

Asset Renewal Forecast Update

Presentation to Environmental Services Commission

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Utilities

January 4, 2024



Information

No action is required by the Commission at this time. Staff will provide an update on the Asset Renewal Forecast.

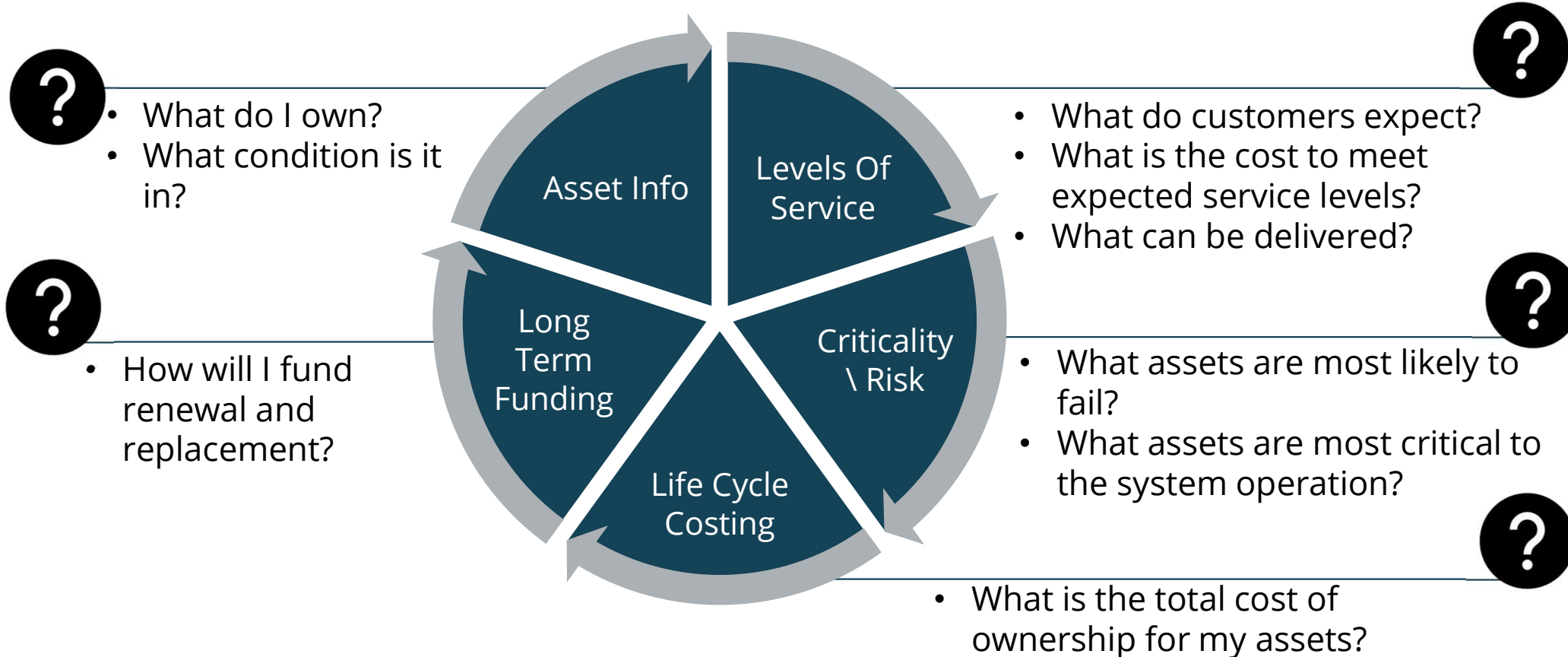


Agenda

1. Recap of Bellevue Utilities Asset Management Program
2. Asset Renewal Forecast Update
3. Rate Implications of Updated Forecast
4. Next Steps



5 Core Components of Asset Management



Asset Management Principles



Lifecycle Approach

Optimizing the useful life of assets



Risk

Balance performance, costs, and risk



Stewardship

Environmental and financial stability



Data and Information

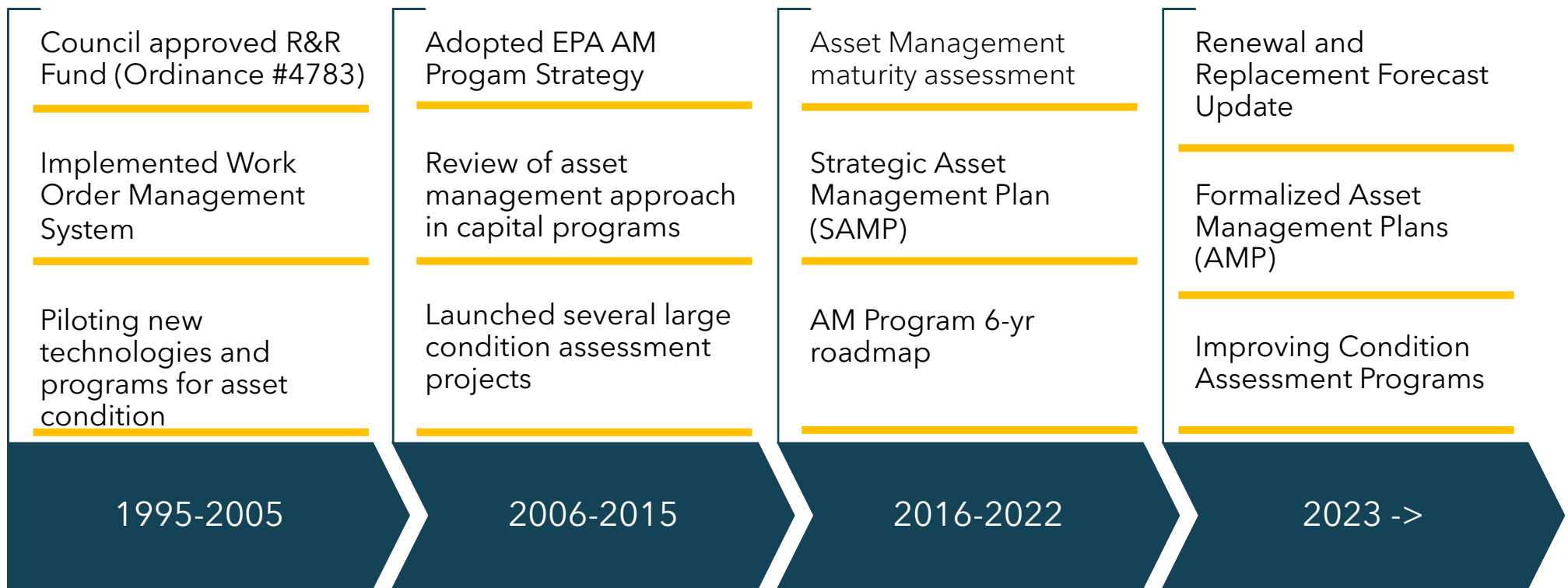
Evidence-based decision making



Continuous Improvement

Line of sight to organizational priorities

Utilities Asset Management (AM) Journey



Asset Renewal Forecast

An update to the 75-year forecast for renewal and replacement of our system



January 4, 2024

Key Asset Renewal Findings

- Water – maintain the existing water main replacement strategy
- Sewer – refine the renewal strategy for sewer mains by planning for both replacement and repair actions to extend service life
- Storm – enhance the renewal plan by increasing condition assessment activities for storm assets
- Vertical Assets – modify our approach to renewal, increase minor rehab actions
- All – increase planned investment based on updated asset-class-specific replacement costs



Project Components

Asset Inventory

- Plan for Assets Individually
- Define Lifecycle and Renewal Options

Needs and Prioritization

- Age/Condition
- Environment
- Level of Service Impacts
- Environmental Risks

Financial Forecast

- System Needs
- Rate Impacts
- Capital Delivery
- Maintenance and Ops



Analysis by Utility



Process for Analysis

Condition / Risk

How do we understand condition?

What are the failure impacts?

What are the available data sources?

Performance / Health

How is the system performing?

What is the outlook of continued performance?

What are evaluated deterioration rates?

Investment / Delivery

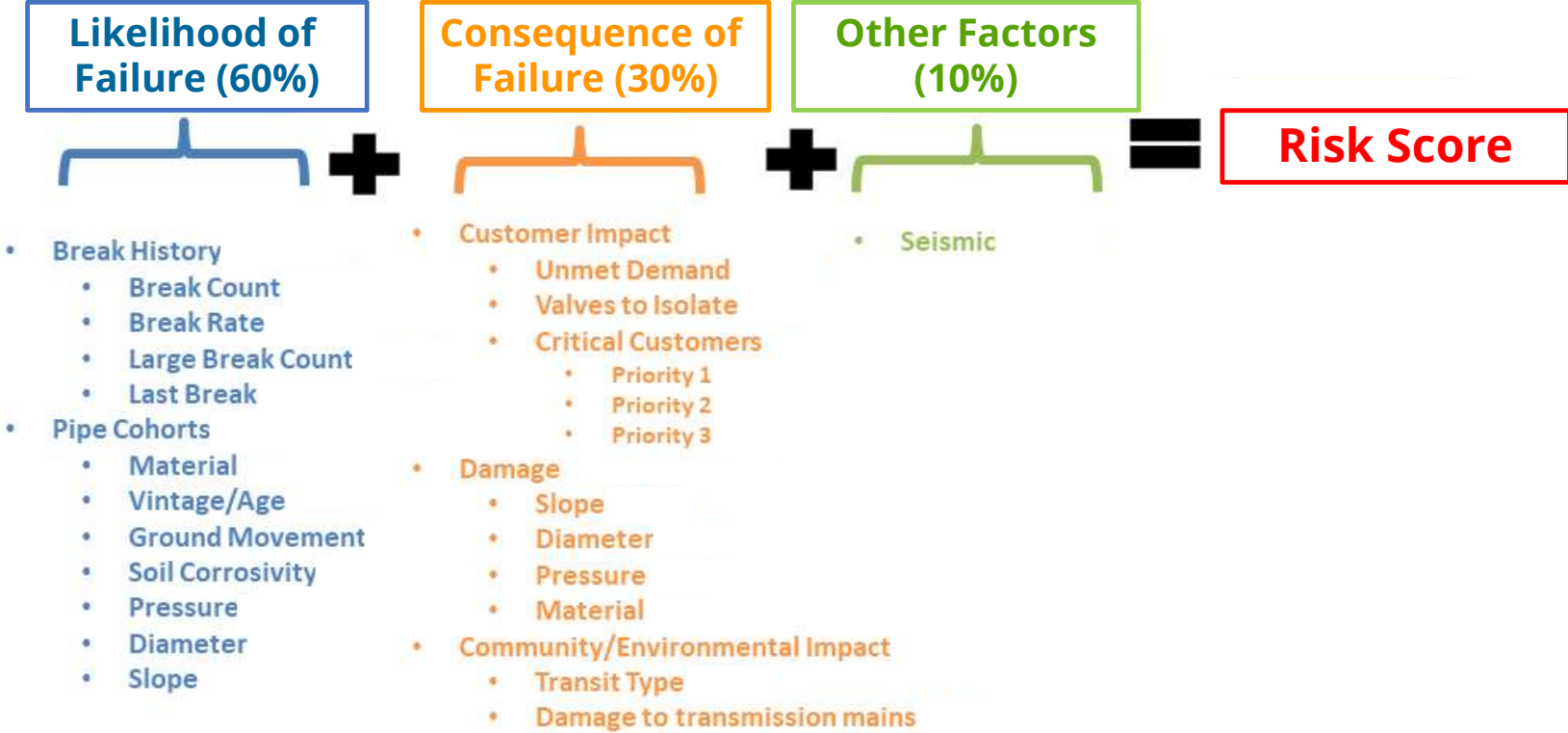
What is the current renewal rate?

What is the current construction cost for renewal?

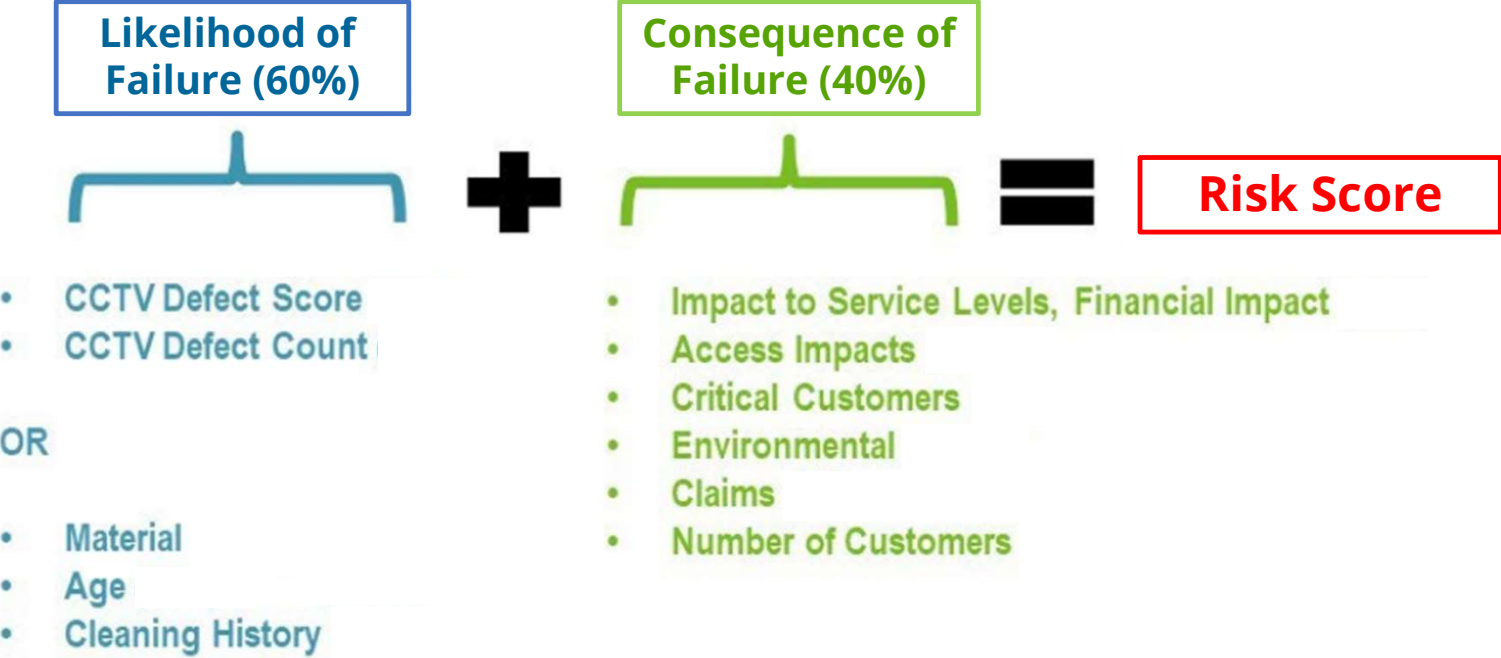
What are the rate and delivery impacts and constraints?



Evaluating Risk – Water Mains



Evaluating Risk – Sewer Gravity Mains



Evaluating Risk – Storm Gravity Mains

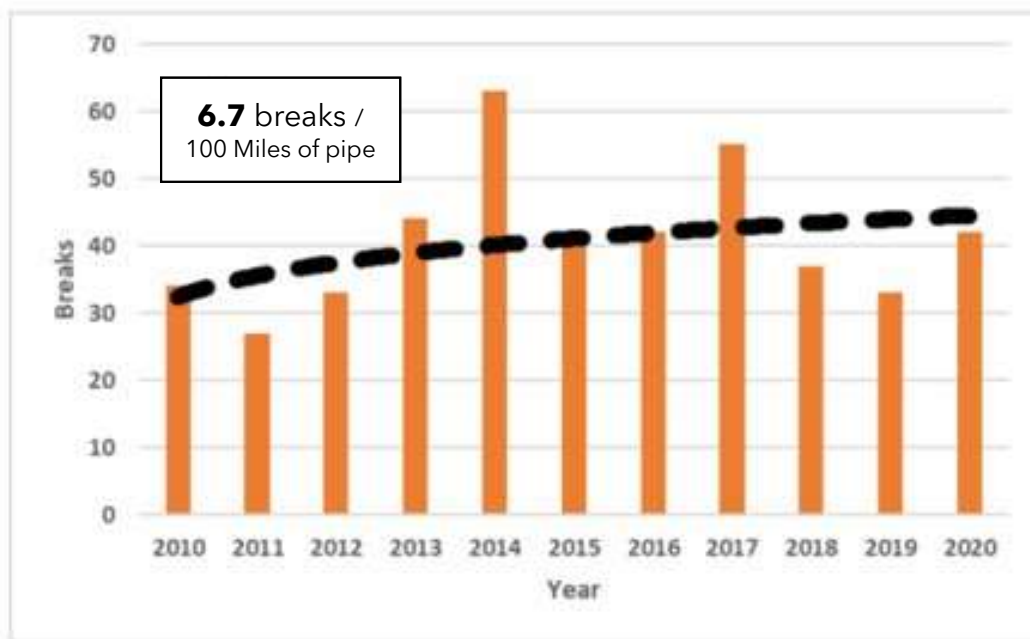


- PACP Quick Rating
OR
- Material
- Age
- Corrosive Soils

- Proximity to Water Bodies
- Pipe Diameter
- Fish Passage
- Proximity to Transportation
- Slope or Liquefaction Area
- Critical Facilities and Land Use



Water Main Analysis



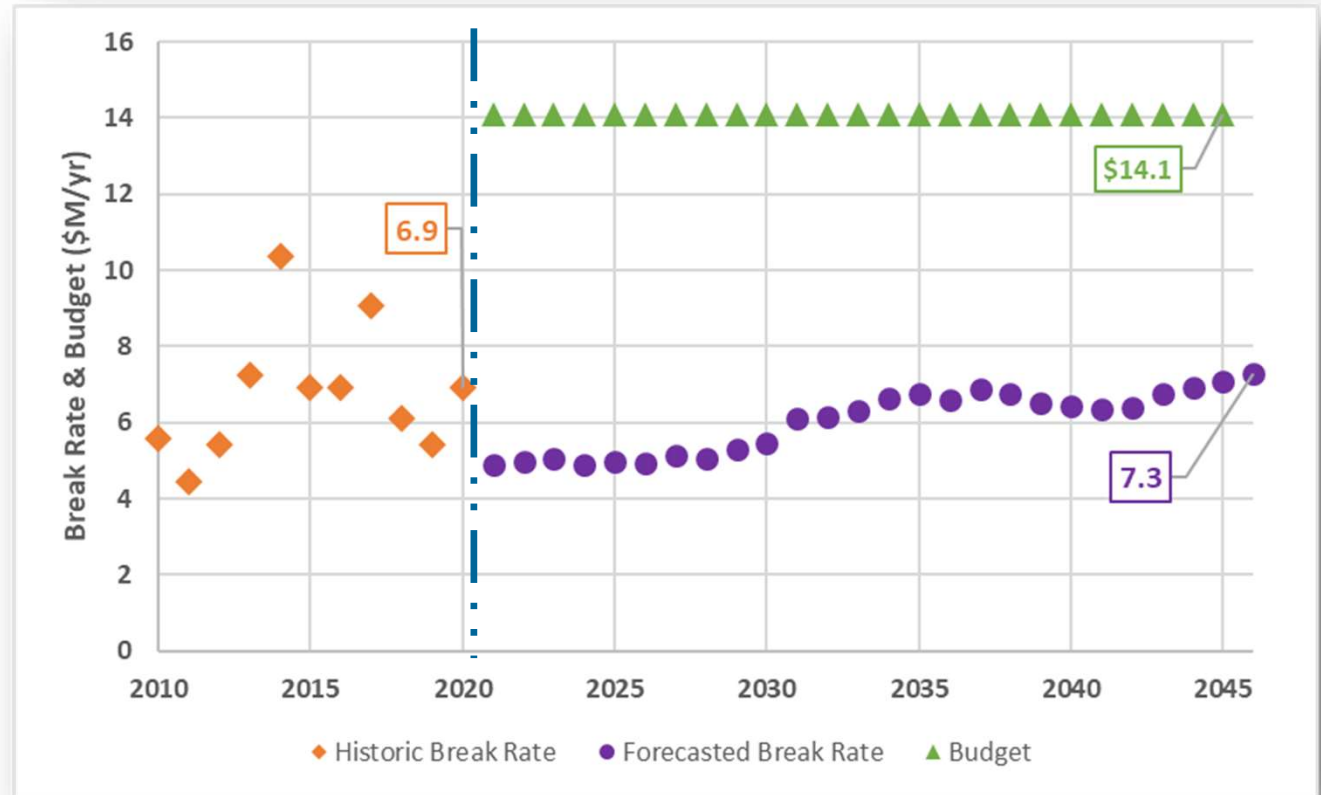
Key Points

- Bellevue's Water System is performing ~50% better than regional averages.
- Performance is attributed to strong existing renewal program

Water Main Replacement Modeling

Analysis in 2021 static dollars

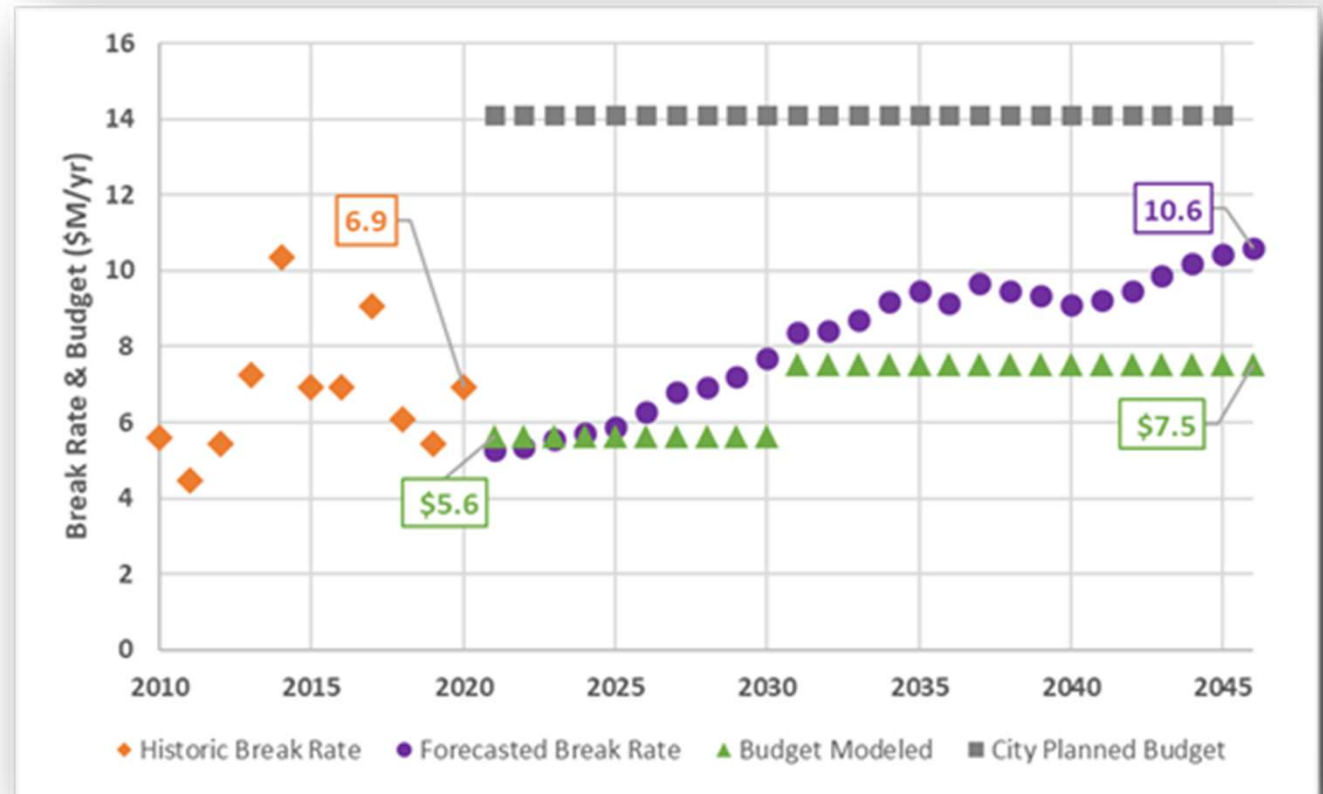
- Updated construction cost estimates.
- Maintain current replacement rate of 5mi/year.
- Slight reduction in service level performance / increase in breaks over 25 yr planning period.



Water Main Replacement Modeling

Analysis in 2021 static dollars

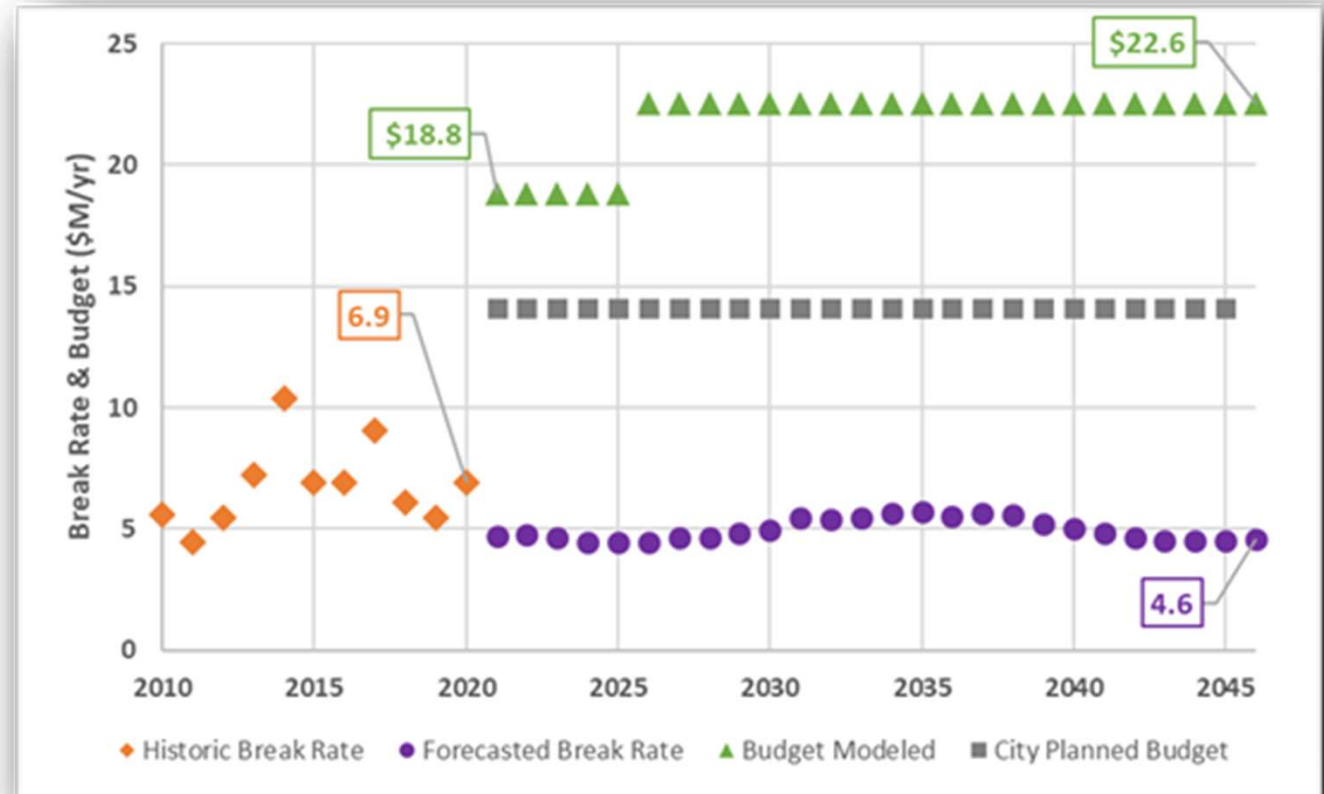
- Reduce investment, replacing 2 – 2.75 miles per year
- Reduction in service level performance / increase in breaks (60%)



Water Main Replacement Modeling

Analysis in 2021 static dollars

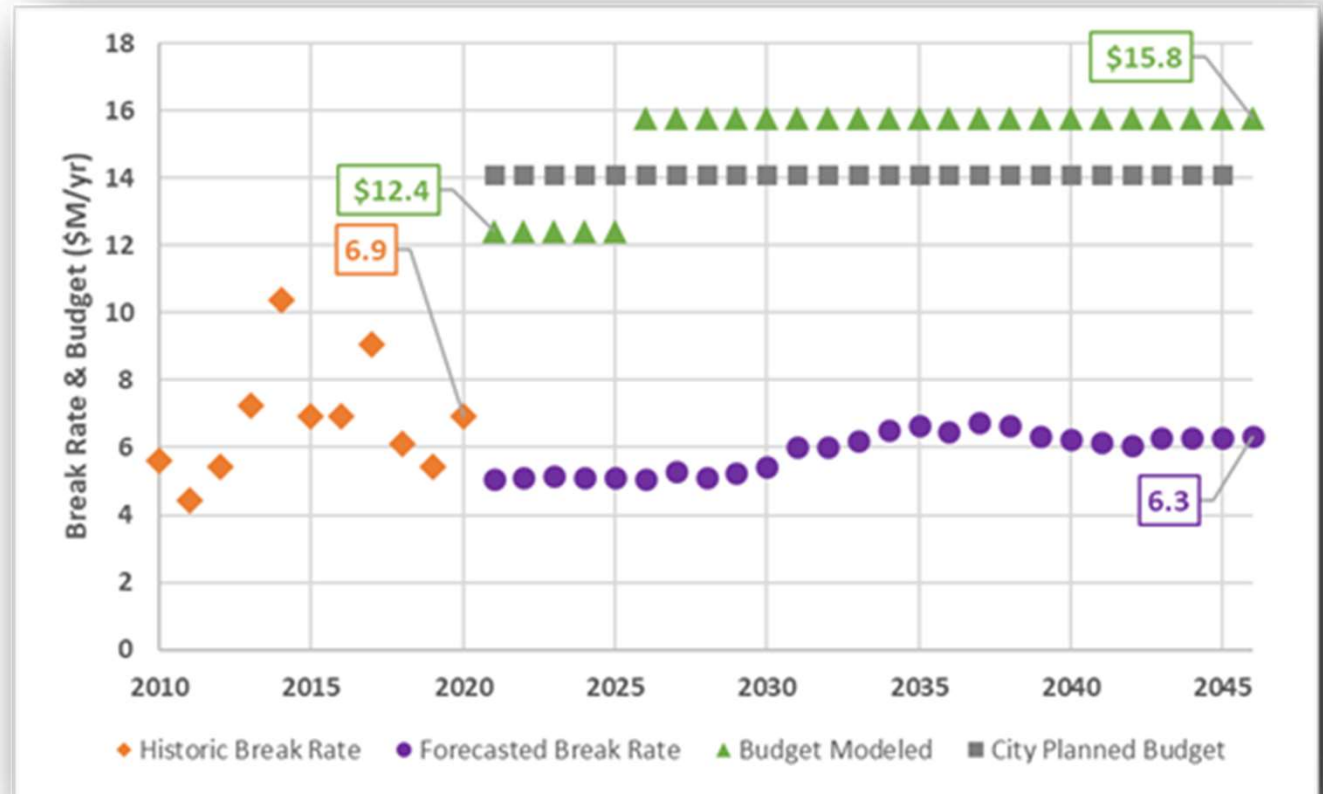
- Significantly increase investment between 6 – 8 miles per year.
- Improve service level performance / decrease in breaks (30%)



Water Main Replacement Modeling

Analysis in 2021 static dollars

- Short term build up in investment to static 5.6 miles per year.
- Slight increase service level performance / decrease in breaks



Sewer and Storm Gravity Mains

Collapse Pipe (XP)



Deformed Rigid



Broken Void Visible (BVV)



Infiltration Gusher

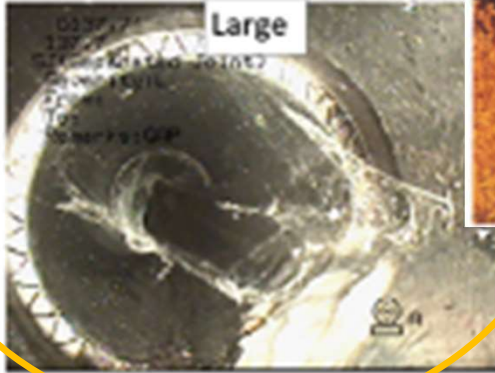


Crack - Circumferential (CC)

Large

Joint Separated (JS)

Large



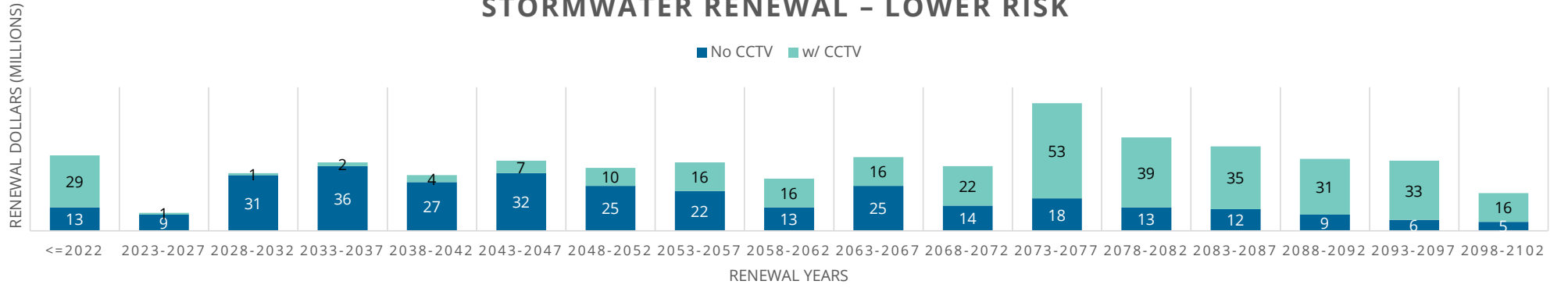
Fracture - Multiple (FM)

Large

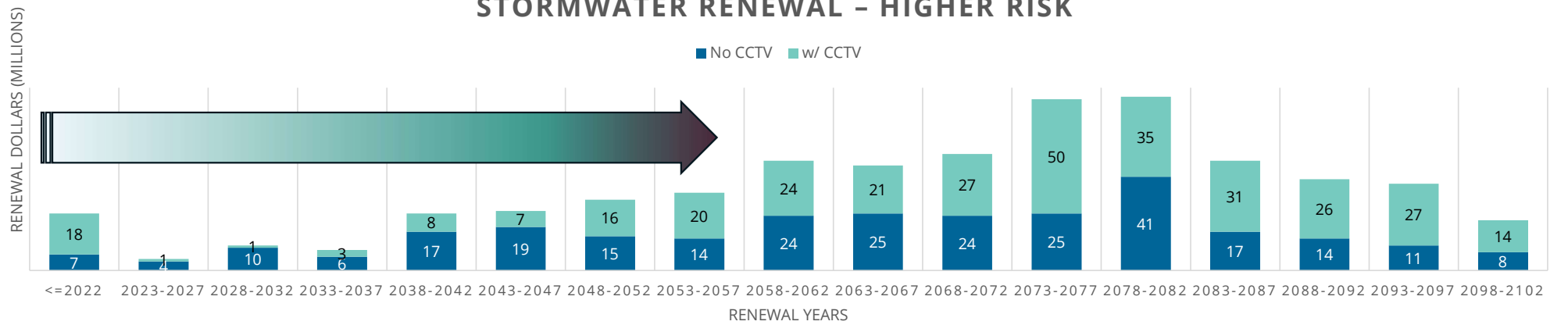


Risk as a Financial Lever

STORMWATER RENEWAL - LOWER RISK



STORMWATER RENEWAL - HIGHER RISK



Asset Categories

Water Linear

Water Mains

Valves

Hydrants

Sewer Linear

Gravity Mains

Laterals

Force Mains

Lake Lines

Manholes

Stormwater Linear

Gravity Mains

Inlets

Network
Structures

Catch Basins

Culverts

Vertical Assets

Reservoirs

PRVs

Pump/Lift/Flush Stations

- Pumps
- Structure / Vault
- SCADA / Elec / HVAC



Asset Renewal Financial Forecast

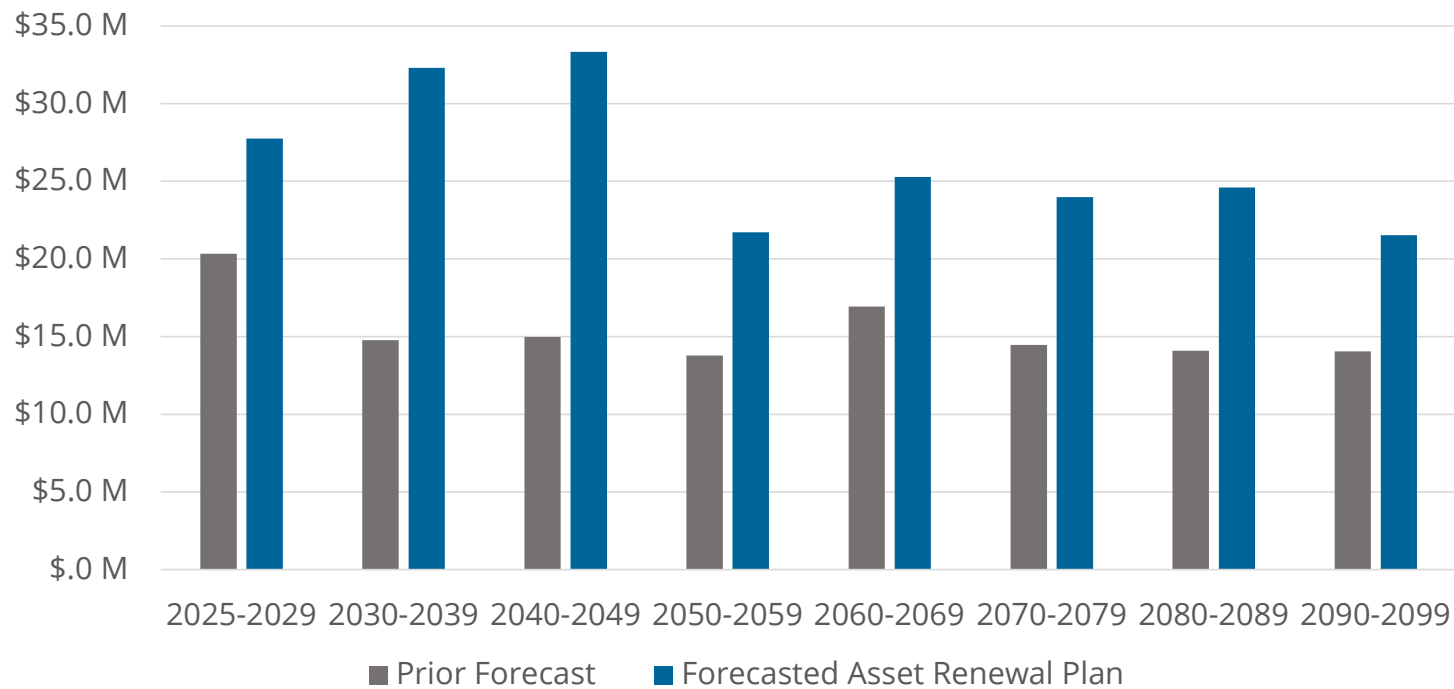
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Water – Proposed Asset Renewal Forecast

Annualized Capital Spending by Decade, 2021\$



Shown in 2021\$

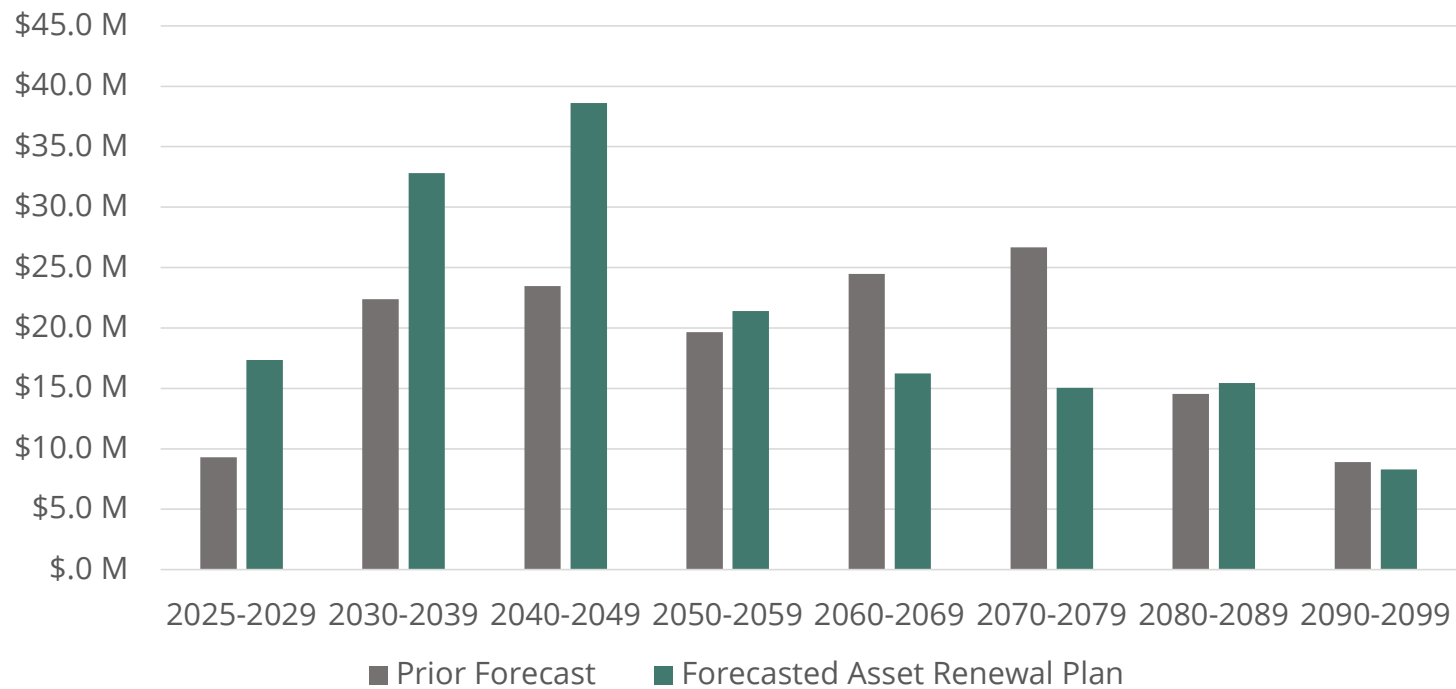
What's Changed?

- Miles per year remains similar: approximately 5 mi / year
Updated costs: from \$430 per LF to \$534.
- Increased replacement cost and schedule for Pressure Relief Valves (PRVs).
- Facility-specific renewal and better lifecycle tracking, better cost analysis



Sewer – Proposed Asset Renewal Forecast

Annualized Capital Spending by Decade, 2021\$



Shown in 2021\$

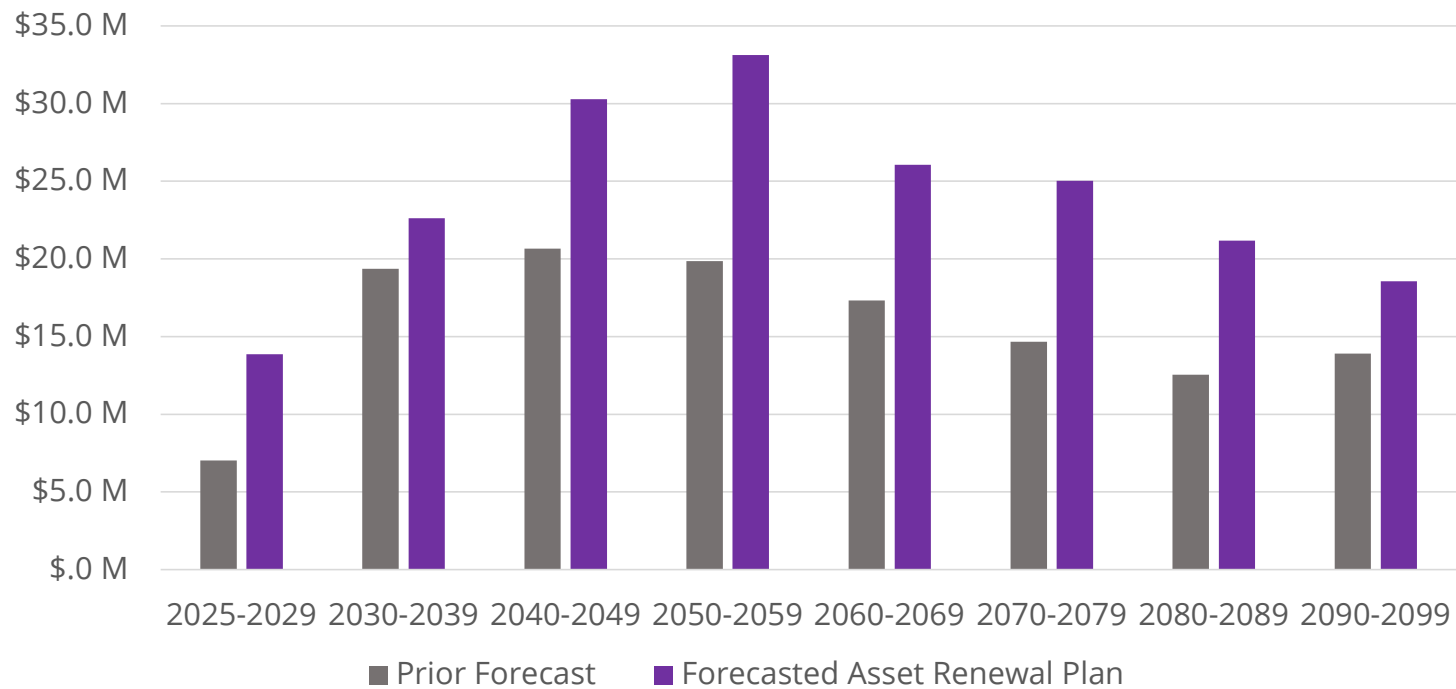
What's Changed?

- Increased need in Gravity main investment
- Lake Lines are the major driver for the increase
- We originally planned Lake Line investment in the 2030's and 2070's



Storm – Proposed Asset Renewal Forecast

Annualized Capital Spending by Decade, 2021\$



Shown in 2021\$

What's Changed?

- Better condition information gives better certainty
- Our stormwater gravity system needs increased investment level and consistency
- Culverts costs are significantly different in the future with new regulatory requirements.



Culvert Costs – Regional Challenge

WSDOT Culvert Costs per Seattle Times

Ballooning costs of state’s fish passage program

Washington’s Department of Transportation says it needs \$3.5 billion to \$4 billion more than expected to meet a court-imposed 2030 deadline to replace hundreds of state-owned culverts that impede salmon migration.

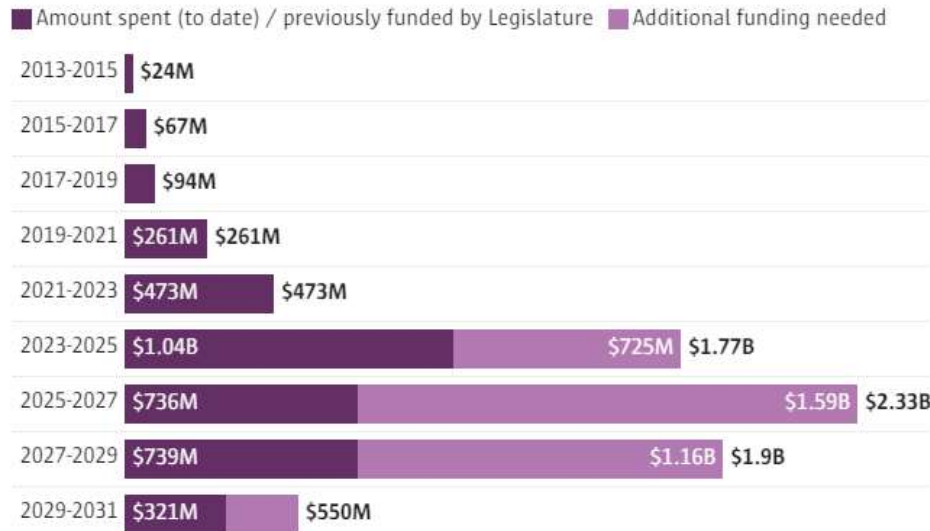


Chart: MARK NOWLIN / THE SEATTLE TIMES • Source: Washington State Department of Transportation



What it means for rates



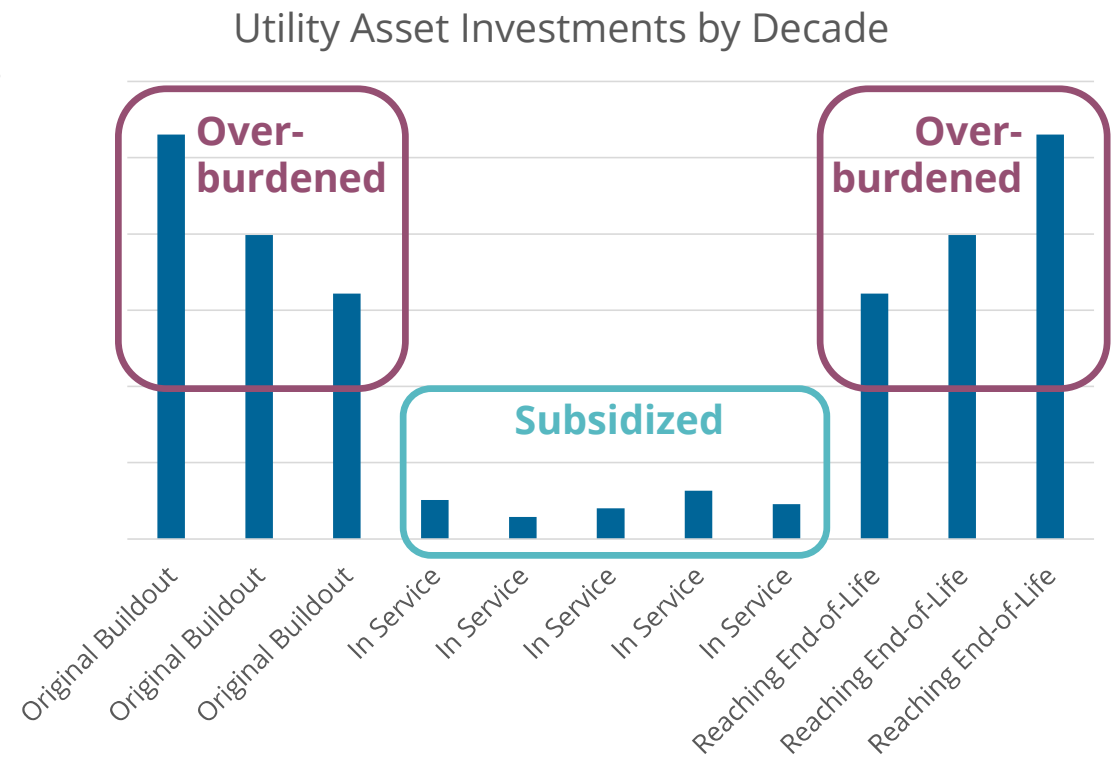
Rate Forecasting Approach

- Rate scenarios shall:
 - Meet all minimum fund balance requirements
 - Smooth rate increases over a 20 year or longer period
- 1. Evaluate R&R fund balance over 75 year period. Confirm minimum balances are met.
- 2. Avoid over-collecting – should not considerably exceed minimum balance at end of 75-year horizon
- 3. Consider intergenerational equity – rate capacity should be as close to level in current \$ as possible



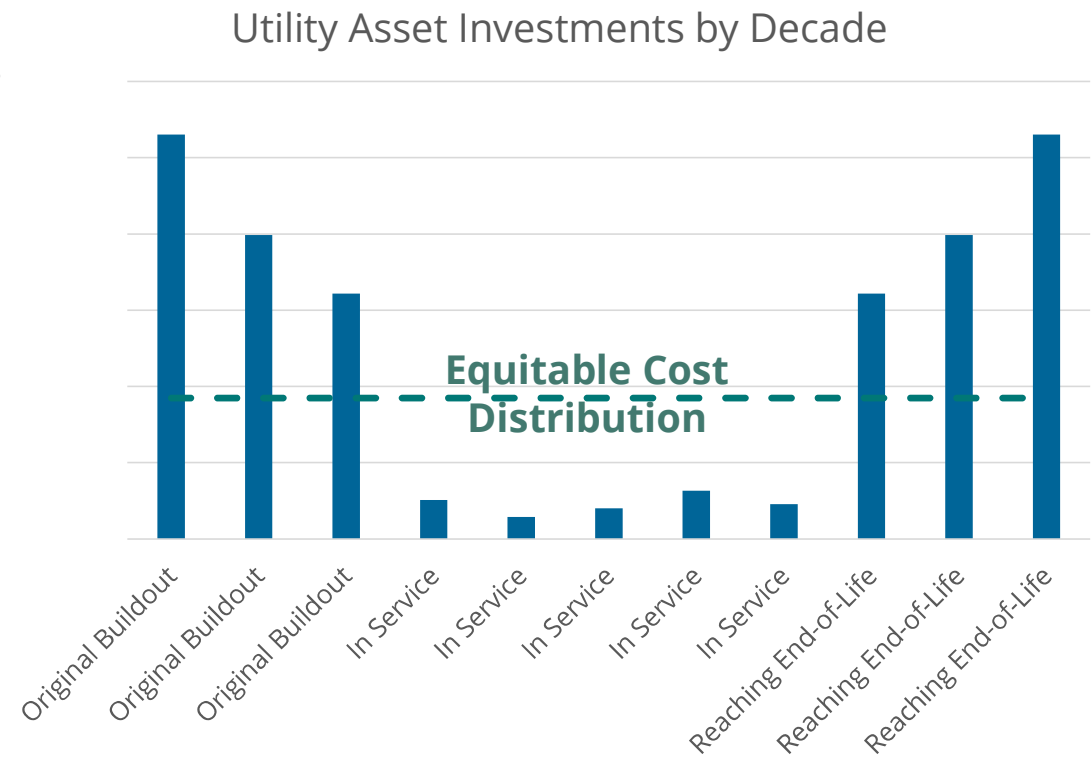
Intergenerational Equity

- Utility assets cost different amounts throughout their lifecycle.
- Intergenerational Equity is the concept of not over-burdening one generation to subsidize another.
- The Renewal and Replacement (R&R) fund is a tool to promote Intergenerational Equity



Intergenerational Equity

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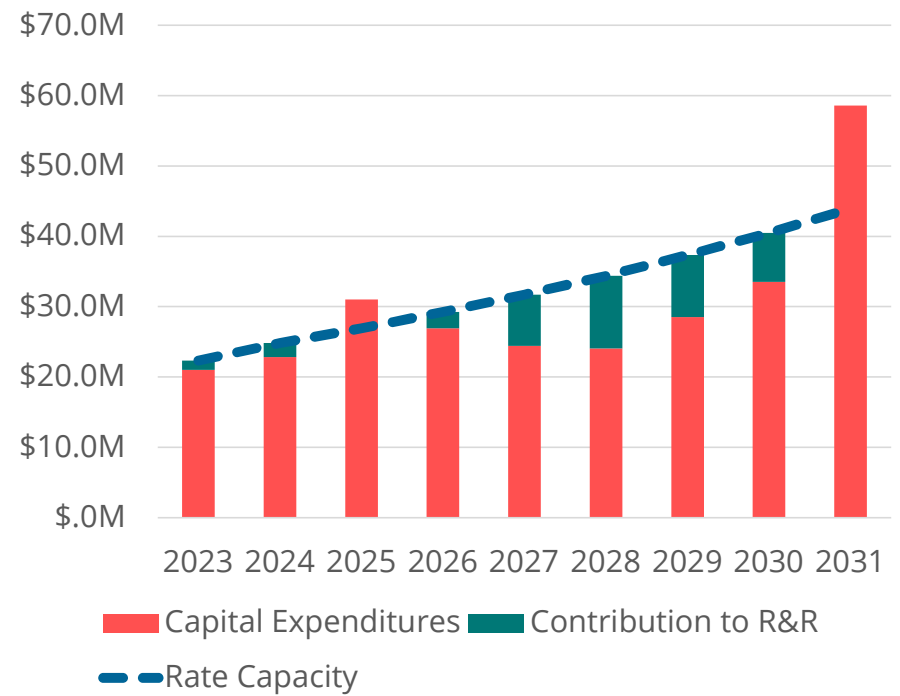


Rate Capacity

How much revenue is available for capital needs for:

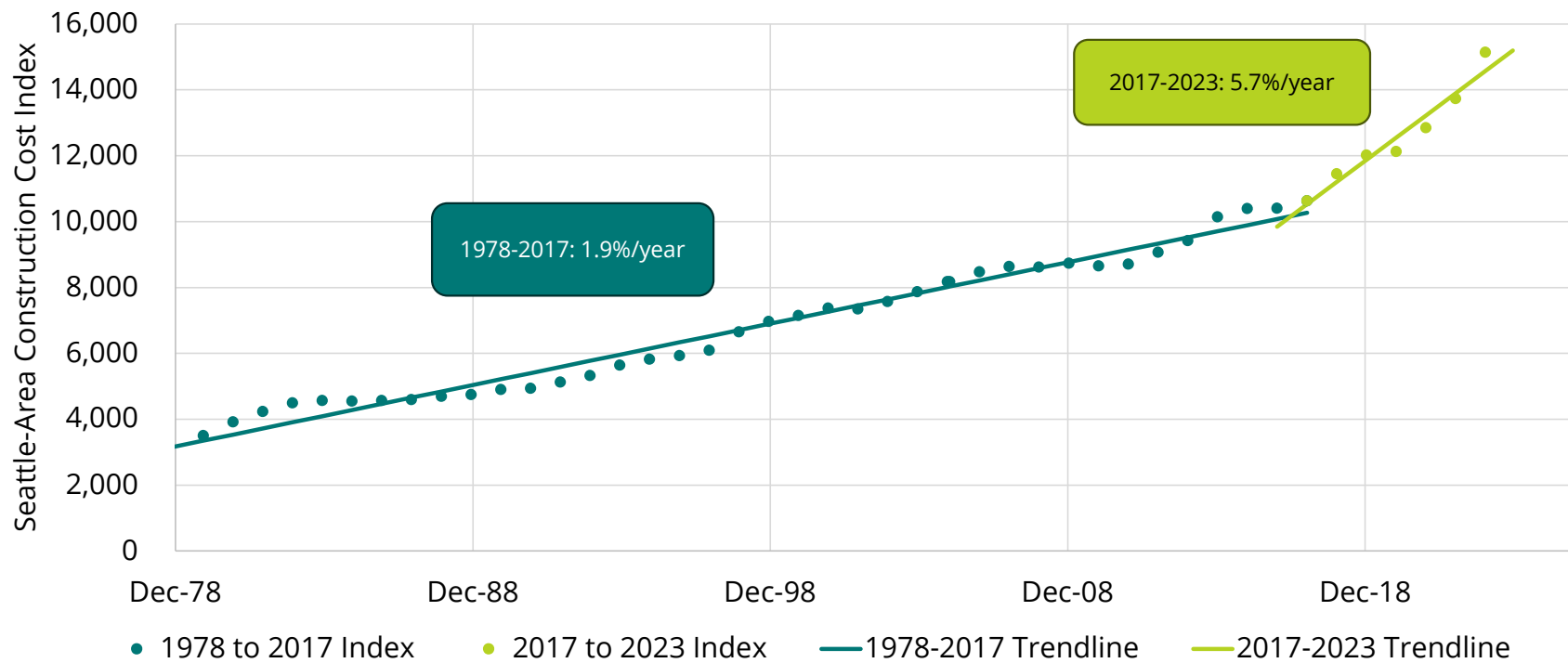
- Current year capital improvements, or
- Additions to the Renewal & Replacement fund for future-year needs

R&R Contribution & Use



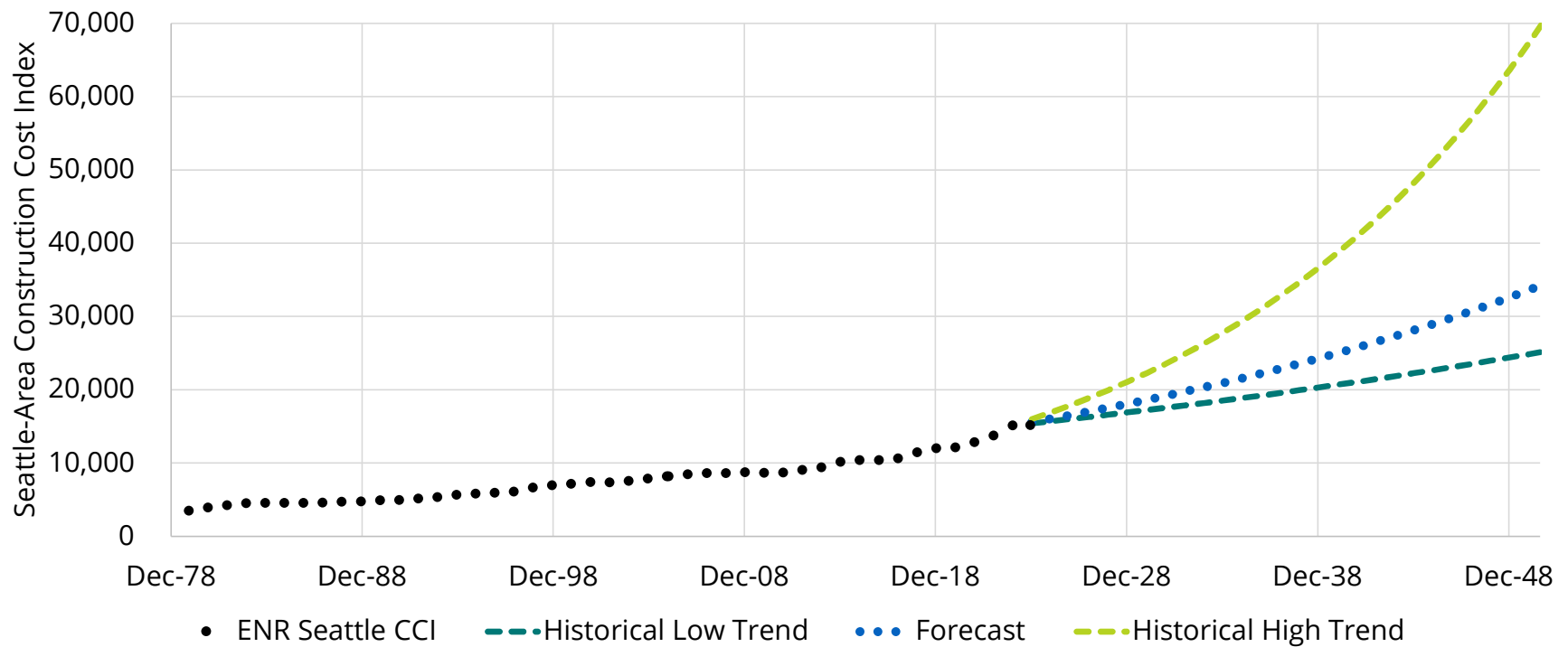
Construction Cost

Construction Cost History and Trends



Construction Cost

Construction Cost History and Trends



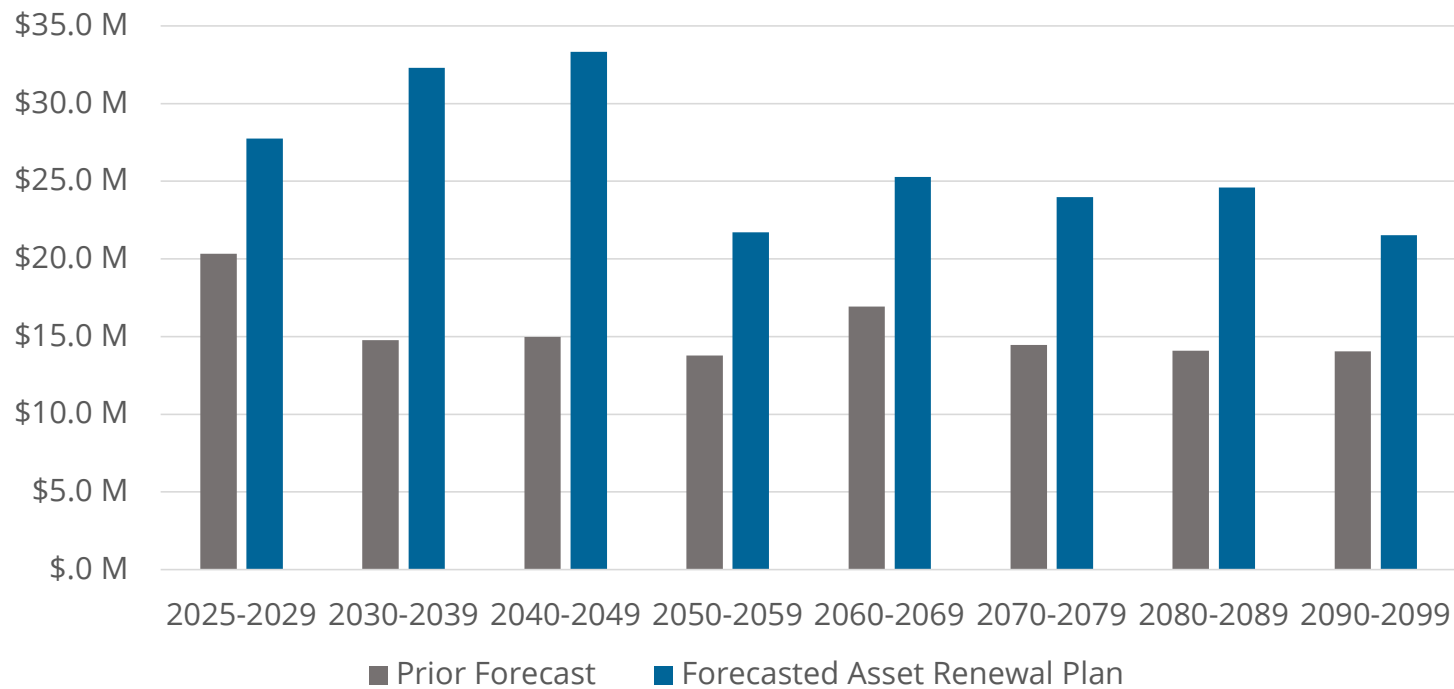
Water Utility – Rate Implications



January 4, 2024

Water – Proposed Asset Renewal Forecast

Annualized Capital Spending by Decade, 2021\$



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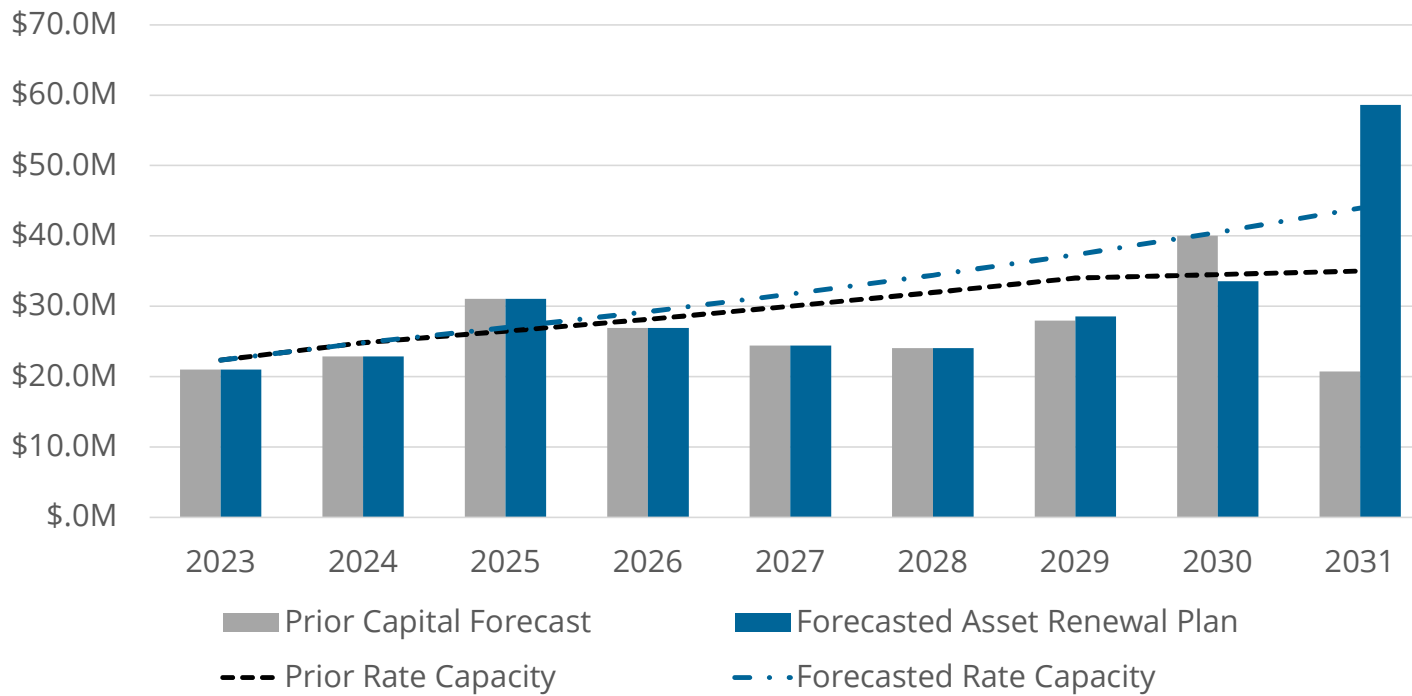
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Water Rate Implications

Planned Capital Needs and Rate Capacity for Capital



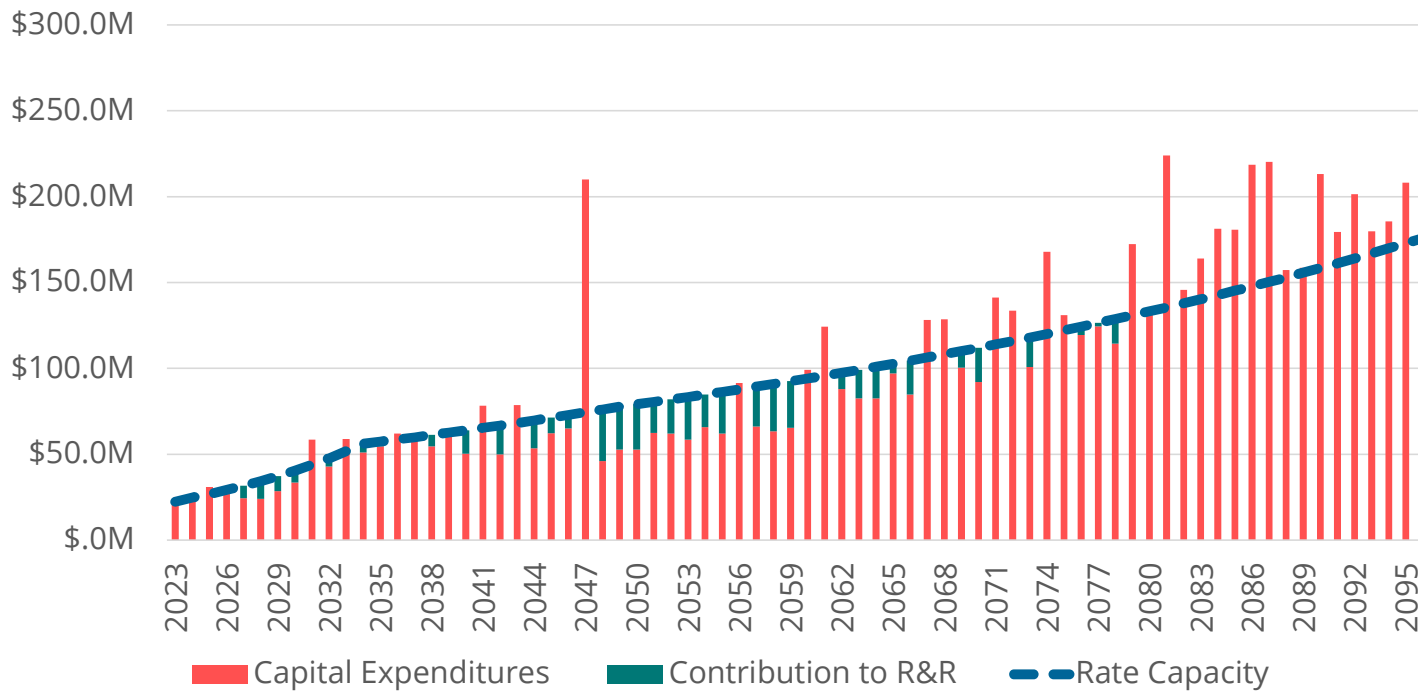
Renewal Forecast Short Term

- Capital needs increase beginning in 2029, with significant increases in 2031
- Forecasted Rate Capacity required in 2031 is 25% higher than previously forecast



Water Rate Implications

R&R Contribution & Use

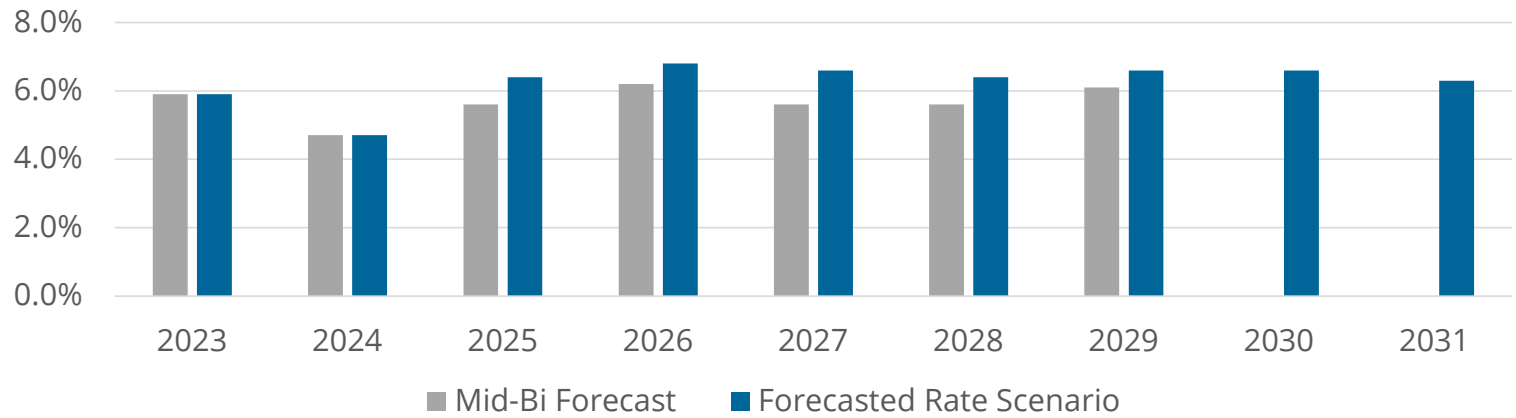


Renewal Forecast Long Term

- Capital needs remain significantly higher through 2050
- Capital Rate Capacity ramps above inflation until 2034, then smoothed below inflation for remainder of forecast



Water Rate Implications



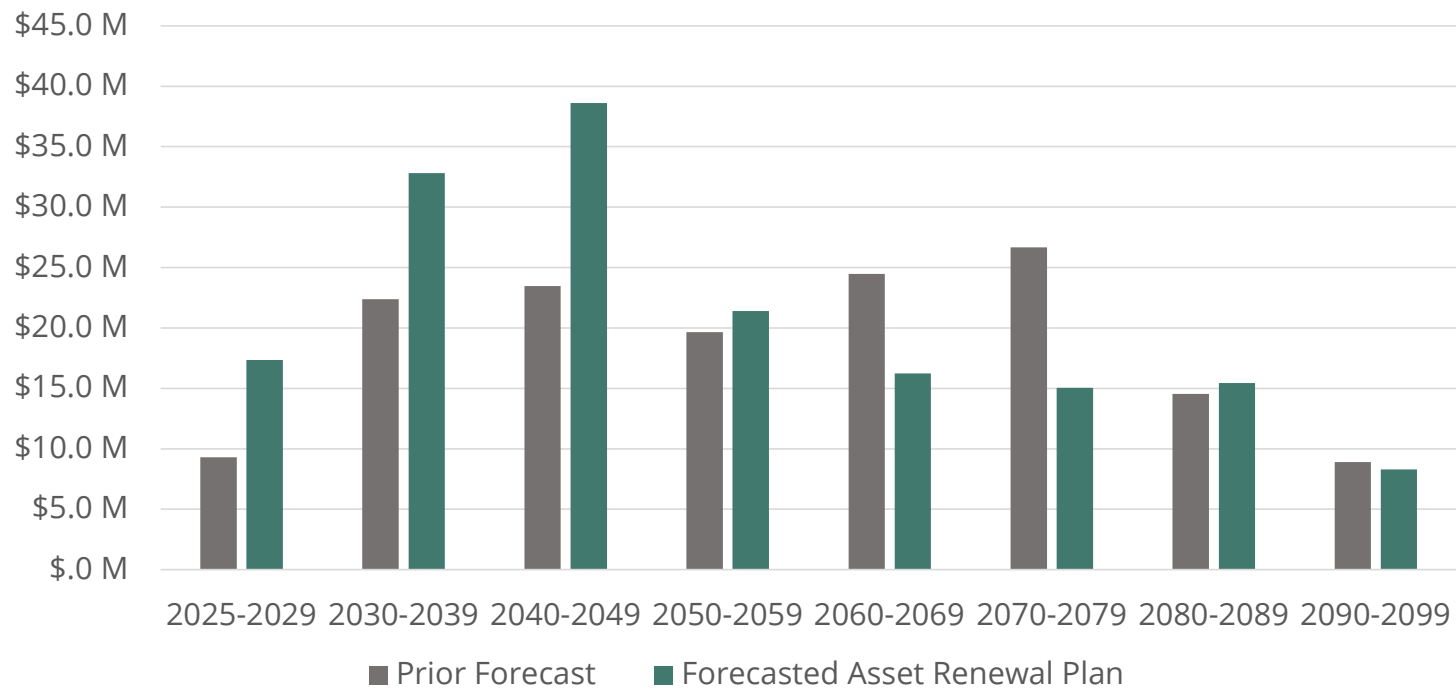
Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031
Mid-Bi Forecast	5.9%	4.7%	5.6%	6.2%	5.6%	5.6%	6.1%		
Forecasted Rate Scenario	5.9%	4.7%	6.4%	6.8%	6.6%	6.4%	6.6%	6.6%	6.3%
Difference	0.0%	0.0%	0.8%	0.6%	1.0%	0.8%	0.5%		

Average increase of 0.7% over prior forecast to build necessary rate capacity



Sewer – Proposed Asset Renewal Forecast

Annualized Capital Spending by Decade, 2021\$



Shown in 2021\$

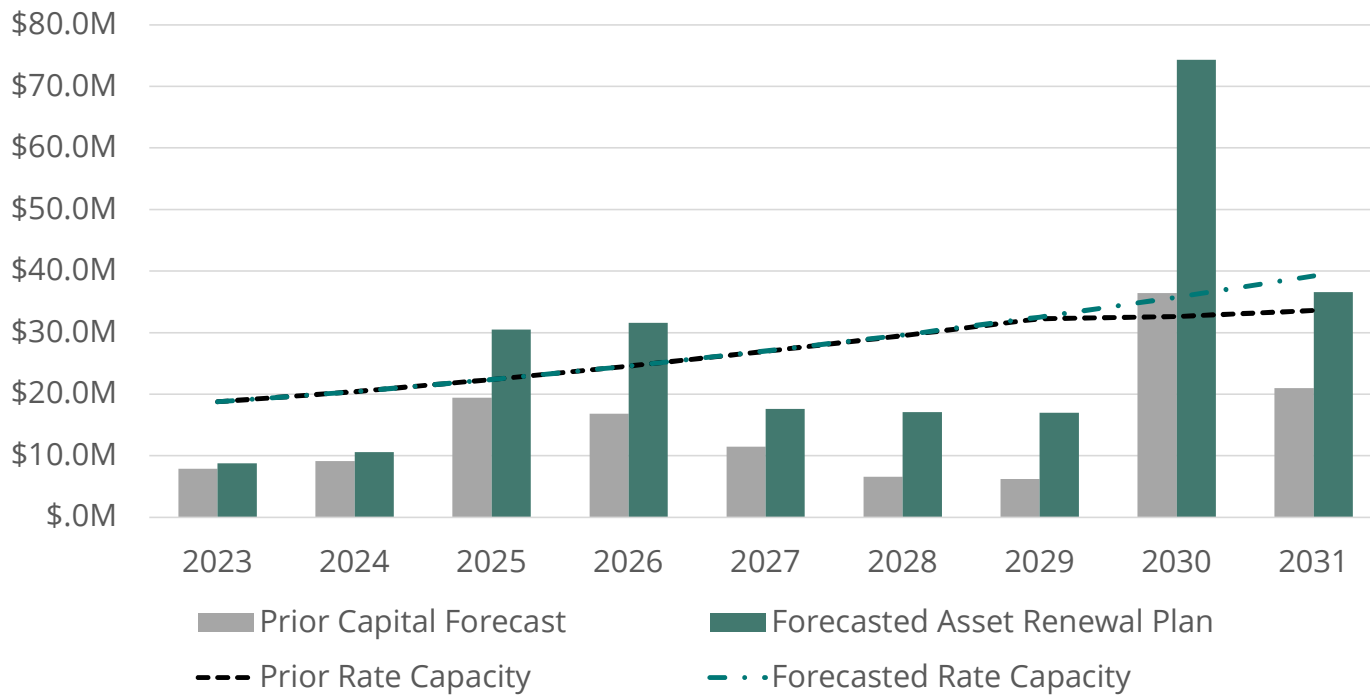
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Sewer Rate Implications

Planned Capital Needs and Rate Capacity for Capital



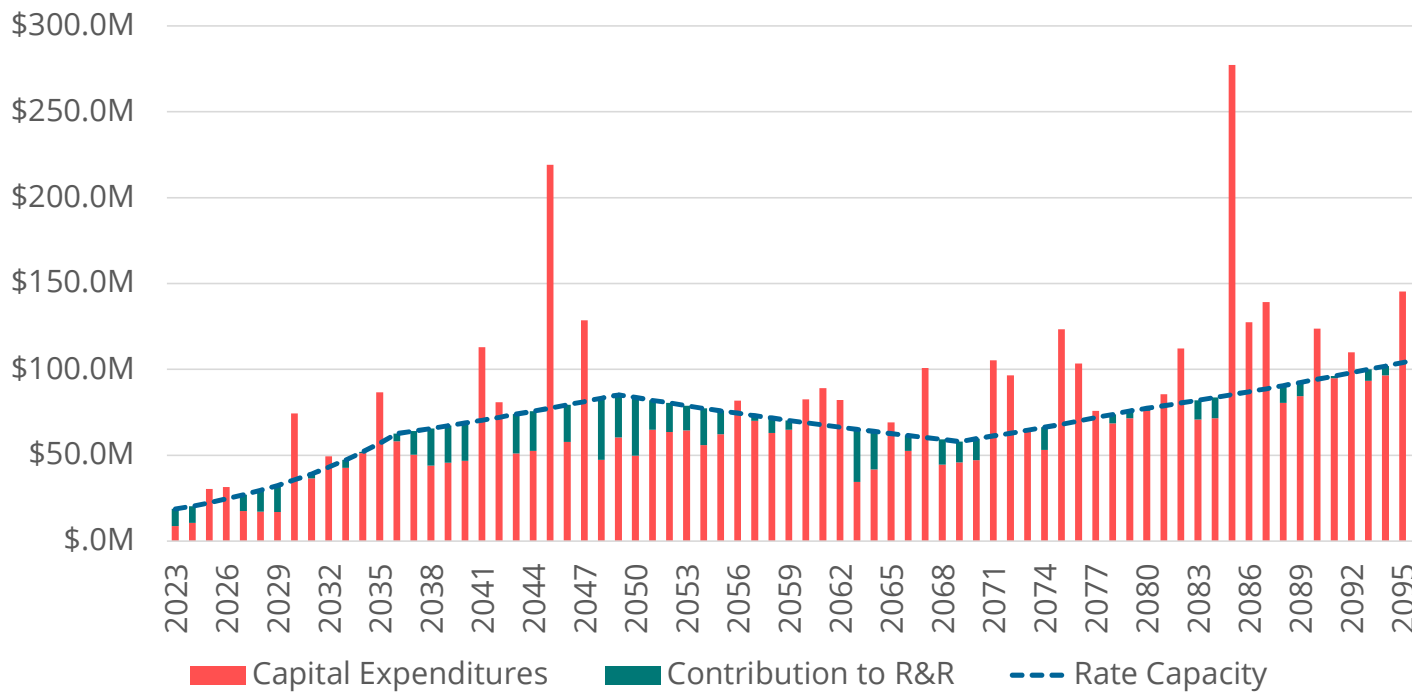
Renewal Forecast Short Term

- Capital needs increase beginning in 2025, with significant increases in 2030
- Forecasted Rate Capacity required in 2031 is 17% higher than previously forecast



Sewer Rate Implications

R&R Contribution & Use

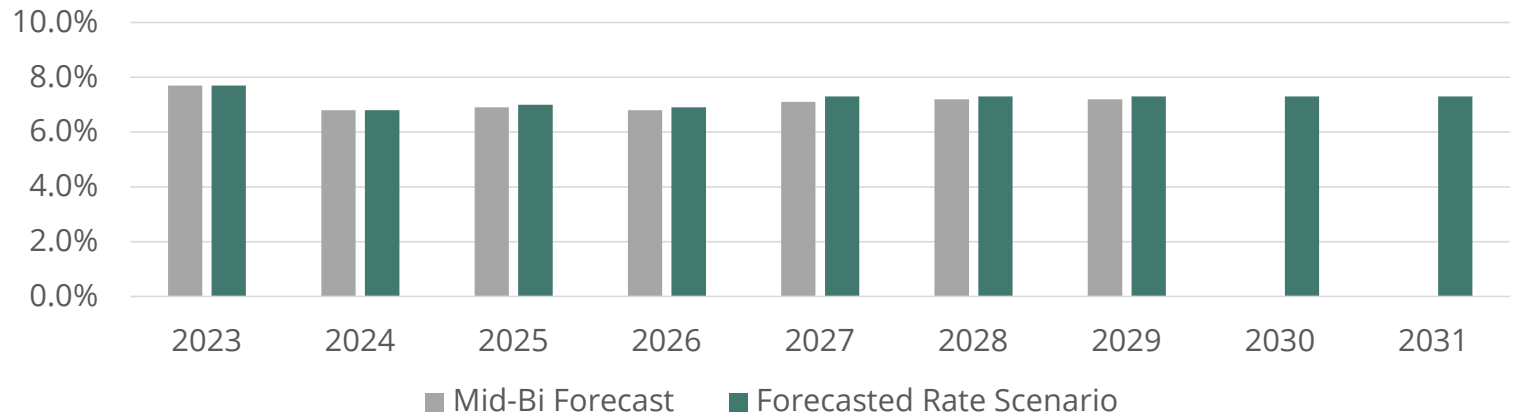


Renewal Forecast Long Term

- Capital needs remain significantly higher through 2050
- Rate Capacity ramps above inflation until 2036, then drops between 2050 and 2070 – driven by meeting Lake Line Replacements.
- Ongoing Lake Line Management Plan study will evaluate alternatives to refine scheduling, cost, and funding structure



Sewer Rate Implications



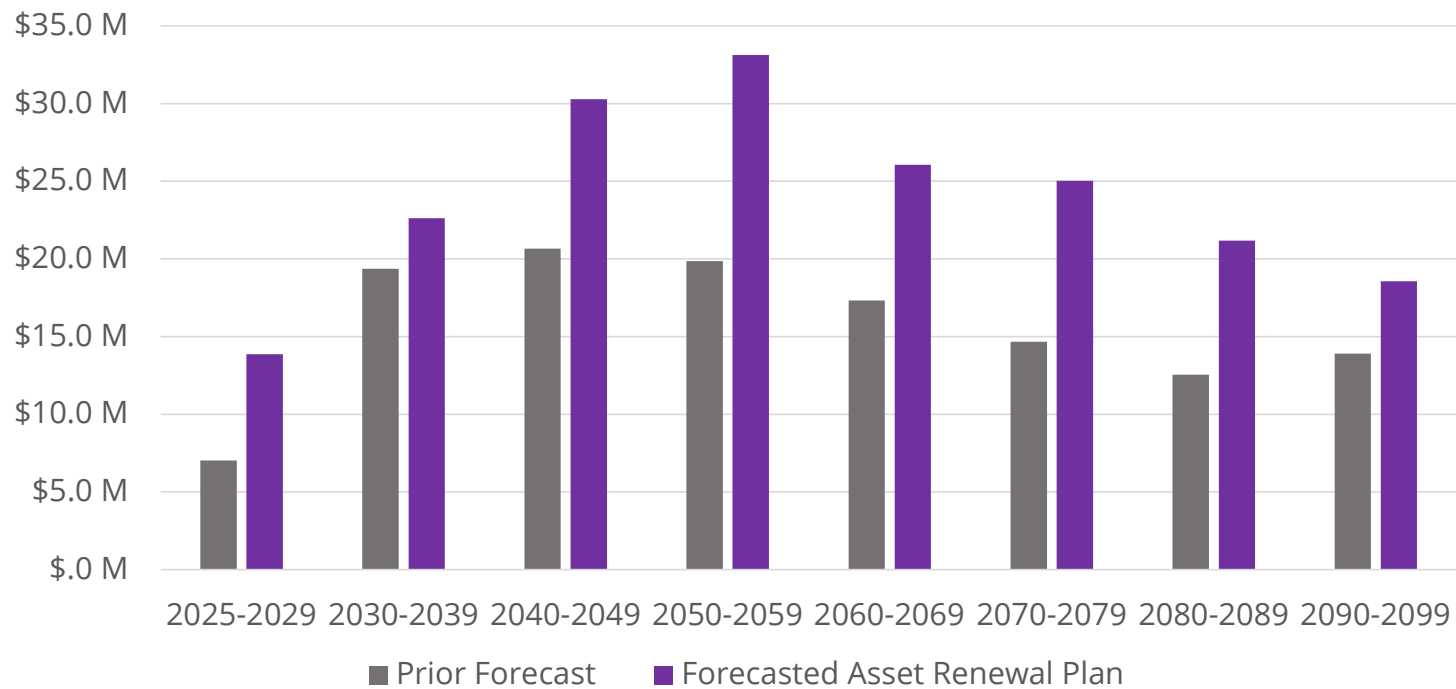
Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031
Mid-Bi Forecast	7.7%	6.8%	6.9%	6.8%	7.1%	7.2%	7.2%		
Forecasted Rate Scenario	7.7%	6.8%	7.0%	6.9%	7.3%	7.3%	7.3%	7.3%	7.3%
Difference	0.0%	0.0%	0.1%	0.1%	0.2%	0.1%	0.1%		

Negligible near-term rate impacts to continue building necessary rate capacity



Storm – Proposed Asset Renewal Forecast

Annualized Capital Spending by Decade, 2021\$



Shown in 2021\$

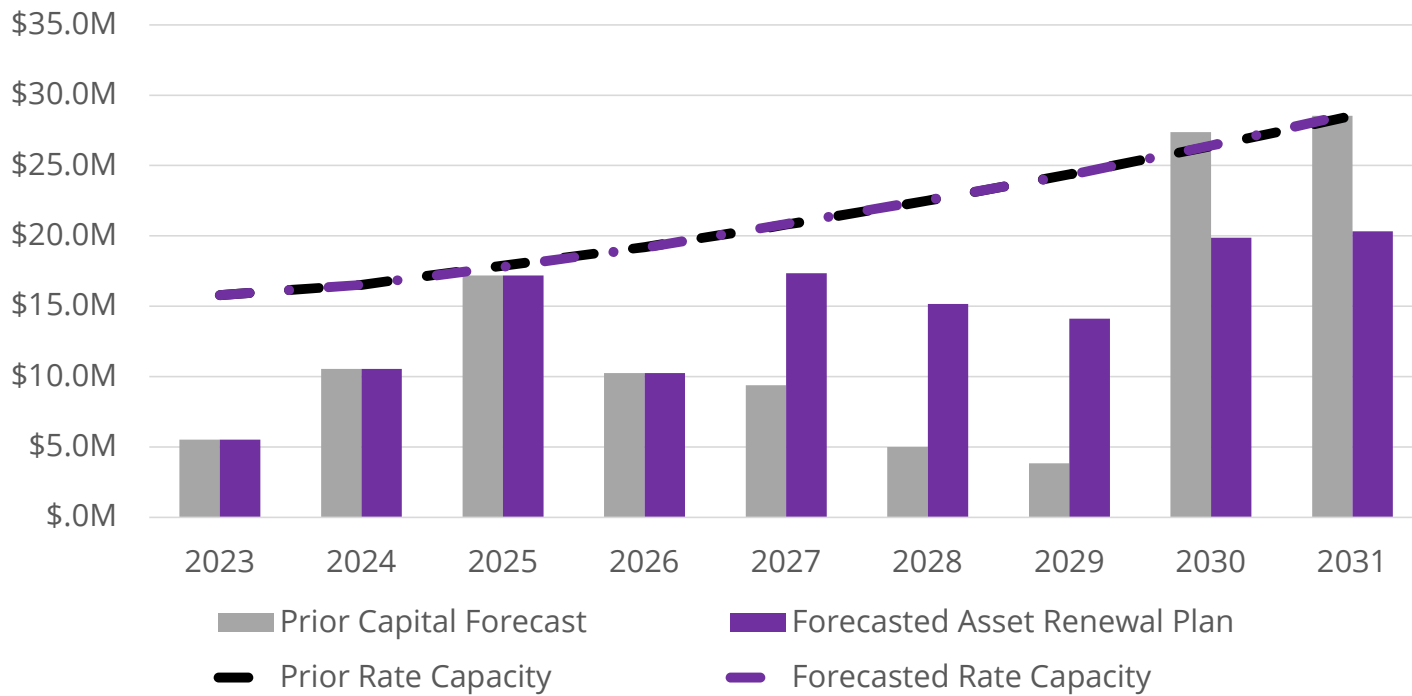
What's Changed?

- Better condition information gives better certainty
- Our stormwater gravity system needs increased investment level and consistency
- Culverts costs are significantly different in the future with new regulatory requirements.



Storm Rate Implications

Planned Capital Needs and Rate Capacity for Capital



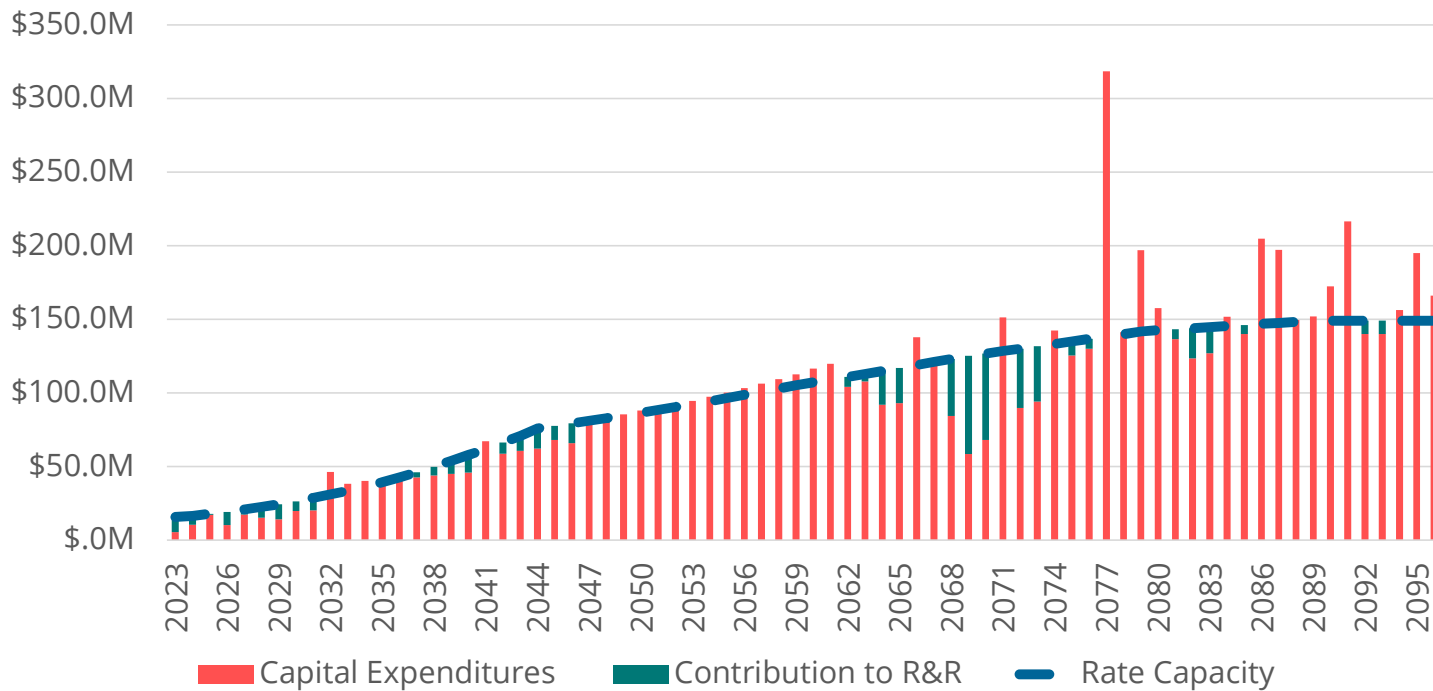
Renewal Forecast Short Term

- Capital needs increase beginning in 2027
- Forecasted Rate Capacity required in 2031 is consistent with the Mid-Bi forecast



Storm Rate Implications

R&R Contribution & Use

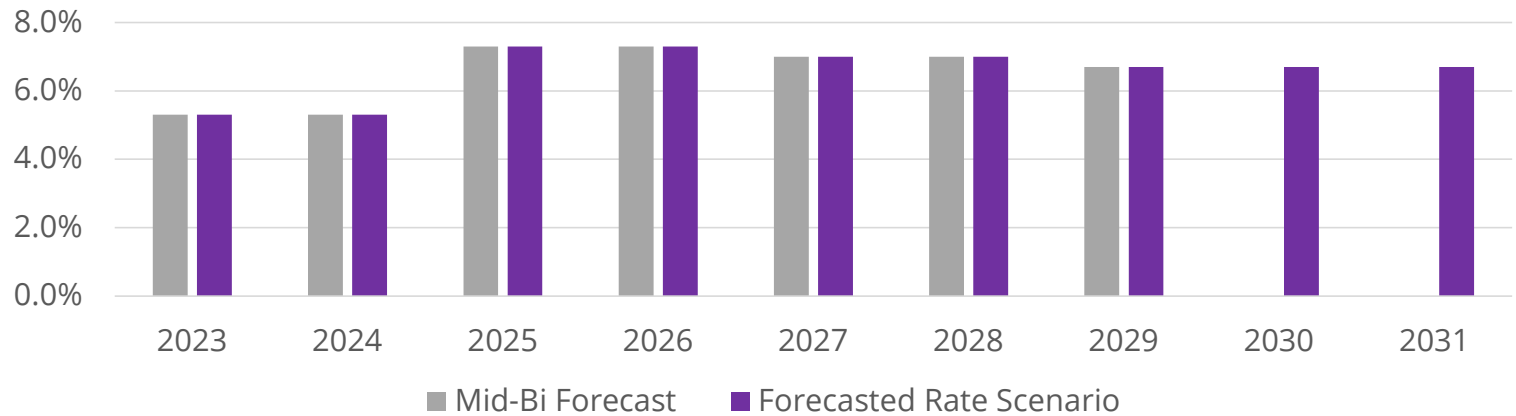


Renewal Forecast Long Term

- Capital needs are significantly higher than previously forecast
- Rate Capacity ramps above inflation until 2044, then smoothed below inflation through the end of the forecast
- Proposed forecast has significant uncertainty related to culvert costs and gravity main condition assessment. Studies are already planned to address these



Storm Rate Implications



Scenario	2023	2024	2025	2026	2027	2028	2029	2030	2031
Mid-Bi Forecast	5.3%	5.3%	7.3%	7.3%	7.0%	7.0%	6.7%		
Forecasted Rate Scenario	5.3%	5.3%	7.3%	7.3%	7.0%	7.0%	6.7%	6.7%	6.7%
Difference	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		

No change from Mid-Bi Forecast – sustained increase in 2025 will build long-term rate capacity



Summary of Findings

Water

- Near term: increase of 0.7%/year
- Mid term: continue to build rate capacity through 2034

Risk Implications

- *Small increase in WM break rate. Estimated at 7 breaks/100mi*
- *Carry higher risk in PRVs through 2041*
- *Pump station & reservoir investment level achieved in 2047*

Next Steps

- *Water Main condition assessment & Asset Management Plan*

Sewer

- Near term: maintain rate path
- Mid term: continue to build rate capacity through 2036

Risk Implications

- *Defer initial Lake Line Investments*
- *Lake Lines catch up to full planned need during 2050s*
- *Gravity main investment level achieved by 2066, slower ramp up*

Next Steps

- *Lake Line Management Plan in progress*

Storm

- Near term: maintain rate path
- Mid term: continue to build rate capacity through 2044

Risk Implications

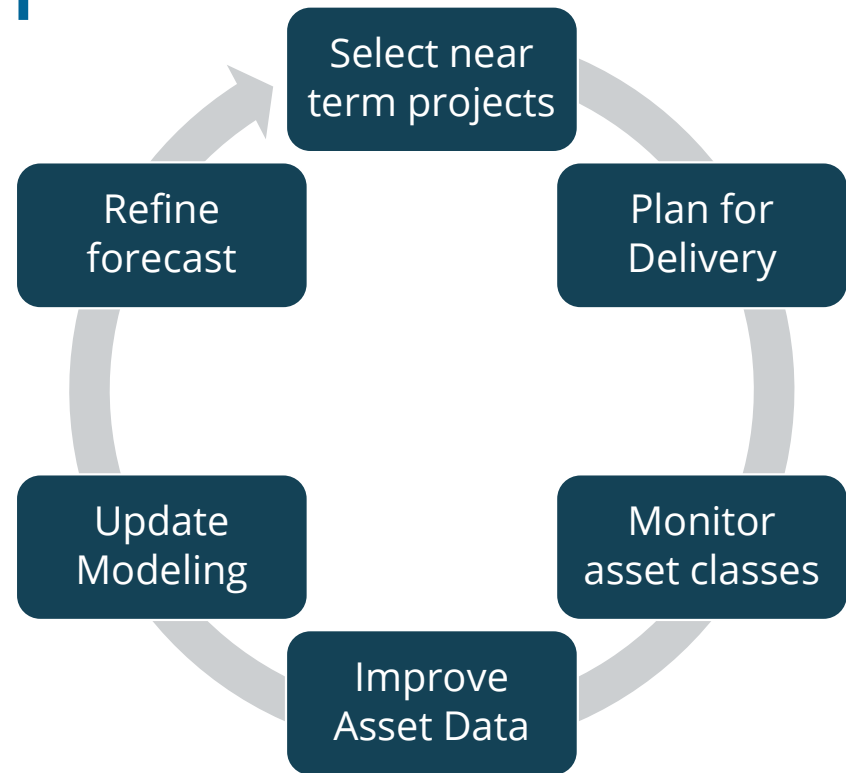
- *Defers increased spending for culverts and gravity mains in the near term. Implications of deferral will be better quantified by Culvert Condition Assessment Study*

Next Steps

- *Culvert Condition Assessment Study*
- *Gravity Main Condition Assessment*

How does the Asset Renewal Update connect to the CIP

- Select priority projects
- Set renewal targets
- Evaluate delivery capacity and resources
- Continue to collect and improve condition data
- Continuously improve our data quality and availability
- Update our modeling and analysis
- Refine our forecast assumptions



What comes next:

- Capital Delivery Improvement
- Asset Management Plans – Specific to each asset class
- Condition Assessment Programs –
 - Culverts
 - Stormwater Gravity Mains
 - Water Mains
- 2025-2026 Budget Process
 - 2025-2031 CIP
 - 2025-2026 Rates and 2025-2030 Rate Forecast



Information

No action is required by the Commission at this time. Staff will provide an update on the Asset Renewal Forecast.

