

Infrastructure Today and Into the Future

November 2019



Agenda

- Strategic Business Plan commitments
- Revisit asset management discussion from 3 years ago
- Water and Drainage & Wastewater
 - Background
 - Recent years



Prior Strategic Business Plan Commitments

- **AP 2 – Transportation Projects**
- **AP 3 – Expand Maintenance of the Water Distribution System**
- **AP 5 – Increase Sewer Repairs**
- **AP 6 – Sanitary Sewer Capacity**
- **AP 7 – Sewer Rehabilitation**
- **AP 8 – Pump Station, Force Main and CSO Outfalls**
- **AP 10 – Facilities Master Plan**

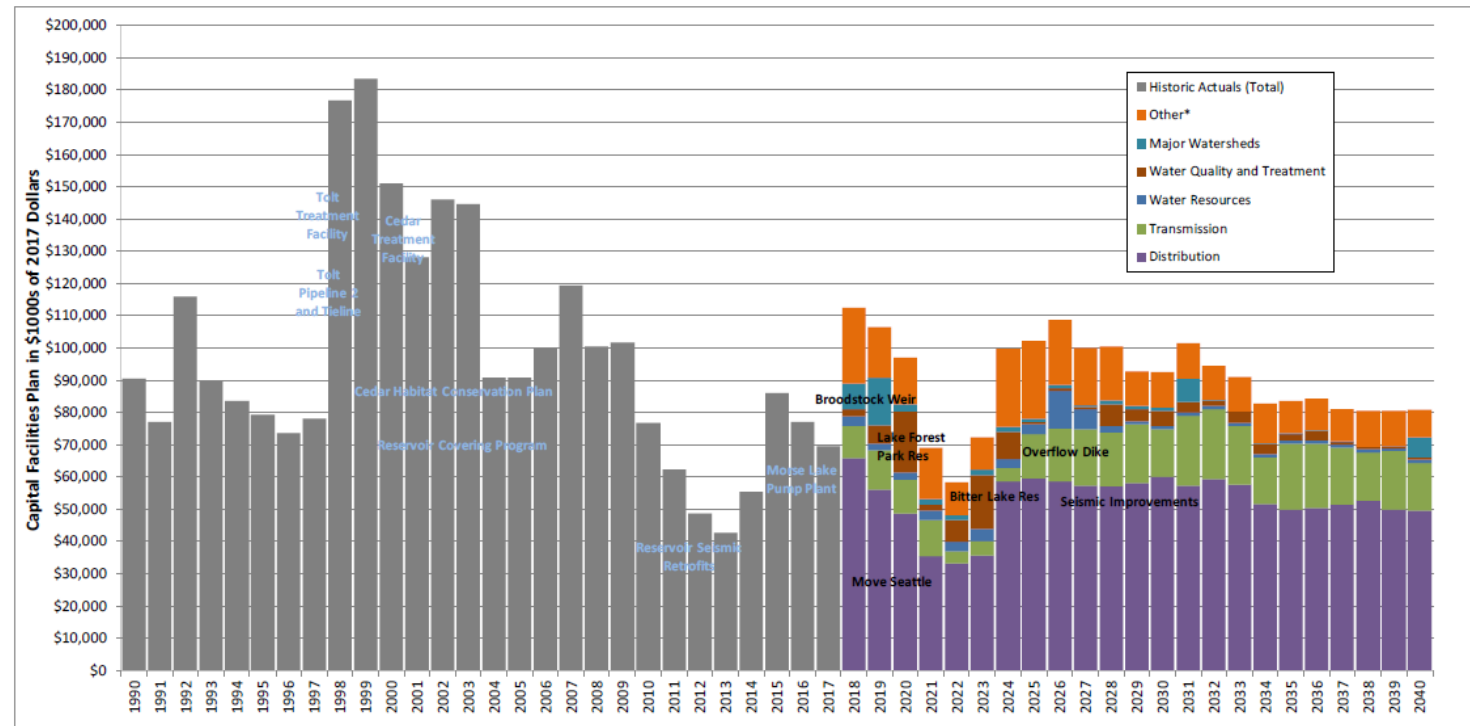
Drinking Water



Capital Improvement Planning (CIP)

- Water System Plan
 - Every 10 years
 - Establishes long-term (decades) CIP spending plan
 - We just updated it in 2019
- We use “asset management” to plan CIP and O&M
 - A structured way of planning for the long term

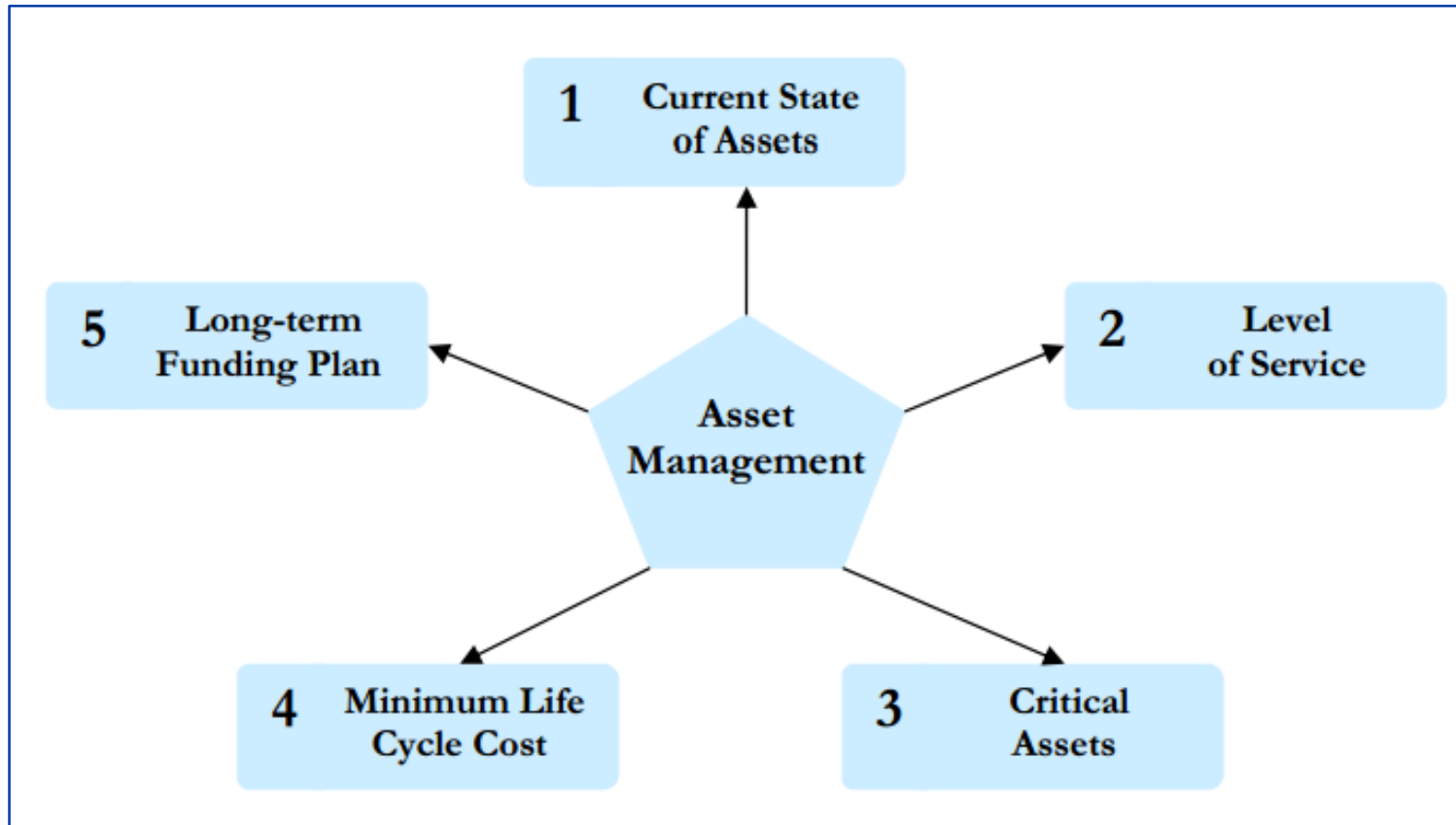
Historic and Proposed Capital Facilities Plan Spending through 2040
(2018-2023 Adopted CIP, plus 2024-2040 Estimate, in thousands of 2017 dollars)



* Other includes Fleets, Facilities, Security, Information Technology, SCADA and other miscellaneous projects.

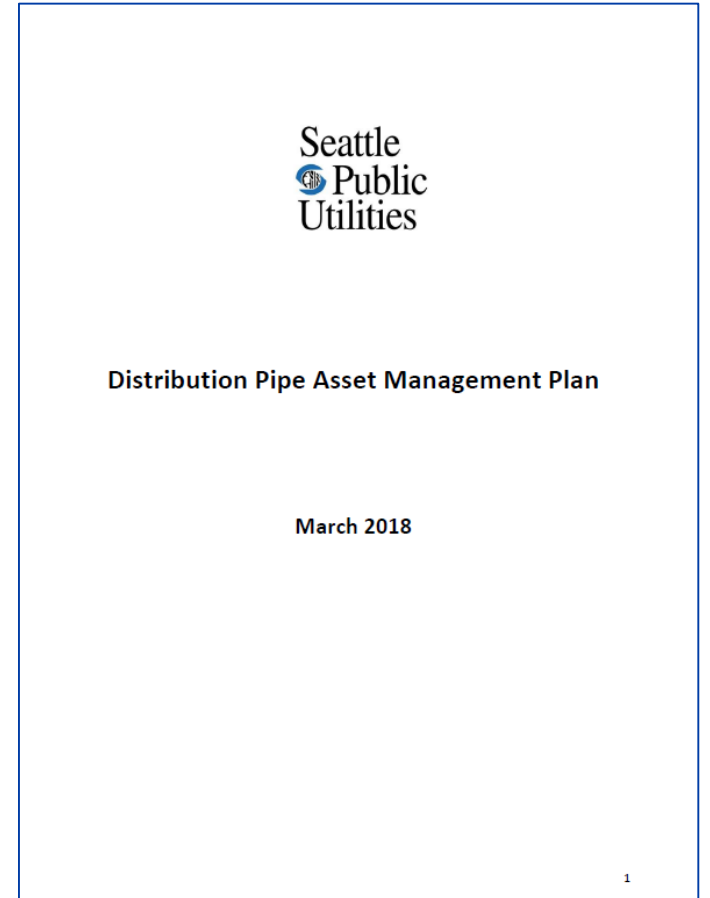


Asset Management



Asset Management Plans (AMPs)

- We have an AMP for most major asset classes
- AMPs contain our long-term plans for how we plan to manage the assets, CIP and O&M
- Renew AMPs on a frequency as needed, based on multiple factors
 - Projected needs for assets
 - Age of existing AMP
 - Available staff resources



Asset Class	Last Updated	Program Manager	Priority for Updating	Notes
Cedar Watershed Reservoirs and Dams	Does Not Exist	SCL / Paul Faulds	Low	SCL ownership
Tolt Watershed Reservoirs and Dams	2014	Paul Faulds	Low	Recent
Lake Youngs Reservoir and Dams	2010	Paul Faulds	Low	Relatively recent, no significant changes
Cedar Watershed Transportation System	2017 (programmatic stage gate)	Matt Orr	Low	Tied into Habitat Conservation Plan
Tolt Watershed Transportation System	Does Not Exist	Matt Orr	Low	Most CIP work done on this recently, O&M focus
Transmission Facilities	Study 2007	Judith Cross	Low	Facility upgrades in progress
In-Town Facilities	Master Plan 2016/2019	Judith Cross	Medium (update in progress)	
Landsburg Facilities	2018 (draft)	Paul Faulds	Medium (in progress)	
Water Treatment Facilities	2013	Jim Nilson	Low	Well defined by DBO contracts
Water Transmission Pipes and Appurtenances	2017	Eugene Mantchev	Low	Recent
Water Distribution Pipes	2018	Tracy De La Torre Evans	Low	Recent
Water Utilidors	Does Not Exist	Matt Orr	Medium (2019)	
Concrete Reservoirs (Treated Water)	2005	Bill Wells	Low	Newer facilities, long service life
Steel Water Tanks and Standpipes	2005 (programmatic update 2007)	Jon Ford	Medium (2019)	
Water Pump Stations	2006 (RCM based analysis 2013)	Bill Heubach	Low	Relatively low maintenance and CIP dollars currently
Water Meters (Wholesale and Retail)	2004	Eugene Mantchev	Medium (2019)	Wholesale meters optimized, retail meters awaiting more staff resources for analysis
Water Valves	2015	Matt Orr/Jim McNerney	Low	Recent
Water Hydrants	2018	Matt Orr/Jim McNerney	Low	Recent
Water Services/Taps	2004 (2011 programmatic Stage Gate)	Matt Orr	Medium (2019)	Lead goosenecks to consider

Asset Management

- Discrete assets are easier to manage
 - Reservoirs, dams, treatment plants, buildings, pump stations
 - Regular inspections provide good data for analysis
- Distributed assets are much more complex
 - Water mains of all sizes
 - Hydrants, valves, service lines
 - Not always easy to inspect



Discrete Assets

Asset	Condition	Certainty	Notes
Cedar Watershed Reservoirs and Dams	Green	Green	
Tolt Watershed Reservoirs and Dams	Green	Green	
Lake Youngs Reservoir and Dams	Yellow	Green	<i>Cascades Dam</i>
Transmission-Area Buildings	Yellow	Green	<i>Older buildings</i>
In-Town Buildings	Yellow	Green	<i>Older buildings</i>
Action Plan 10 Buildings	Green	Green	
Water Treatment Plants	Green	Green	
Concrete Reservoirs (Treated Water)	Green	Green	
Steel Water Tanks and Standpipes	Yellow	Green	<i>Coatings, seismic</i>
Water Pump Stations	Green	Green	



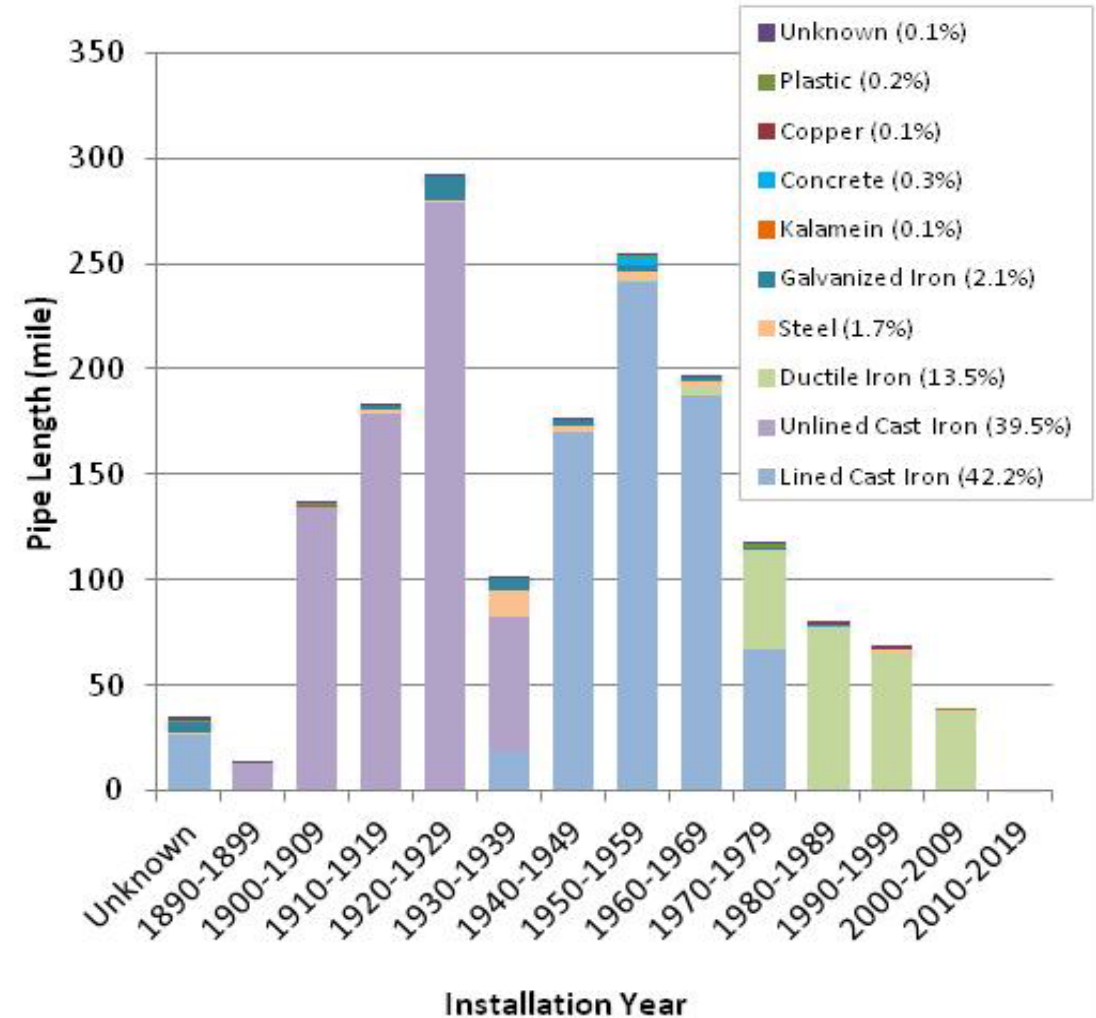
Distributed Assets

Asset	Condition	Certainty	Notes
Cedar Watershed Transportation System	Green	Green	
Tolt Watershed Transportation System	Green	Green	
Water Transmission Pipes and Appurtenances	Yellow	Red	<i>More inspection needed, difficult</i>
Water Distribution Pipes	Yellow	Red	<i>Cannot inspect easily</i>
Action Plan 2 (and refer to next slides)	Yellow	Yellow	<i>More inspection needed, difficult</i>
Water Meters (Wholesale and Retail)	Green	Yellow	<i>Testing frequency</i>
Water Valves	Yellow	Red	<i>Deferred maintenance</i>
Water Hydrants	Yellow	Green	<i>Deferred maintenance</i>
Action Plan 3			



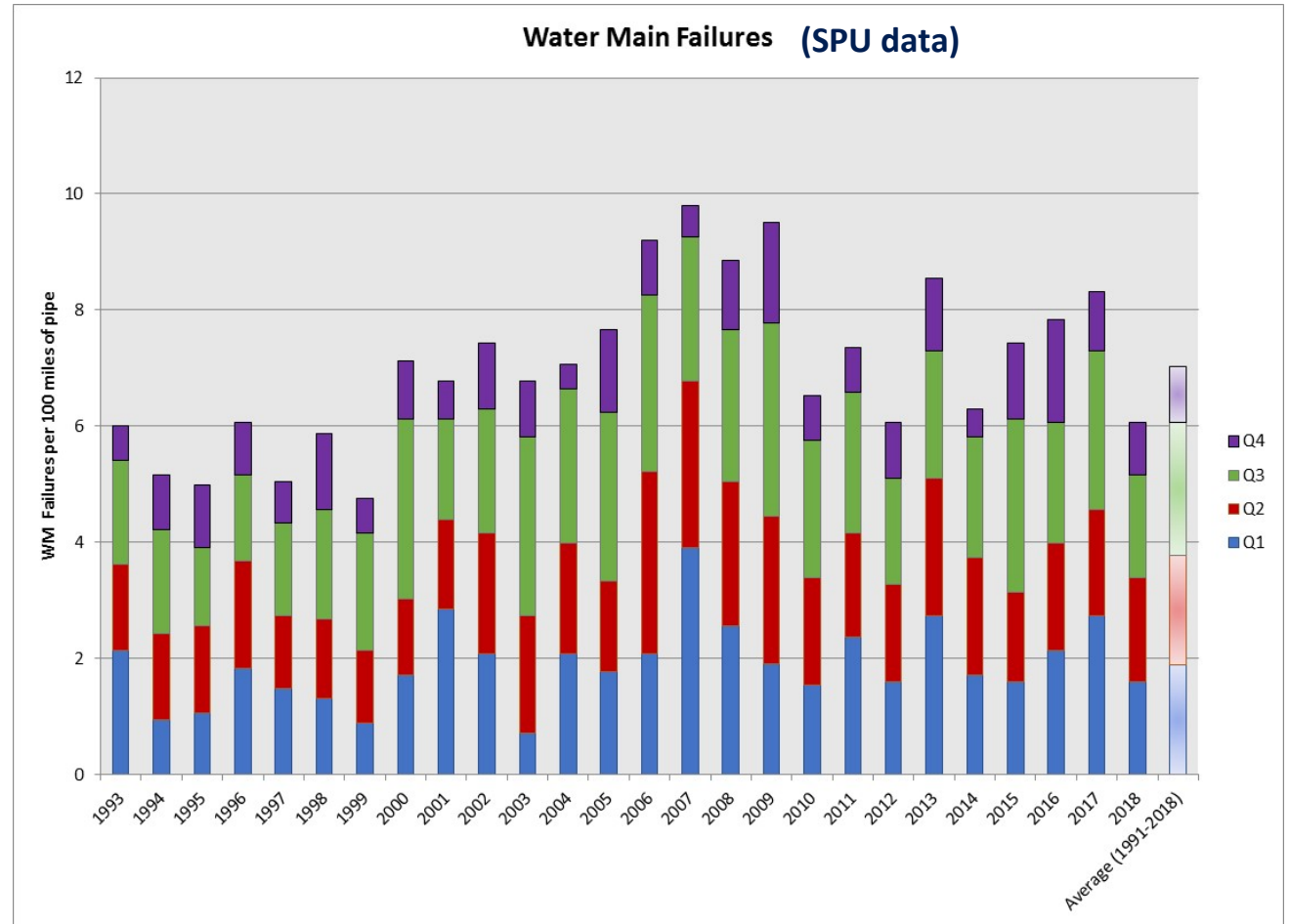
Distributed Assets - Watermains

Figure 1. Distribution Main Inventory (by installation decade)



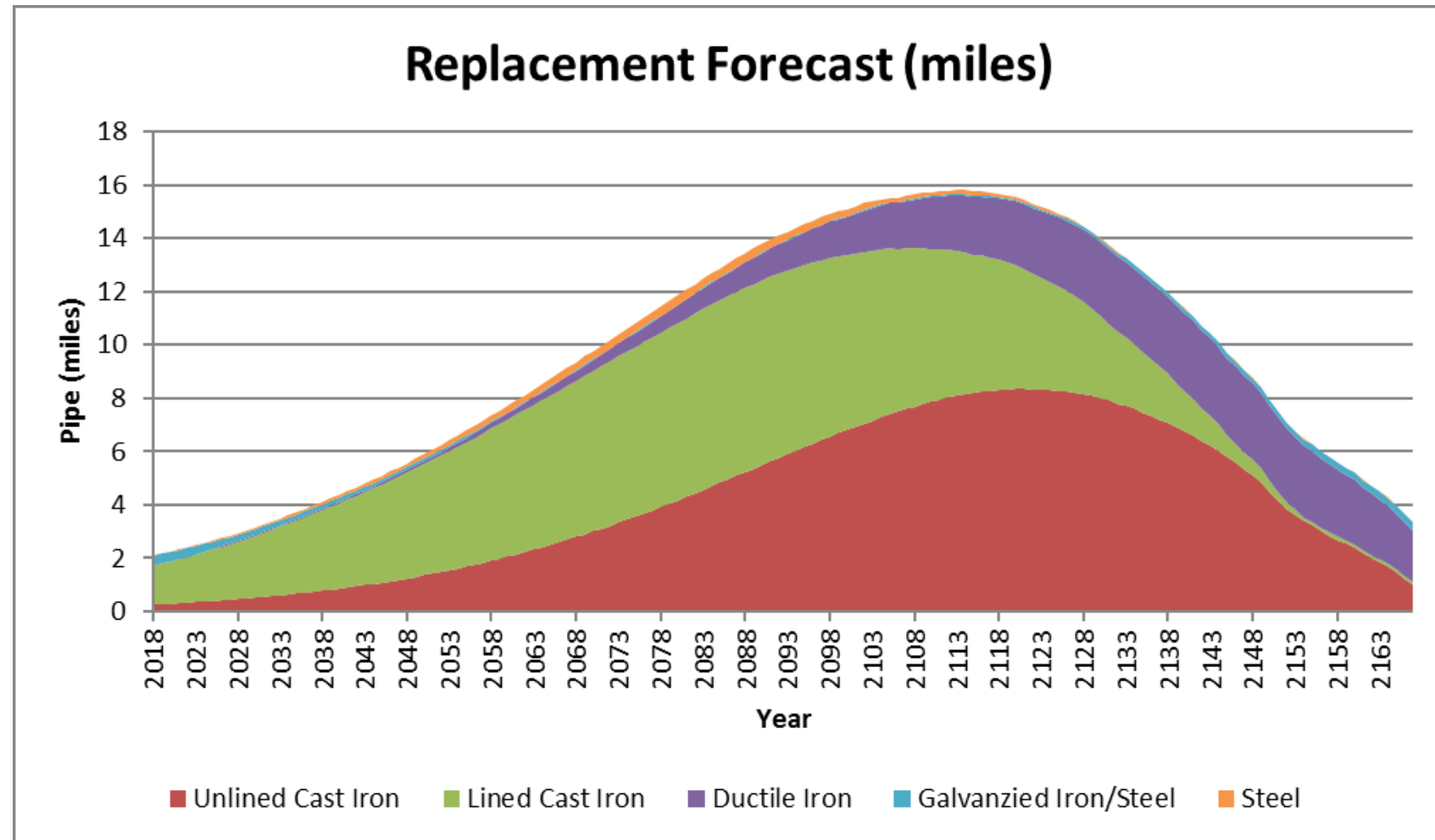
Data-Driven Decision Making

- Benchmarking data shows other utilities around 15-20 failures/100 miles



Replacement & Renewal Strategy - Long Term

- Adjust long-term plan based on data
- Test technologies such as pipe lining instead of "dig and replace"



Recent Years - Successes

Item	2107 SBP Discussion	Status
Watermain replacement	Ramp up replacement program based on data	<ul style="list-style-type: none"> • ~1 mile/yr of proactive work, ramping up over the future • ~1.5 mile/yr of transportation-driven watermain
Seismic	Complete seismic study, update CIP projections	<ul style="list-style-type: none"> • Completed seismic study (update of 1990's study), updated CIP projections • Watermain replacement with ~1 mile of seismic-resistant pipe • Seismic upgrades for buried reservoirs
Facilities	Continue to analyze need for building upgrades	<ul style="list-style-type: none"> • Replaced administrative building at Cedar Falls, analyzing several other buildings now
Resiliency		<ul style="list-style-type: none"> • Replacement floating pump plant for Cedar Reservoir (drought management)



Opportunities

Item	2107 SBP Discussion	Status
Watermain replacement	Ramp up replacement program based on data	<ul style="list-style-type: none">• High unit cost
Watermain replacement	Keep up with Move Seattle projects, especially opportunity work	<ul style="list-style-type: none">• Coordinated with SDOT on all Move Seattle projects• Several large Move Seattle projects have been deferred
Valve and hydrant maintenance	Catch up with backlog of deferred maintenance	<ul style="list-style-type: none">• Recruiting challenges



What's in the Future?

- Continued focus on
 - Asset management
 - Watermain replacement and data driven planning
 - Seismic study recommendations
 - Facilities analysis
 - Deferred maintenance
- Resiliency
 - Climate change
 - Third round of water supply studies completed
 - Looking at wildfire risk in the watersheds
 - Action plans being developed in the face of an uncertain future



Questions?

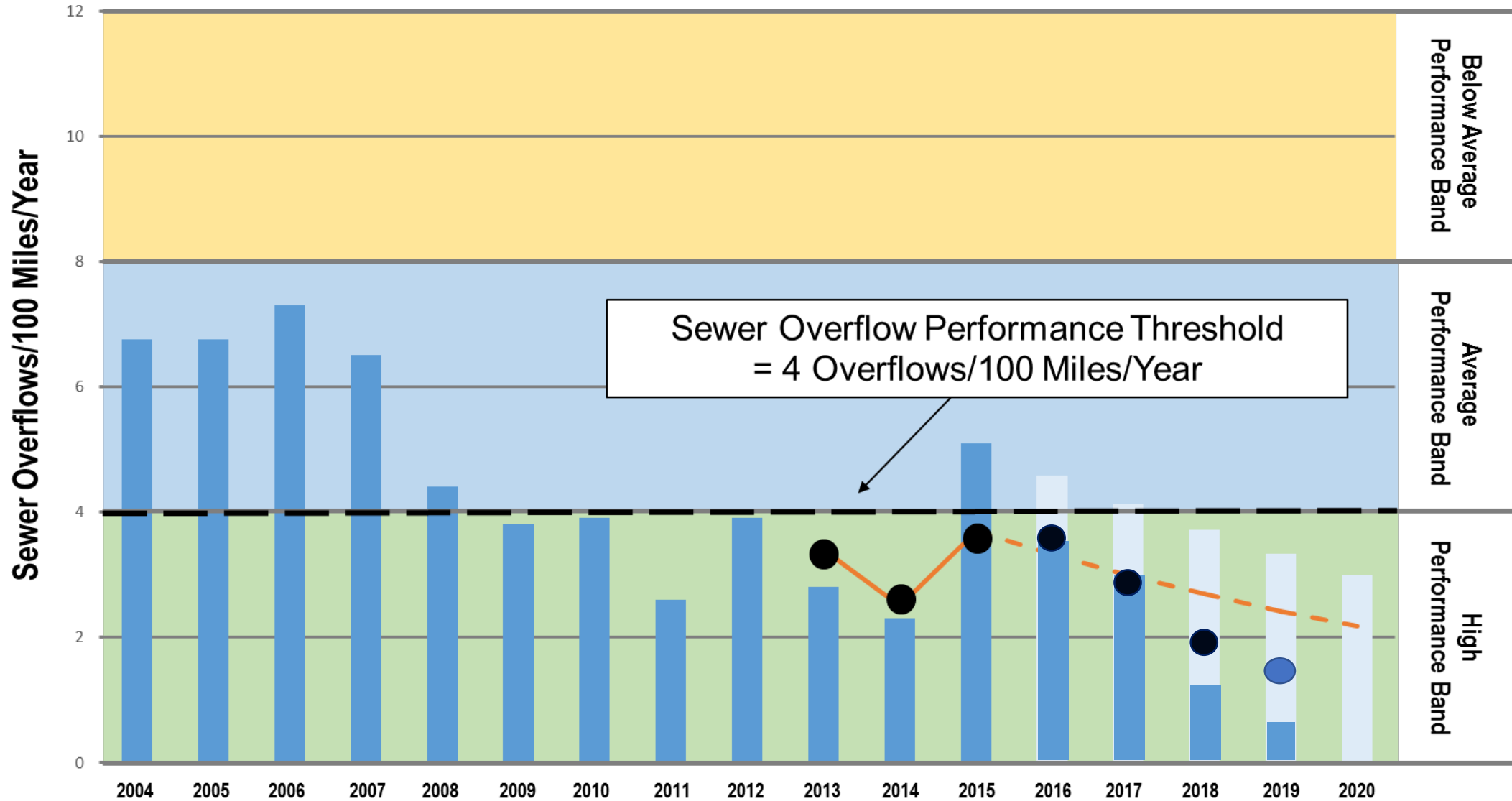


Drainage & Wastewater Assets













Asset management plans exist or will be developed for **bold assets**

Progress: Sewer Overflow Reduction



Drainage & Wastewater Assets (1)

Asset Group	Asset Class	Condition	Certainty	Asset Management Plan Status
Wastewater	Wastewater pipe			Updated 2015
	Shoreline sewer pipe			Starting 2020
	Pump stations and force mains			Updated 2016
	CSO facilities			Updated 2018
	CSO outfalls			Assessment 2019, AMP 2020

Drainage & Wastewater Assets (2)

Asset Group	Asset Class	Condition	Certainty	Asset Management Plan Status
Drainage	Catch basins	Good	Good	Updated 2017
	Major Surface Water Facilities	Fair	Good	Completed 2018, O&M needed to restore condition
	Ditches and culverts	Fair	Poor	Completed 2018, limited condition information for culverts
	GSI, bioretention	Good	Good	Completed 2018
	Stormwater storage	Good	Fair	Completed 2019, difficult to inspect, finishing assessments
	Drainage pipe	Good	Fair	Completed 2019, limited condition information
	Water quality structures	Good	Good	Completed 2019

Drainage & Wastewater Assets (3)

Asset Group	Asset Class	Condition	Certainty	Asset Management Plan Status
Urban Ecosystems	Creek culverts			Completed 2019, upcoming assessment and R&R plan
	Creeks, floodplains and wetlands			Underway
	Landscapes			Underway
Facilities	Workforce Facilities			
	Grit facilities			Completed 2019
	Decant facilities			Starting 2020

Drainage & Wastewater Assets (1)

Asset Group	Asset Class	Condition	Certainty	Asset Management Plan Status
Wastewater	Wastewater pipe			Updated 2015
	Action Plan			Starting 2020
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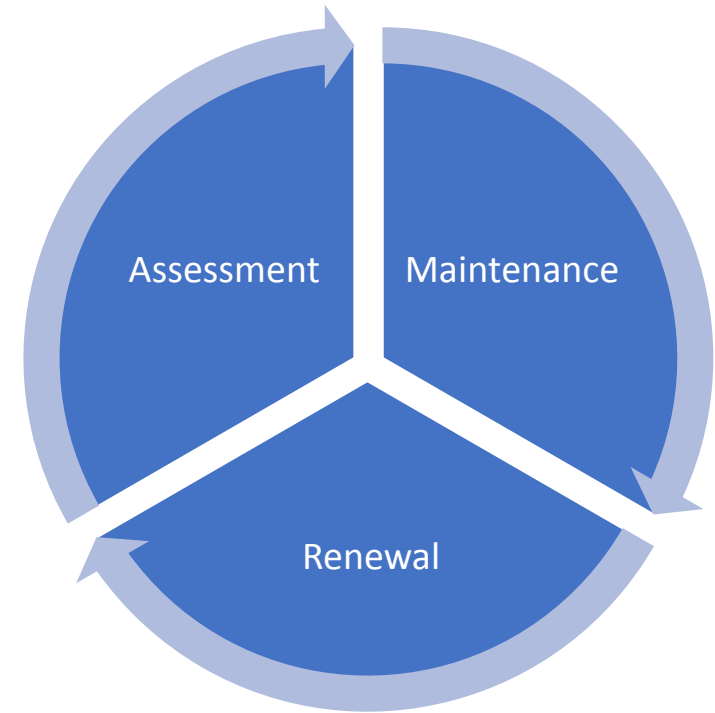


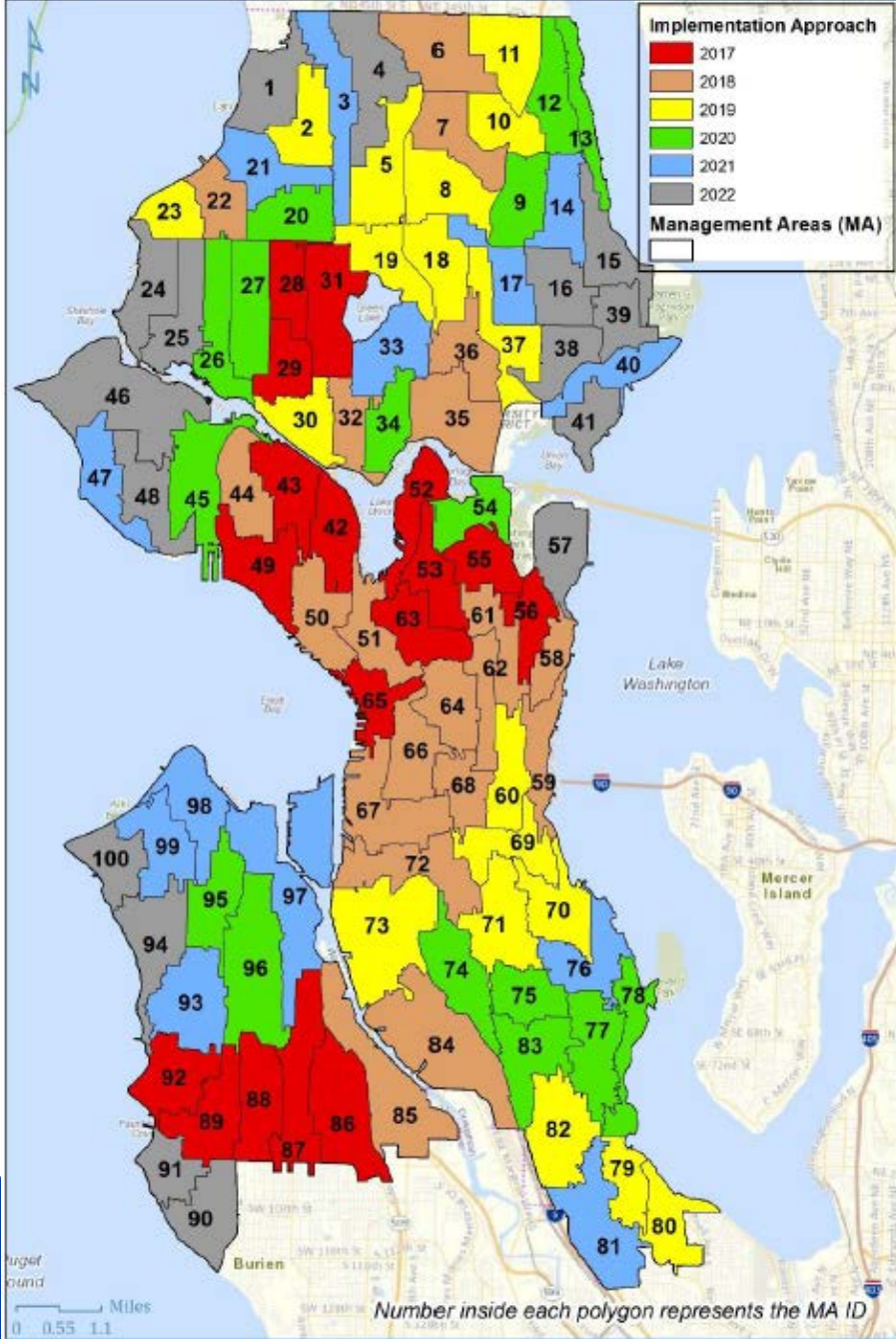
Asset Management Implementation

Wastewater Pipes

Revised asset management strategies and practices

- **Condition Assessment Strategy**
- **Maintenance Strategy**
- **Renewal Strategy**





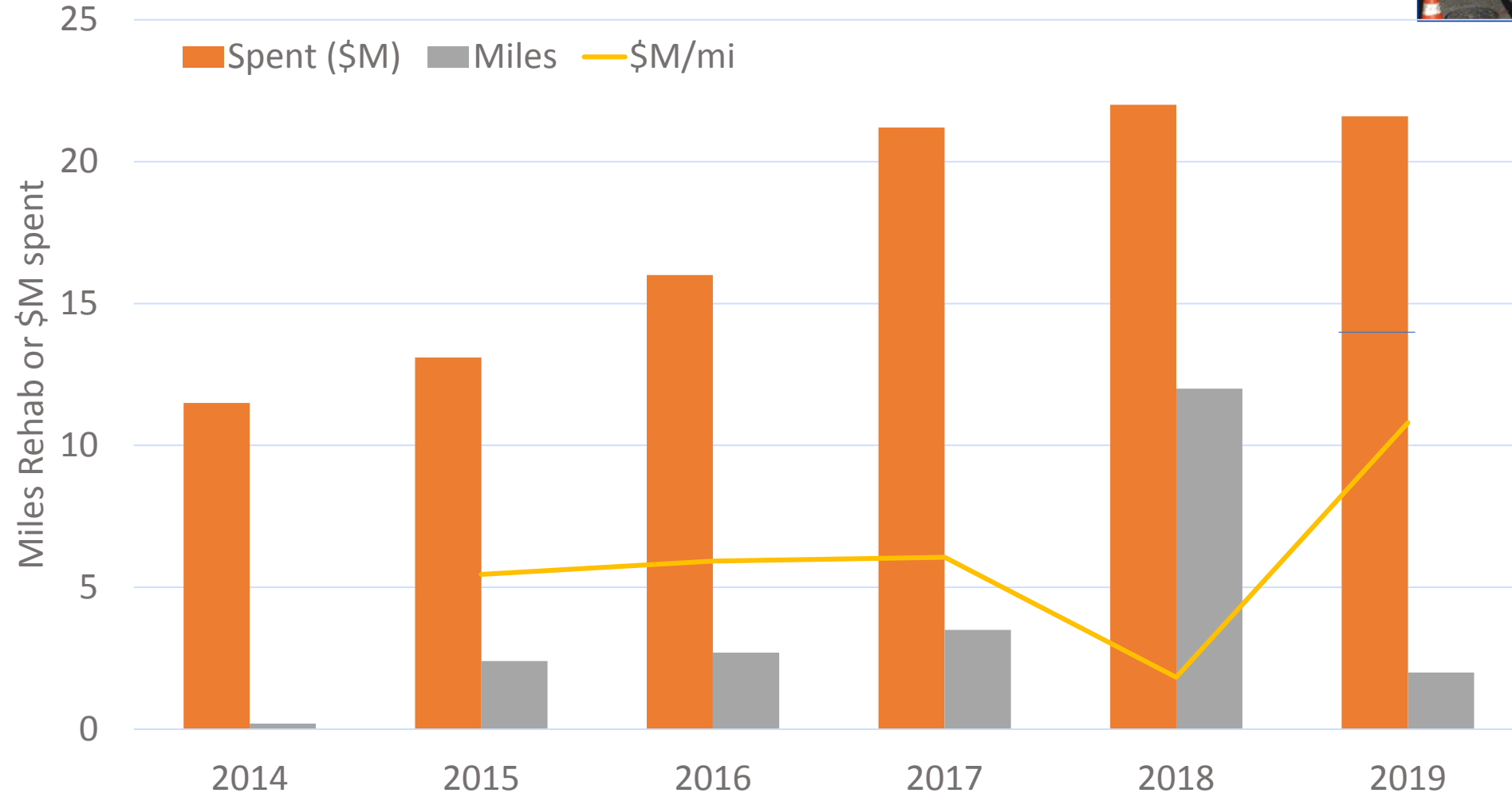
- Developed system and risk-based approach
- Group work geographically and based on system needs
- Maximize crew working time and minimize community disruption
- Prioritized inspections based on structural risk, % inspected, and equity
- Goal: Inspect and clean entire wastewater system by 2023; 10-year cycle thereafter

Note: Red and brown sewer-sheds are complete

Progress: Increased pipe rehabilitation



Rehabilitation Miles and Spending



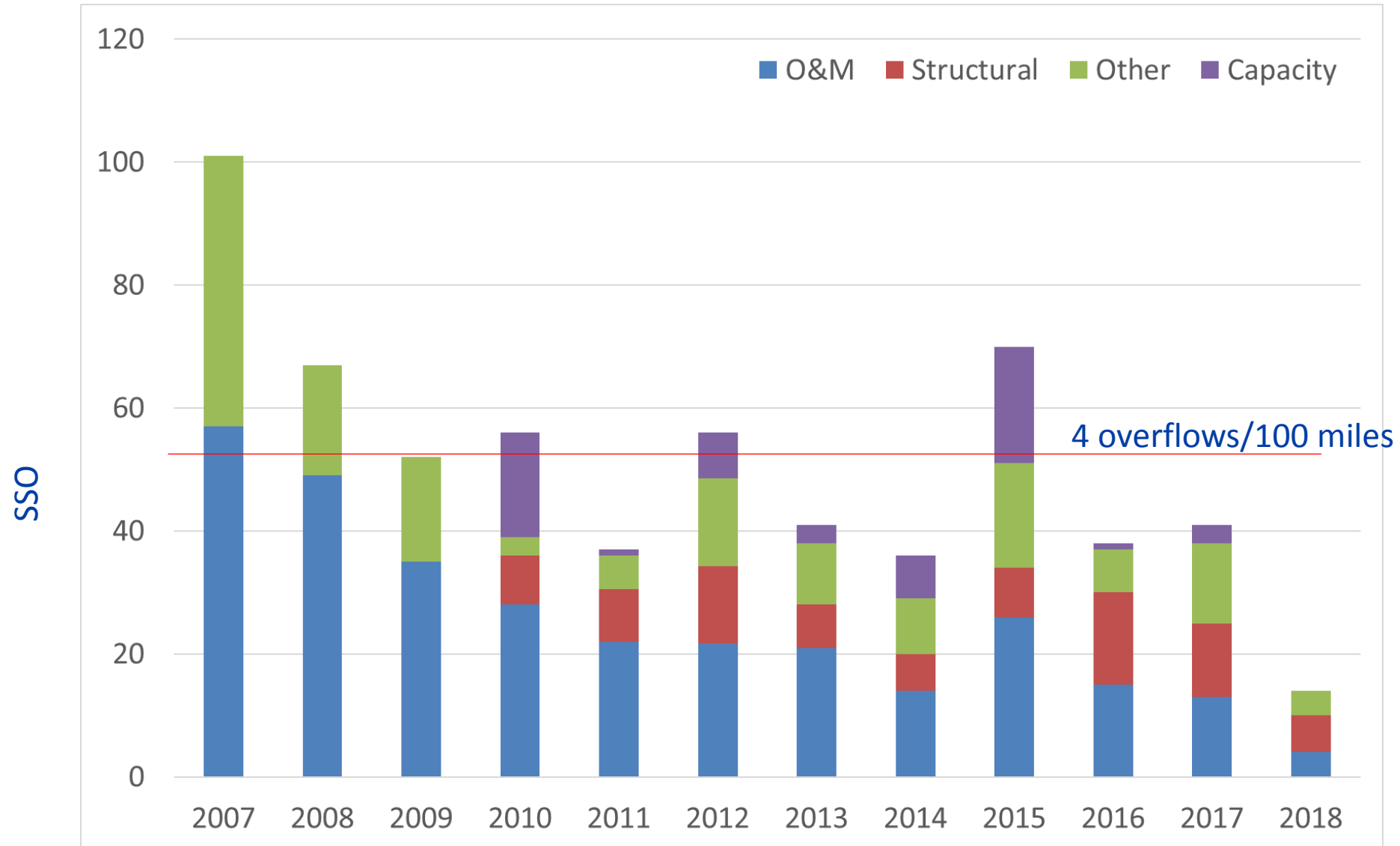
Action Plan

Lining Crew Status

- Lining crew positions hired, assisting with CCTV and Cleaning in interim
- Cross-training with Portland and Tacoma
- Developed Standard Operating Procedures
- Acquired and currently onboarding CCTV and Lining trailer
- Next obtain certification and training from supplier
- Scheduled to start pipe installation Q1 2020



Progress: Fewer maintenance-related overflows



Drainage & Wastewater Assets (1)

Asset Group	Asset Class	Condition	Certainty	Asset Management Plan Status
Wastewater	Wastewater pipe	Yellow	Green	Updated 2015
	Shoreline sewer pipe	Yellow	Red	Starting 2020
	Pump stations and force mains	Yellow	Green	Updated 2016
	CSO facilities	Green	Green	Updated 2018
	CSO outfalls	Green	Yellow	Assessment 2019, AMP 2020

Action Plan

- CSO outfalls - 18 assessments complete this year. Additional cleaning and R&R planning moving forward.

AMP Implementation

1

- Condition Assessment

2

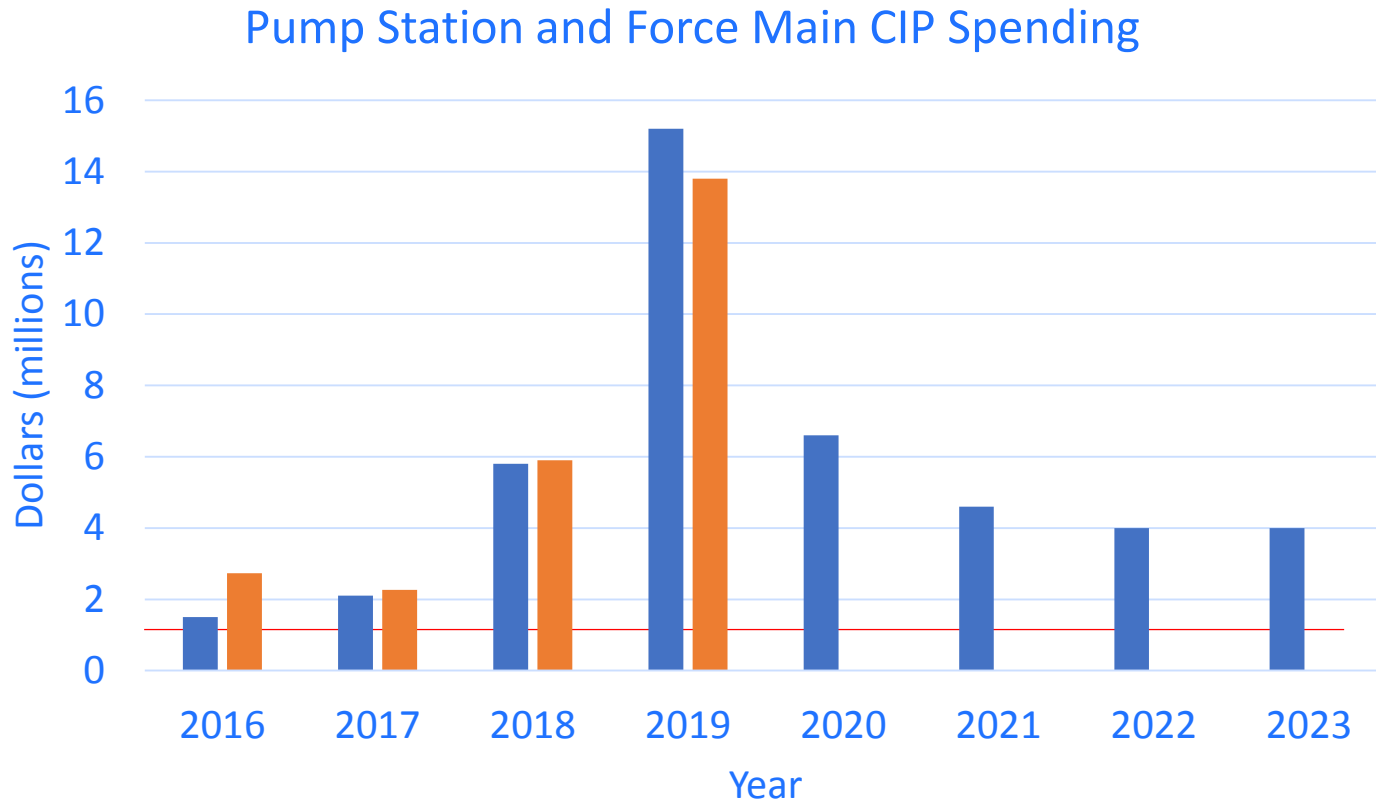
- Evaluate Risk

3

- Prioritize & Execute



AMP Implementation



Exceeding SBP Goals

- Ventilation Project
- Electrical upgrades
- Force Main 43, 9, 70, 30, 76
- PS 2, 17, 56, 72, 73, 118
- Design starting for 4 additional locations

AMP Implementation

Before



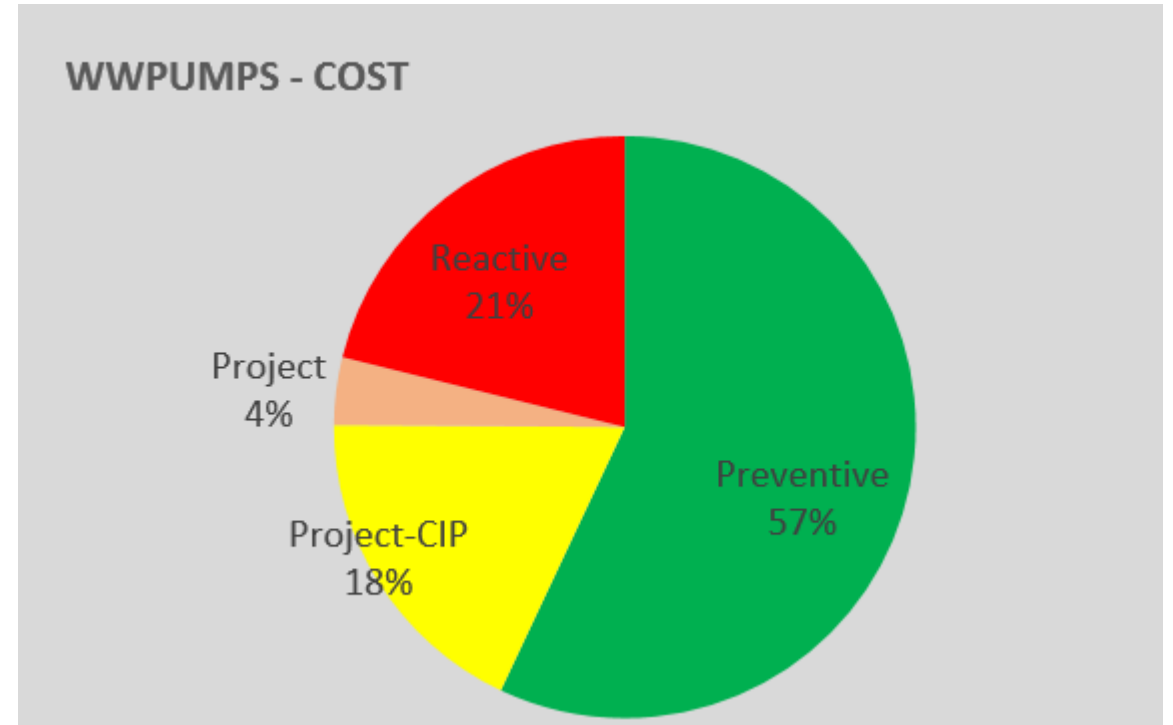
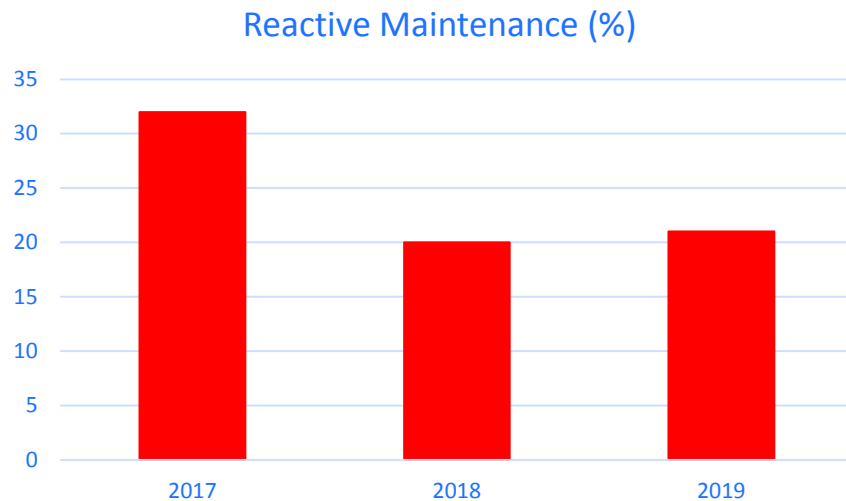
After



WWPS081 pump replacement

AMP Implementation Outcomes

- Reduce reactive maintenance costs over time



Drainage & Wastewater Assets (3)

Asset Group	Asset Class	Condition	Certainty	Asset Management Plan Status
Urban Ecosystems	Creek culverts	Yellow	Red	Completed 2019, upcoming assessment and R&R plan
	Creeks, floodplains and wetlands	Yellow	Yellow	Underway
	Landscapes	Yellow	Yellow	Underway
Facilities	Workforce Facilities	Red	Green	
	Grit facilities	Red	Green	Completed 2019
	Decant facilities	Red	Yellow	Starting 2020



Facilities Upgrades - Haller Lake

- New locker rooms
- New bathrooms
- Improved staging area
- Laundry facilities



Facilities Upgrades – South Operations Center

- 6-acre industrial facility
- Improves south end crew efficiency and effectiveness
- Project underway to determine facility upgrades
- Potential grit and decant facility location



Recent Years - Successes

- We have met our commitments in the action plan areas
 - Wastewater pipe
 - Wastewater pump stations and force mains
 - Facilities
- We have completed Asset Management Plans for most major asset classes.

Opportunities

- South Operations Center Evaluation
- Haller Lake Facilities Master Plan starting

Return to discuss focus areas

- Drainage Assets
- Utility Asset Management Assessment

Questions?

