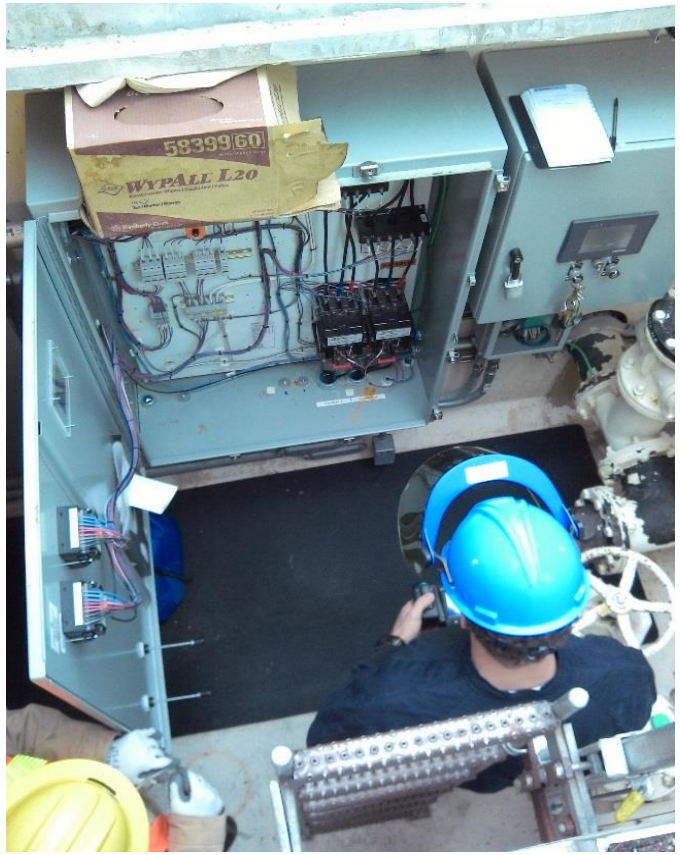
- Airlift (12)
- Dry Well/Wet Well (45)
- Submersible (11)

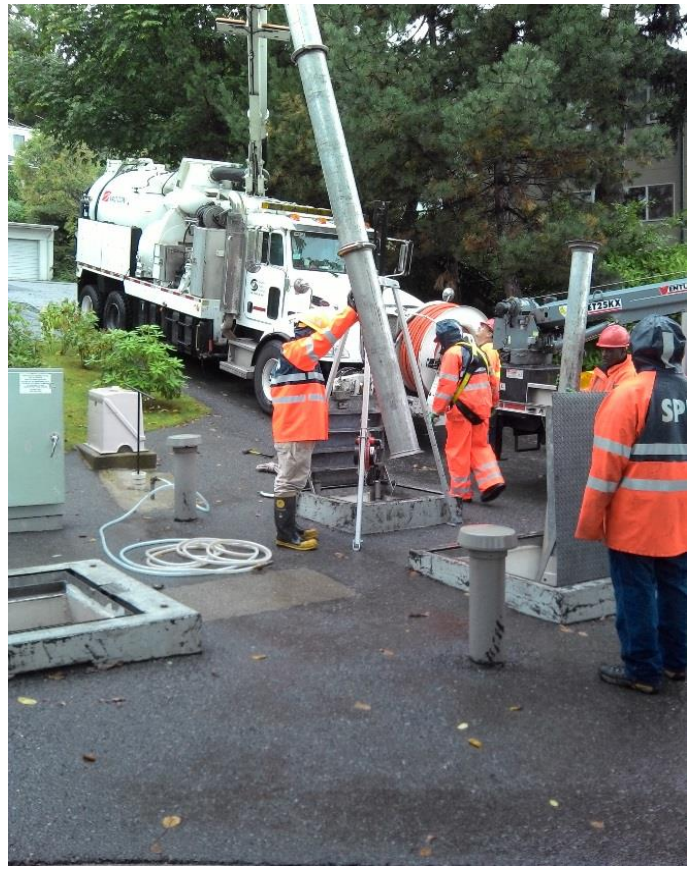
Note: This program does not include Improvements to Pump Stations that are being upgraded as part of the CSO Program (for example PS 22 in Magnolia or PS 13 in Montlake) Those projects are funded and approved under the CSO Retrofits Program

Asset Conditions

- Performed a system wide condition assessment of 54 non Air Lift Pump Stations (2014-2015)
- Performed a Probabilistic Risk Assessment of Force Mains for replacement / inspection
- Continue to refine/adjust assessments based on updated condition monitoring data



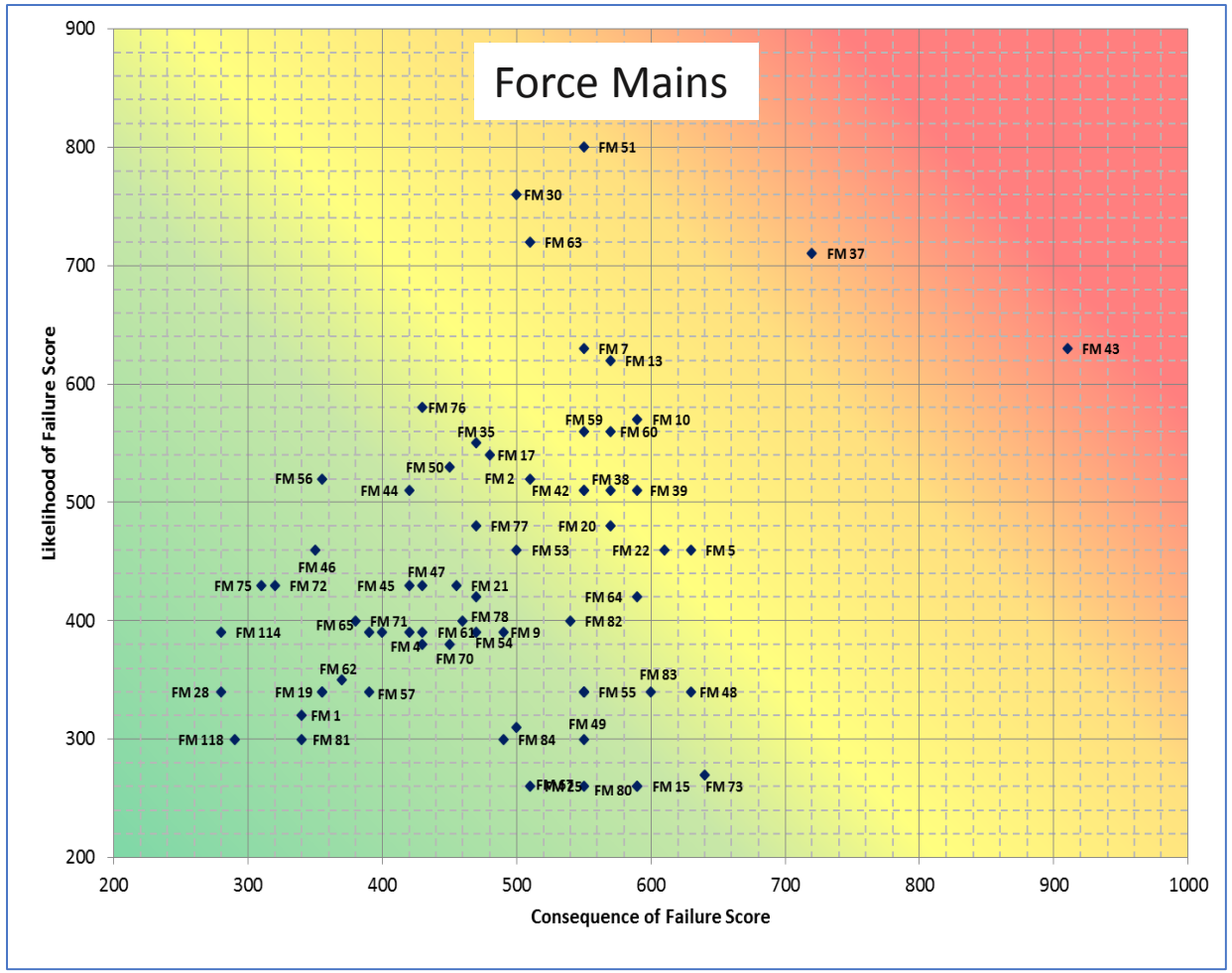




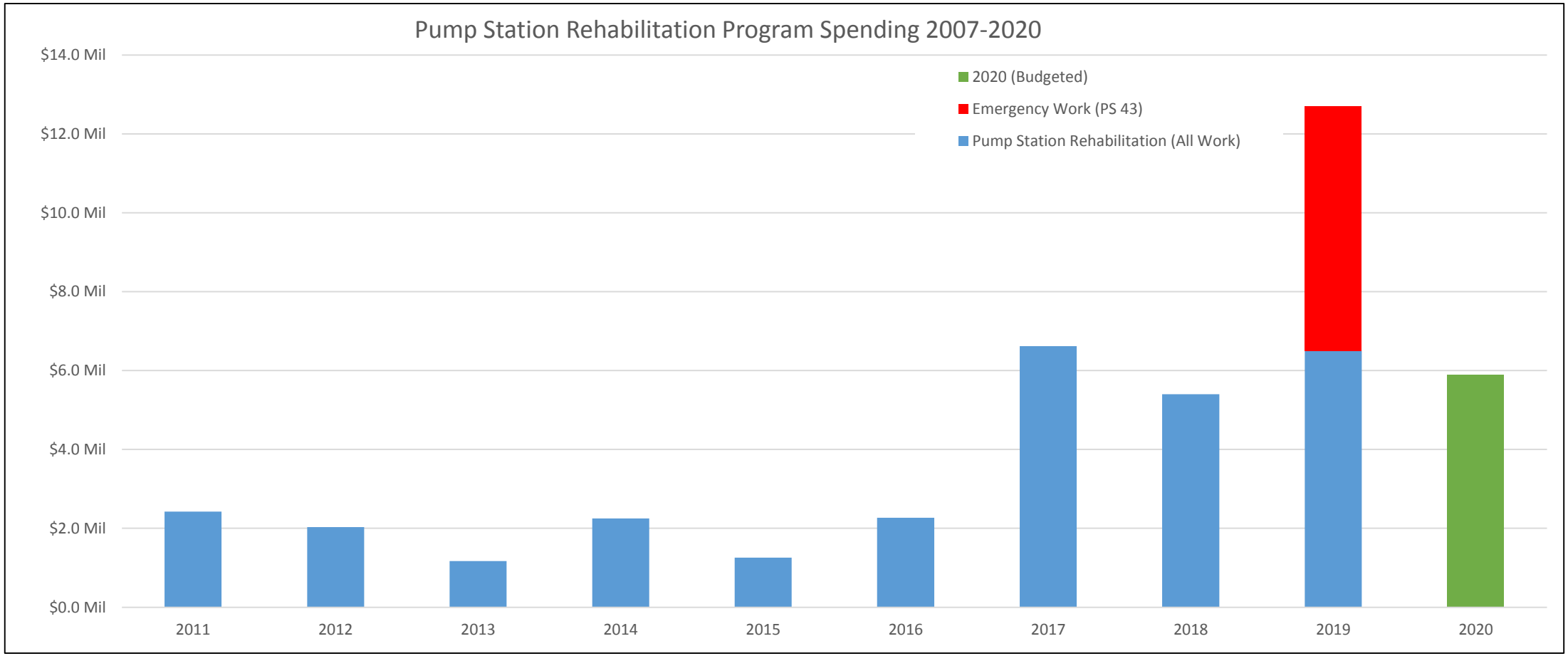
Asset Conditions – Pump Stations

PS and Force Main Prioritization

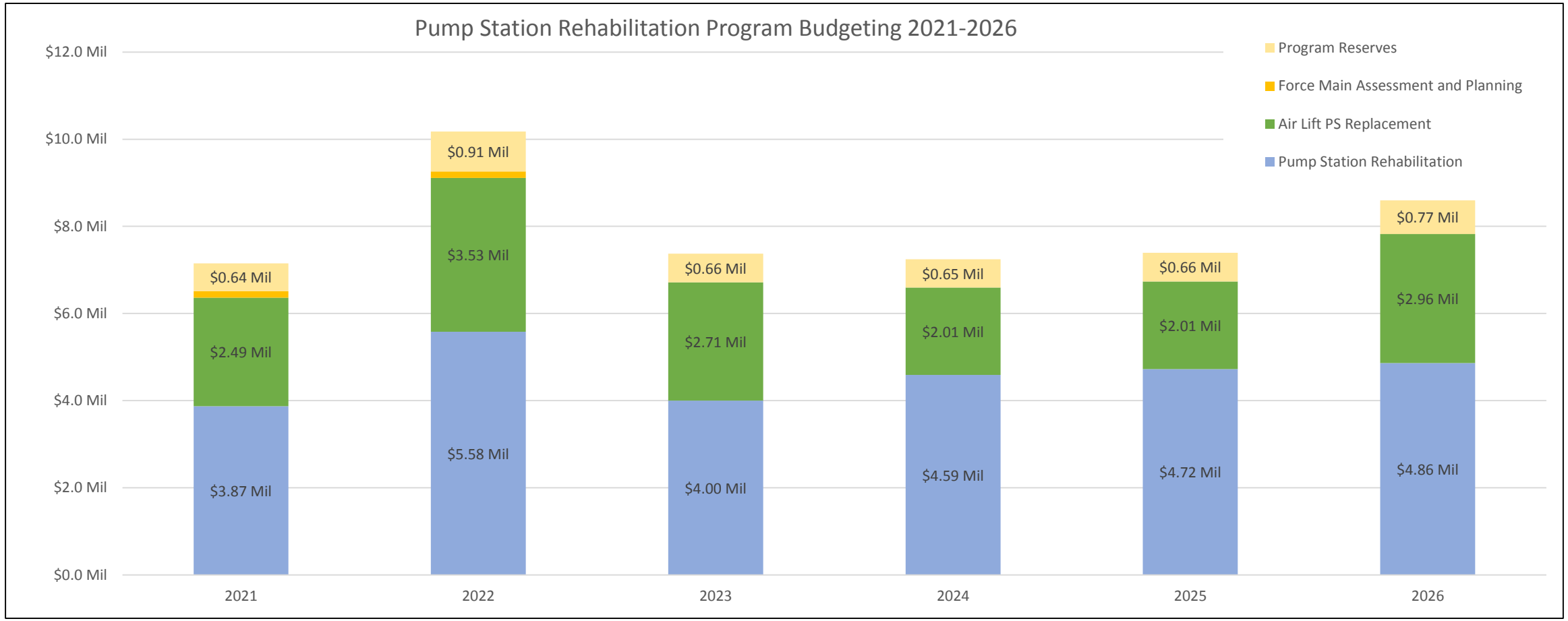
Pump Station ID	Station Type	Criticality
73	W	36.79
72	W	35.375
17	W	35.125
37	W	33.84
43	W	31.51
7	W	30.36
77	W	30.14
71	W	27.7
44	W	25.92
45	W	25.83
35	W	25.38
9	W	25.29
10	W	25.11
46	A	24.84
58	W	24.75
63	W	24.75
5	W	23.885
22	W	23.545
2	W	23.46
25	W	23.29
38	A	23.29
36	A	23.205
48	W	23.12
60	W	23.12
20	W	23.12
39	W	22.95
13	W	22.95
114	S	22.8
56	A	22.64
11	S	22.56
118	W	22.24
53	W	22.24
78	A	21.075
82	A	21
81	W	20.85
1	W	20.85
30	S	20.775
83	A	20.775
4	A	20.7
18	S	20.7
28	S	20.7
31	S	20.7
74	S	20.55
19	S	20.4
21	S	20.4
69	W	18.46
51	W	18.07
55	A	17.875
65	W	17.875
84	W	17.875
54	W	17.81
57	W	17.81
80	A	16.56
6	W	16.5
42	W	16.38
47	A	16.26
59	W	16.2
61	W	16.2
62	W	16.2
49	W	16.2
50	A	16.2
67	W	16.2
75	A	16.2
70	W	16.14
64	W	16.08
66	W	16.08
76	W	16.08
15	S	14.685



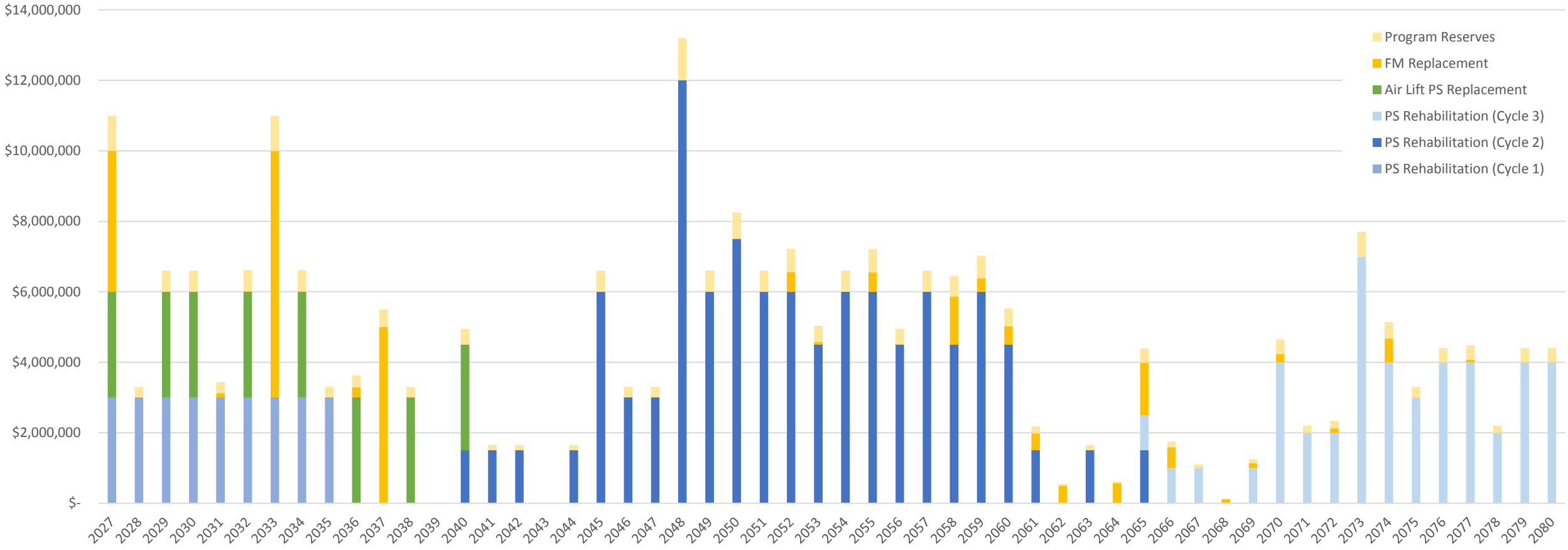
Historical Program Cashflow (2007-2020)



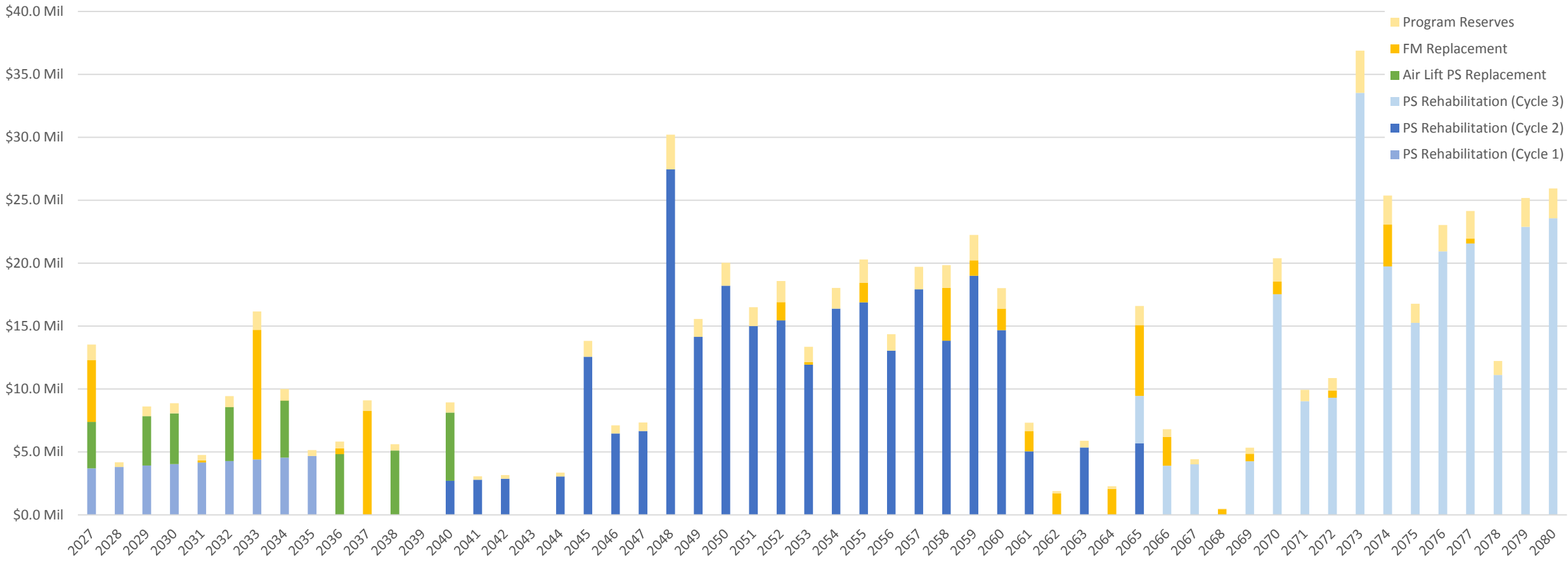
Proposed Program Cashflow (2021-2026) Escalated



Proposed Program Cashflow (2027-2080) Not Escalated



Proposed Program Cashflow (2027-2080) Escalated



Budget Request for Pump Stations and Force Mains

PUMP STATIONS AND FORCE MAINS							
($000's)	2021	2022	2023	2024	2025	2026	Total
O&M $ Amount	-	-	-	-	-	-	-
Baseline Budget	3.00	3.00	3.00	3.00	3.00	3.00	18.00
Action Plan Increase (2018)	1.37	1.02	1.00	-	-	-	3.39
Action Plan Increase Request (2020)	2.78	6.16	3.37	4.24	4.39	5.60	26.54
Total Request	7.15	10.17	7.37	7.24	7.39	8.59	47.93
FTEs Added/Changed	-	-	-	-	-	-	-

Outfalls

Outfalls

- Repair/Replace 2 outfalls/year

CSO OUTFALLS							
($000's)	2021	2022	2023	2024	2025	2026	Total
O&M $ Amount	-	-	-	-	-	-	-
Baseline Budget	0.50	0.50	0.50	0.50	0.50	0.50	3.00
Action Plan Increase (2018)	1.00	1.00	1.00	-	-	-	3.00
Action Plan Increase Request (2020)	-	-	-	1.00	1.00	1.00	3.00
Total Request	**1.50**	**1.50**	**1.50**	**1.50**	**1.50**	**1.50**	**9.00**
FTEs Added/Changed	-	-	-	-	-	-	-

*** Continue Action Plan Funding**

Drainage Rehabilitation

480 miles of storm drain pipelines

295 storm drain outfalls

23 large surface water facilities

1 million gallons of underground stormwater detention

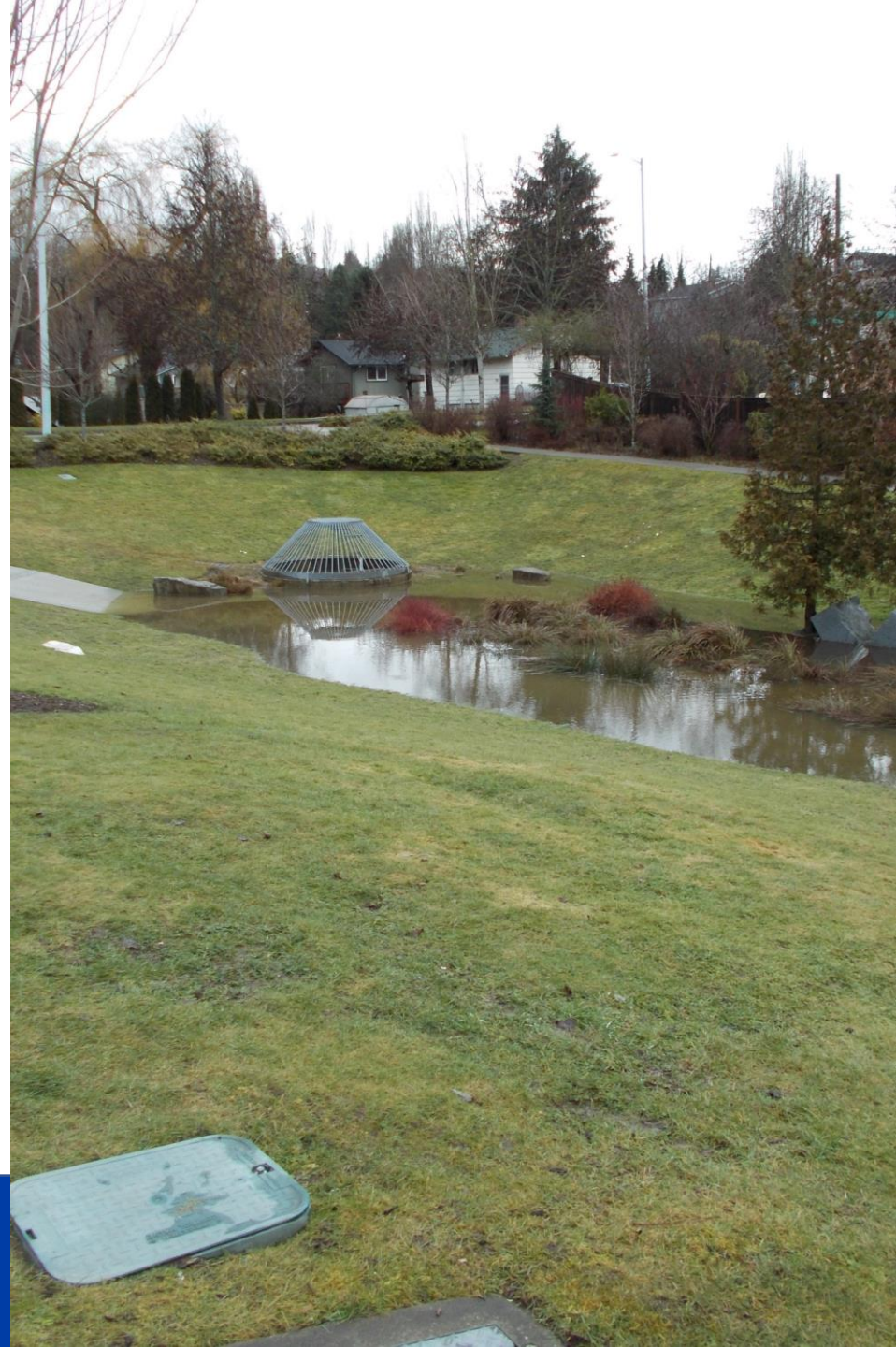
11.6 miles of creek culverts

46 miles of non-stream bearing culverts

62 green stormwater facilities

over 20,000 catch basins

400 water quality structures in the city limits

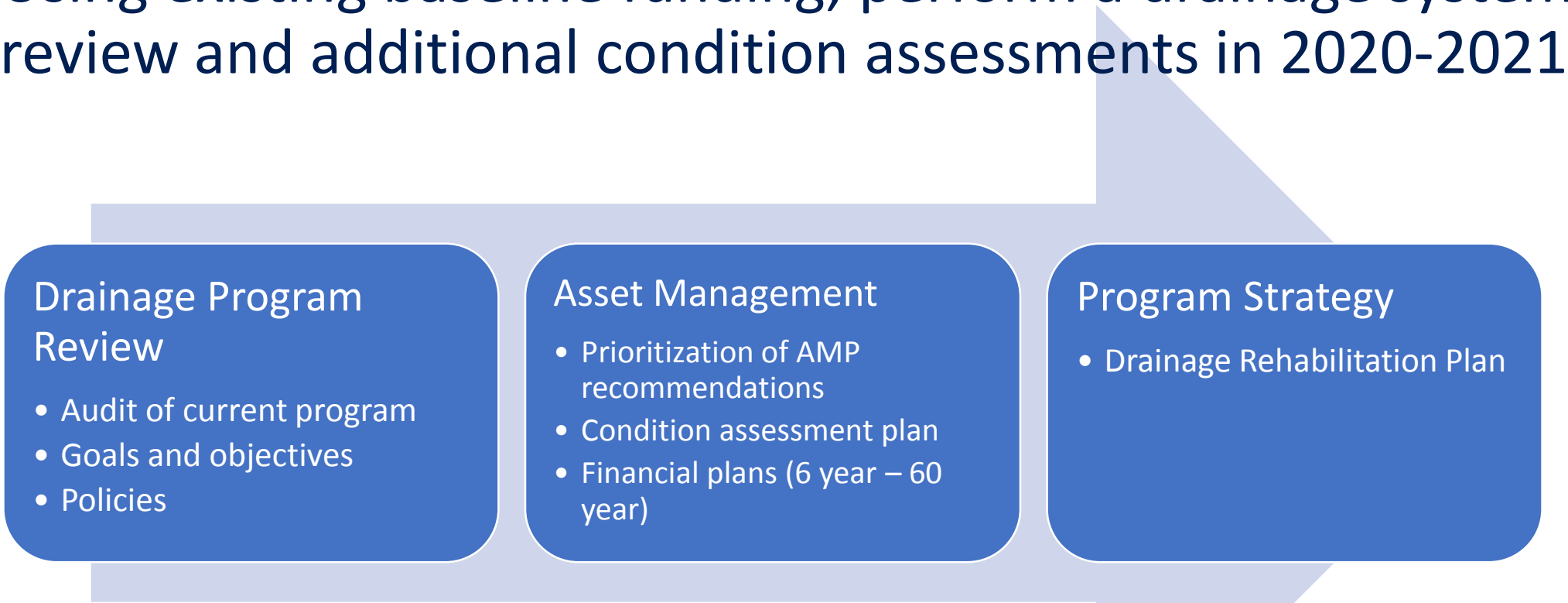


Problem Statement

- Condition is unknown for large asset classes
  - Creek culverts, Ditch and Culvert, Drainage Pipes, and Underground Detention
- Current spending is less than $3M a year

Drainage

- Using existing baseline funding, perform a drainage system review and additional condition assessments in 2020-2021



Drainage Action Plan

Increase Funding

- $0.5-2M/year in Capital Funding

Increase Resources

- 1 FTE for program management
- 0.5 FTE assessor

Evaluate Needed Changes

- Based on Drainage Program Review

Drainage Action Plan

Program Title	Drainage Rehabilitation						
Project name and number(s)							
($000's)	2021	2022	2023	2024	2025	2026	Total
DRAINAGE							
Baseline $ O&M	250						250
Baseline $ Capital**	3,071	3,819	12,093	9,990	13,102	12,022	54,097
Total $ Baseline	3,321	3,819	12,093	9,990	13,102	12,022	54,347
O&M $ Increase	0						
CIP $ Increase		500	1,000	2,000	2,000	2,000	7,500
Total $	3221	4,319	13,093	11,990	15,102	14,022	61,847
FTEs Added/Changed	1.5*						1.5*

SBP Action Plan Summary

SBP Initiative Summary

Assets	Additional CIP	Additional FTE
Wastewater Pipes	$7.5-10M/year	4 FTE
Pump Stations, Force Main, Outfalls	$4-6M/year	-
Drainage	$2M/year	1.5 FTE
Total	$13.5-18M/year	5.5 FTE

Questions