



RIVERSIDE PUBLIC UTILITIES

UTILITY 2.0

WATER INFRASTRUCTURE RE-CAP

JULY 29, 2015

WATER | ENERGY | LIFE



PUBLIC UTILITIES

RiversidePublicUtilities.com

ROAD MAPS – INFRASTRUCTURE IMPROVEMENT – WATER RE-CAP



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INFRASTRUCTURE IMPROVEMENT
EXECUTIVE SUMMARY

WORKFORCE DEVELOPMENT

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THRIVING FINANCIALLY

ADVANCED TECHNOLOGIES

ROAD MAPS – INFRASTRUCTURE IMPROVEMENT – WATER - GOALS



- Address aging infrastructure.
- Improve system safety and reliability.
- Increase the use of technology to inform future planning and increase conservation.
- Use financial pro forma to strike investment balance.



Water Infrastructure Assessment

Water System:

- Significant improvement have been made through the CIP process, but areas of criticality remain.
- Significant pipeline replacement needed.

Technology:

- Leverage technology to realize increased efficiency and effectiveness.
- Improve SCADA and network communication to further enhance security.

Workforce:

- Workforce needs training to have Utility 2.0 skill sets.
- Knowledge transfer needed for aging workforce.

Financials:

- Strong Financial Position
- Continue efficiency improvements

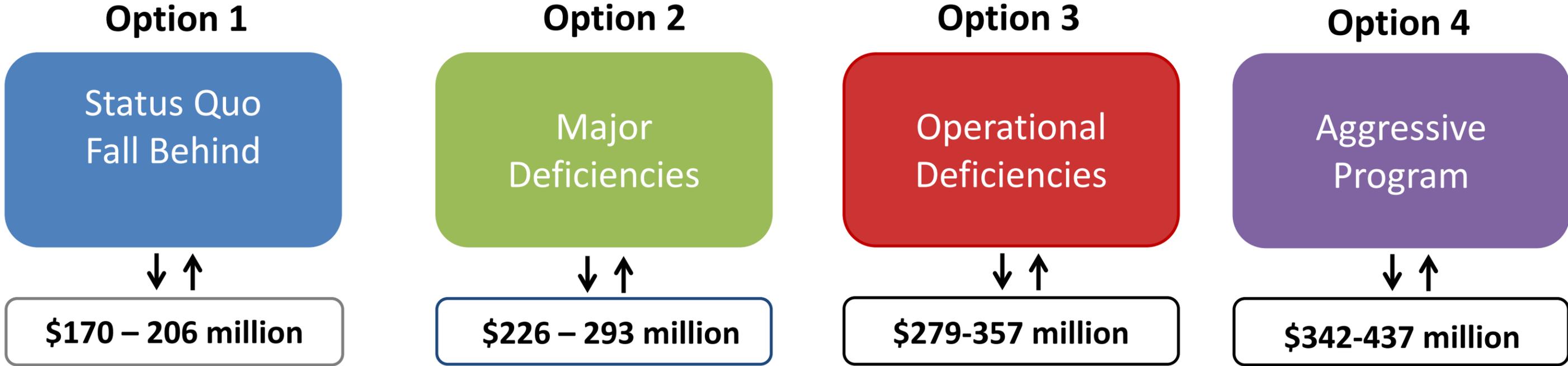
Infrastructure Assessment

Asset	Criticality	Last 10 Years	Status	Next 10 Years
Wells		\$20 Million	On target	\$21-\$29 Million
Treatment Plants		\$30 Million	On target	\$19-\$27 Million
Distribution Facilities		\$15 Million	On target	\$6-\$10 Million
Reservoirs		\$45 Million	On target	\$5-\$7 Million
Transmission Mains		\$35 Million	Deficient	\$84-\$102 Million
Distribution Pipelines		\$90 Million	Deficient	\$107-\$198 Million
Technology		\$15 Million	Deficient	\$44-\$64 Million



Summary of Investment Options

Additional financial investment is required to address current backlog and improve maintenance.



ROAD MAPS – INFRASTRUCTURE IMPROVEMENT - WATER

INFRASTRUCTURE IMPROVEMENT
FEEDBACK ANSWERS

WORKFORCE DEVELOPMENT

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Feedback

- What did we get from the SAFE WATER Plan?
 - New Infrastructure
 - Additional Storage
 - Water Independence
- What is a sustainable rate of pipeline replacement?
 - Distribution Pipeline
 - Transmission Pipeline
- What about the North Waterman Treatment Plant?
- What are we doing about Technology?

ROAD MAPS – INFRASTRUCTURE IMPROVEMENT - WATER

INFRASTRUCTURE IMPROVEMENT
SAFE W.A.T.E.R. PLAN

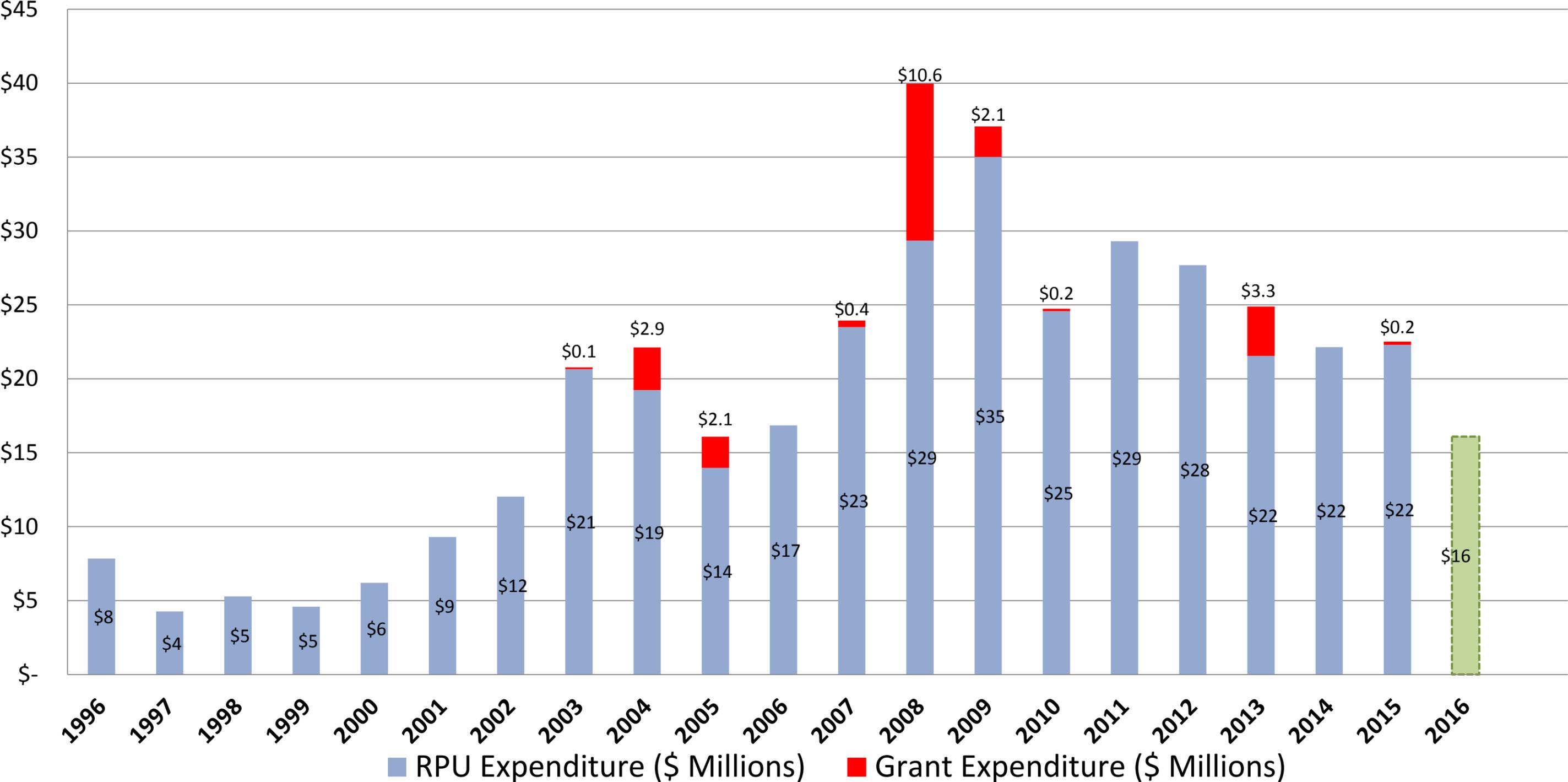
WORKFORCE DEVELOPMENT

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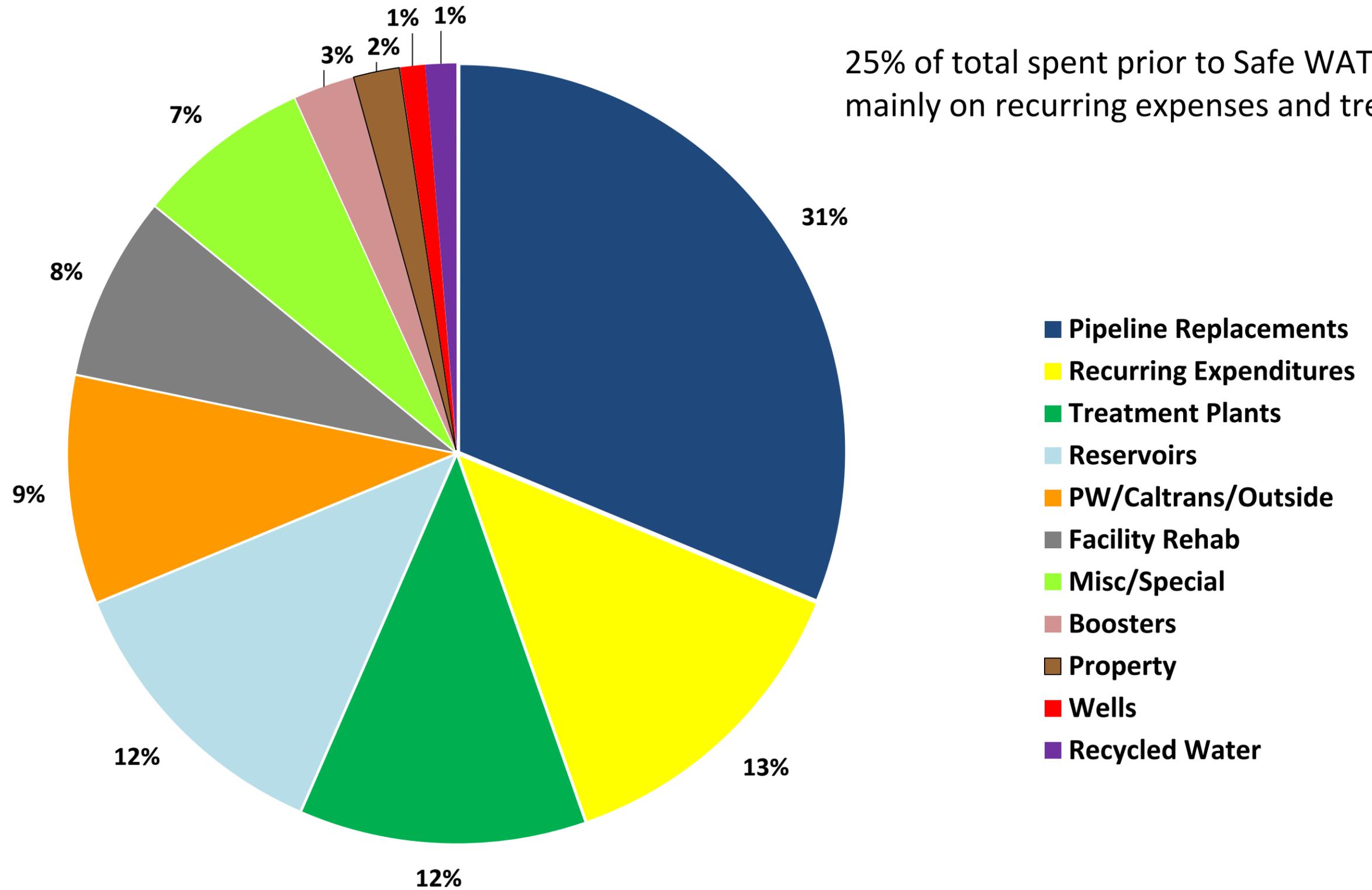
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CIP Expenditure by Fiscal Year



CIP by Category since 1996



Safe WATER Plan

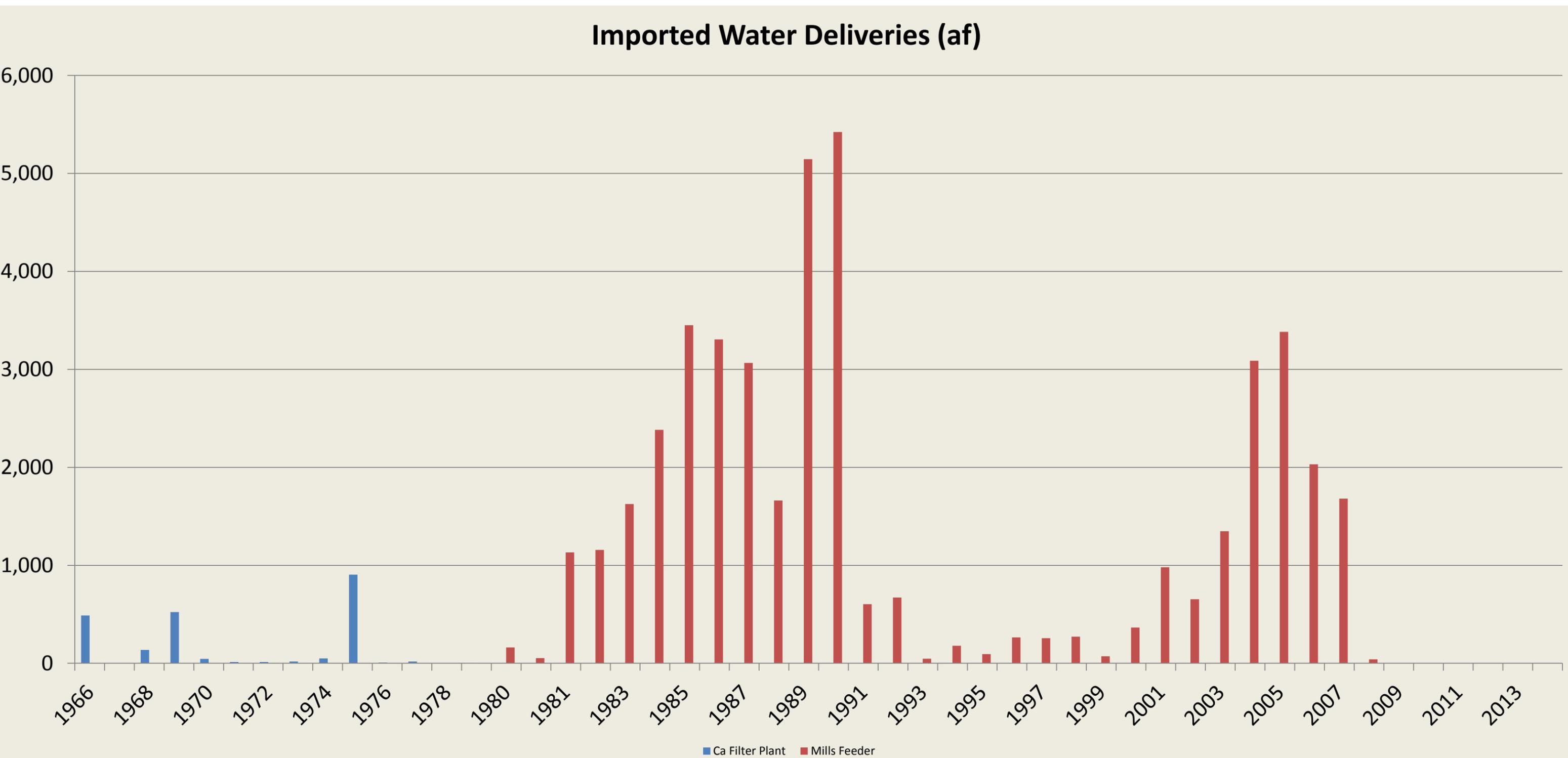
Water Facilities	Safe WATER Plan
49 Active Wells	Replaced 10 Wells
16 Storage Reservoirs (109 MG)	Restored 33 MG, added 8 MG
11 Treatment Plants	Added JW North
41 Booster Stations	18 new or rebuilt
27 Pressure Reducing Stations	14 new or rebuilt
64,000 meters	35,000 replaced
824 miles of distribution pipeline	62 miles replaced
132 miles of transmission pipeline	6 miles replaced

Safe WATER → Water Independence

- JW North
 - Converted irrigation wells to potable wells
 - Added 10% capacity
- Booster Station replacement/upgrades
 - Prior Booster Stations unable to maintain Campbell Reservoir
 - Replacements pushed water uphill during summer months
- Whitegates Reservoir Replacements
 - Increased storage from 1 MG to 9 MG
 - Provided added protection to 1200 zones

Imported Water Deliveries

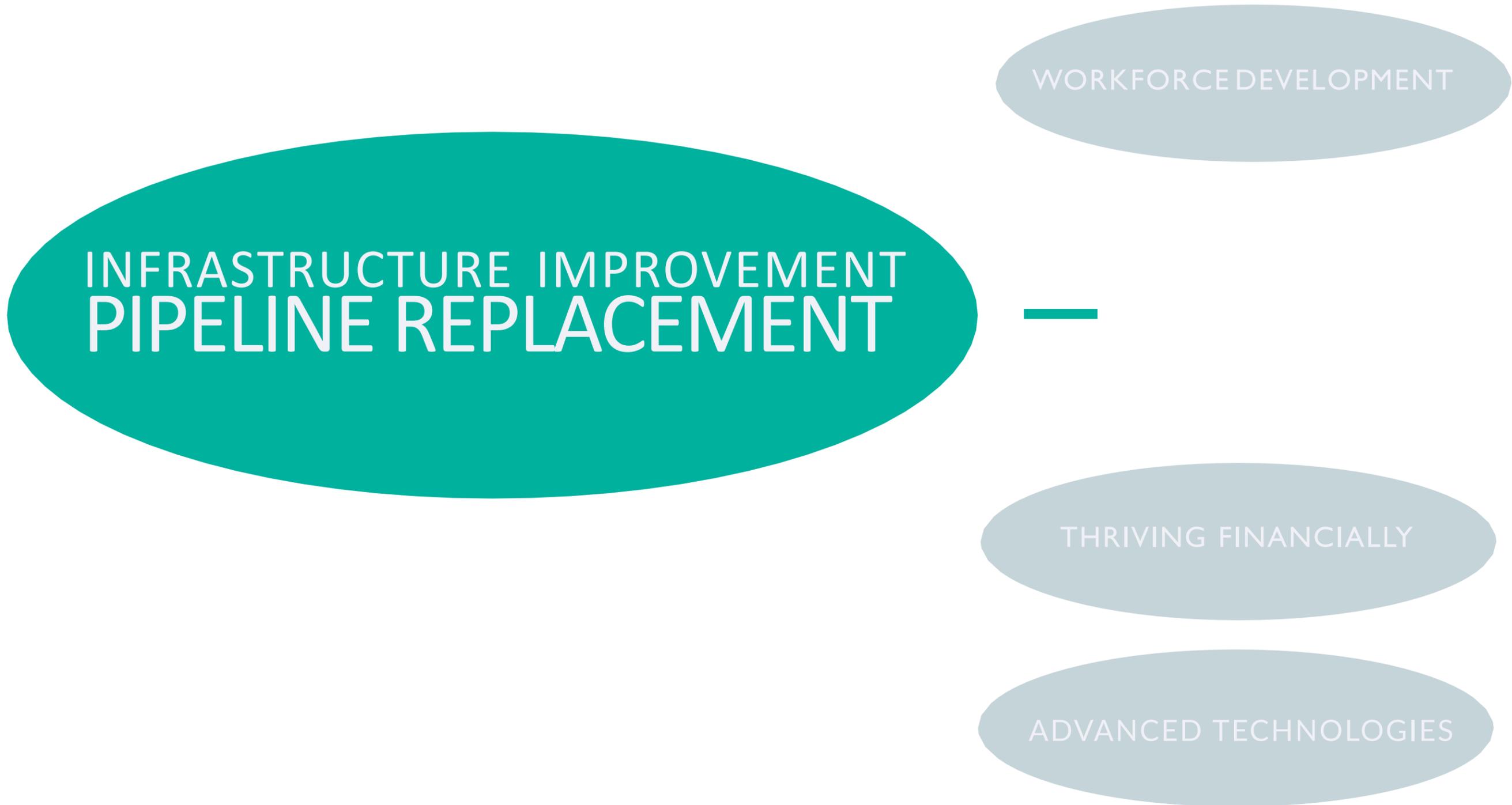
Imported Water Deliveries (af)



Imported Water Savings

- Averaged 1,500 afa from 2000 to 2007
 - \$1 to \$2 Million per year
- A total of \$7 Million to \$10 Million saved from 2008-2015

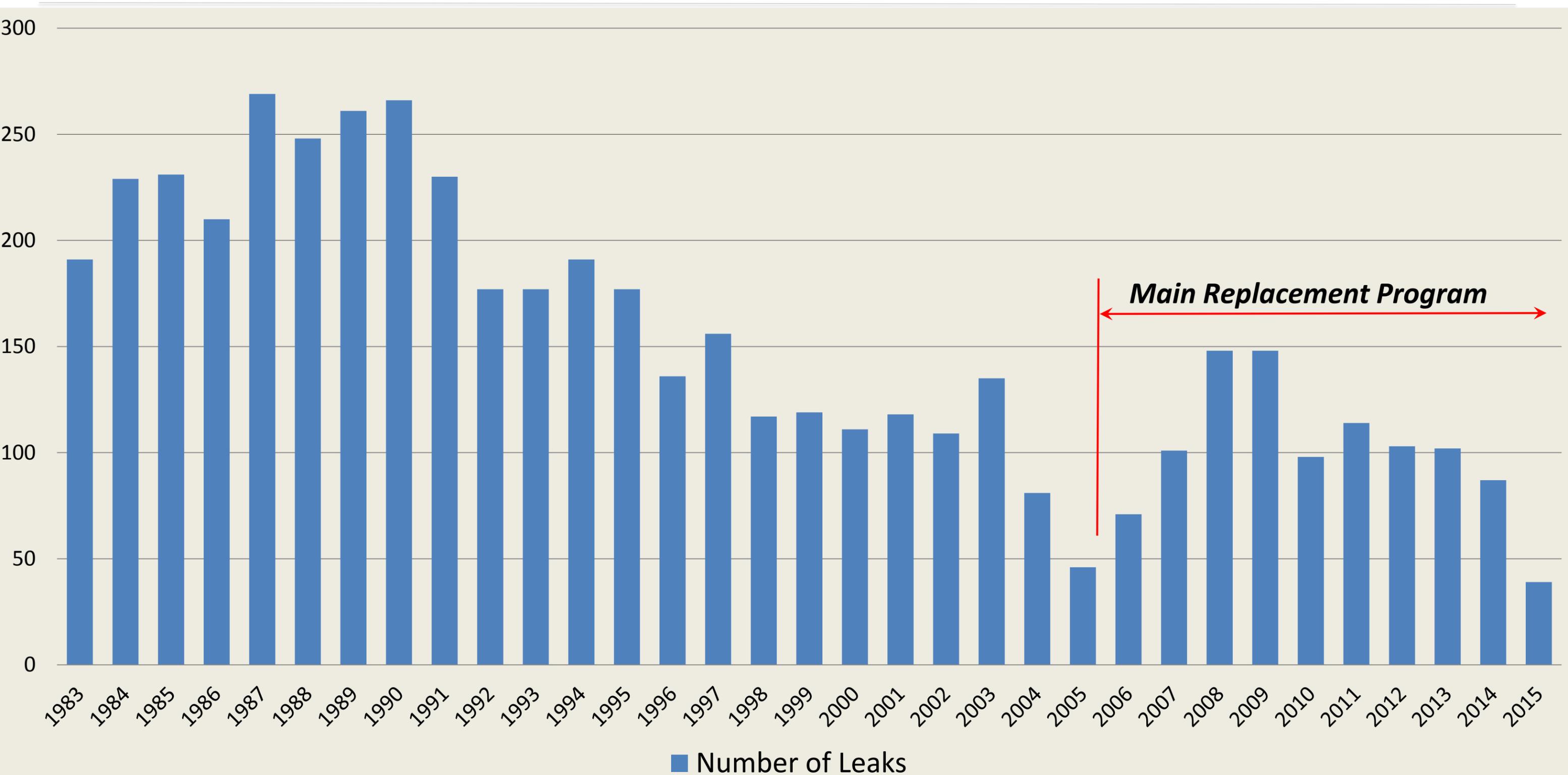
ROAD MAPS – INFRASTRUCTURE IMPROVEMENT - WATER



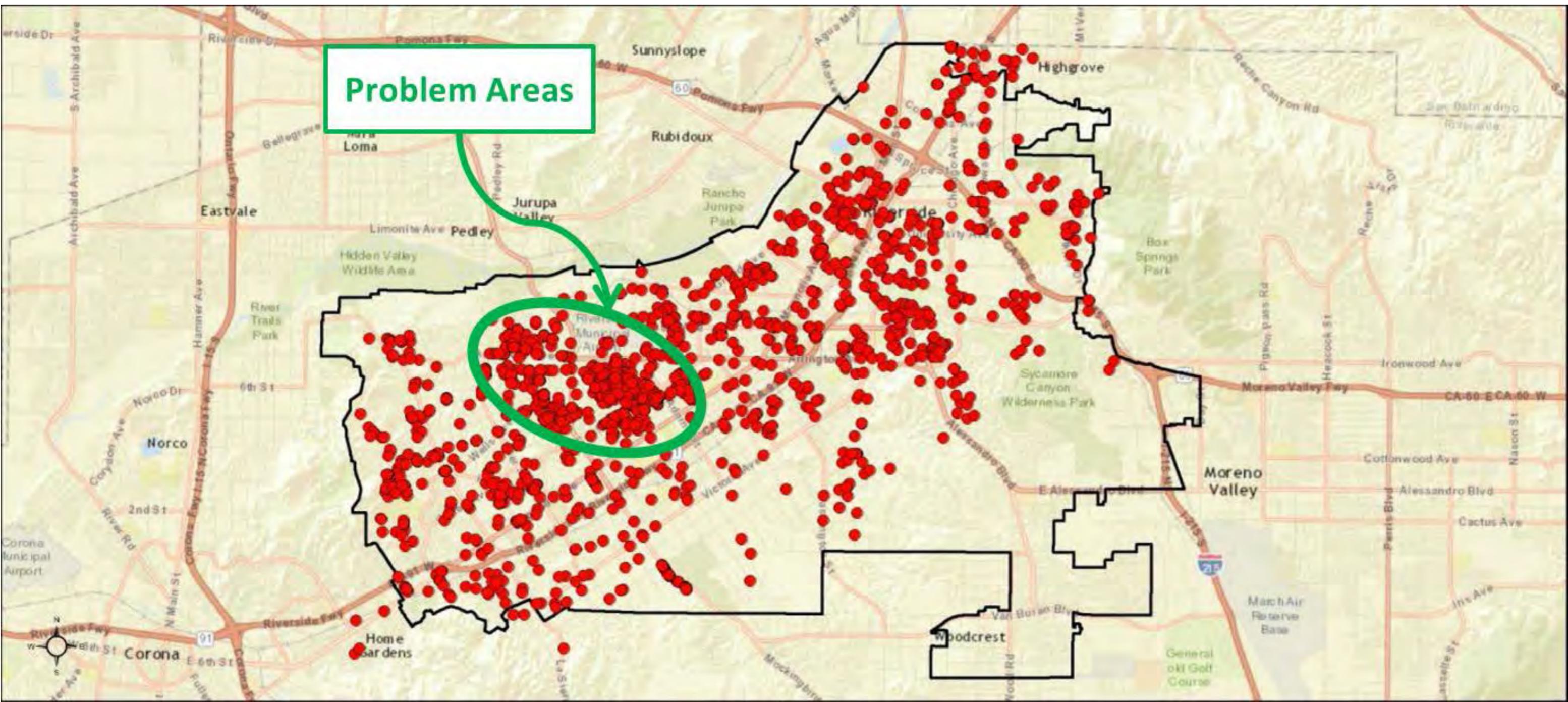
Sustainable Pipeline Replacement

- Water Distribution Pipeline (smaller pipelines)
 - Leak rates
 - Expected Lifetimes
- Water Transmission Pipeline (larger pipelines)
 - Capacities
 - Internal inspections
 - Leak rates

Annual Distribution Line Leaks



Active Leaks Map



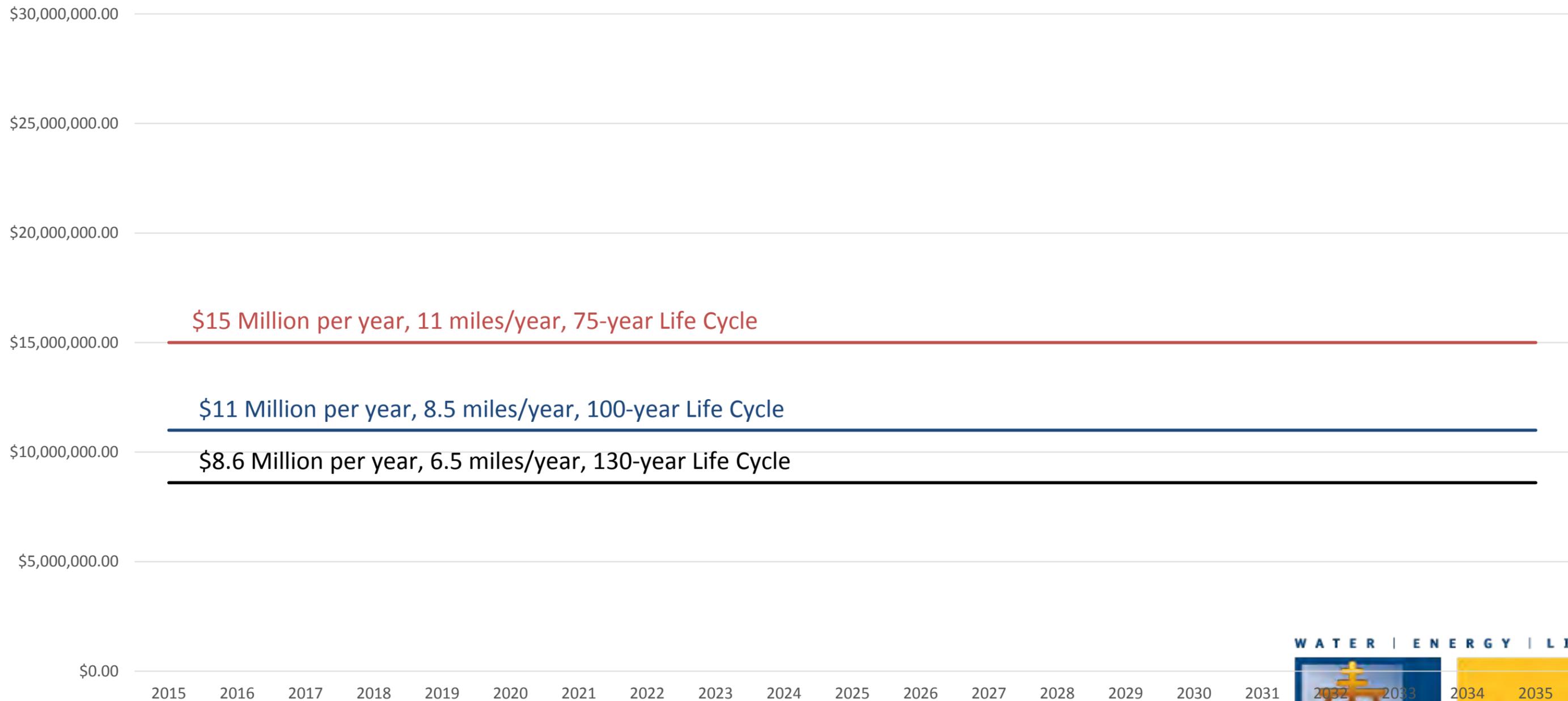
Premature Pipeline Failure



Failed Cast Iron Distribution mains removed from service December 2014. Installed c. 1950.

Distribution Pipeline Replacement Needs

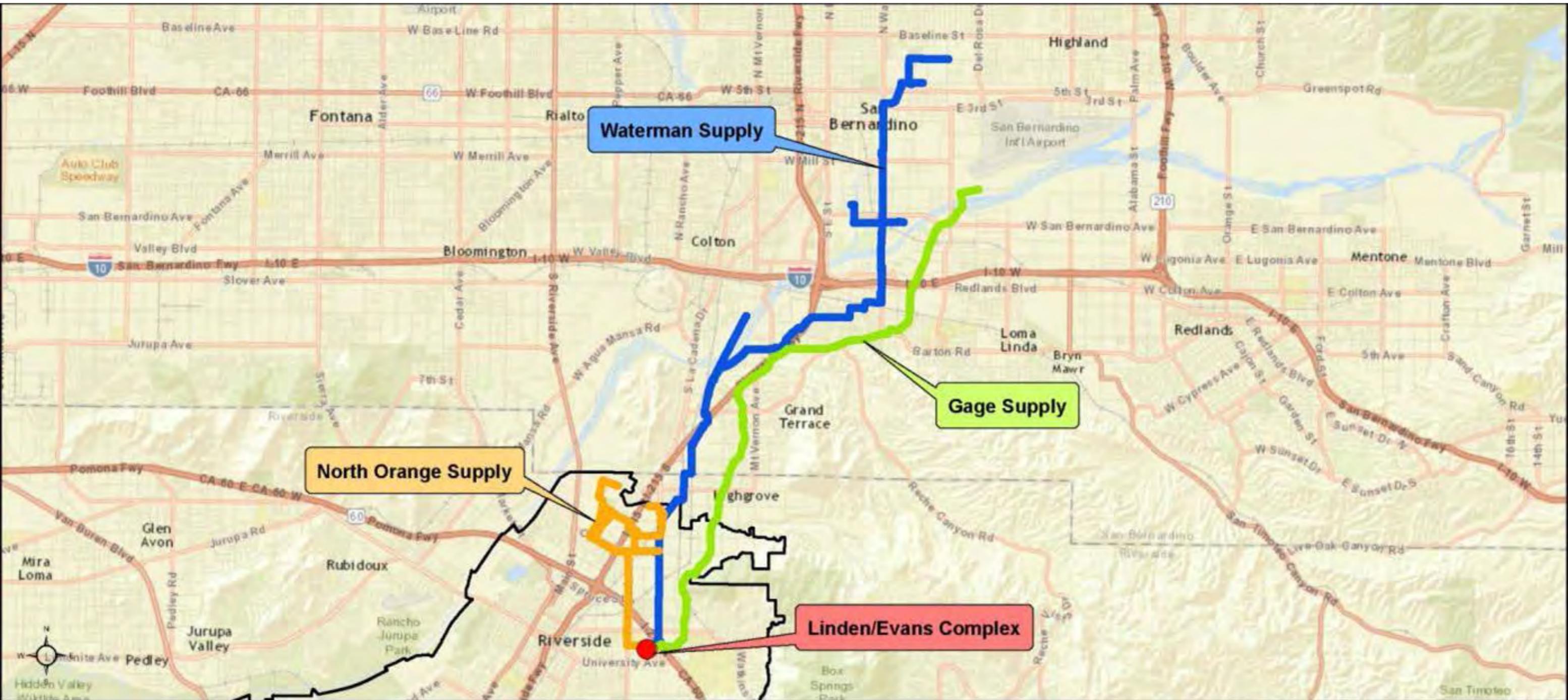
2015 Dollars



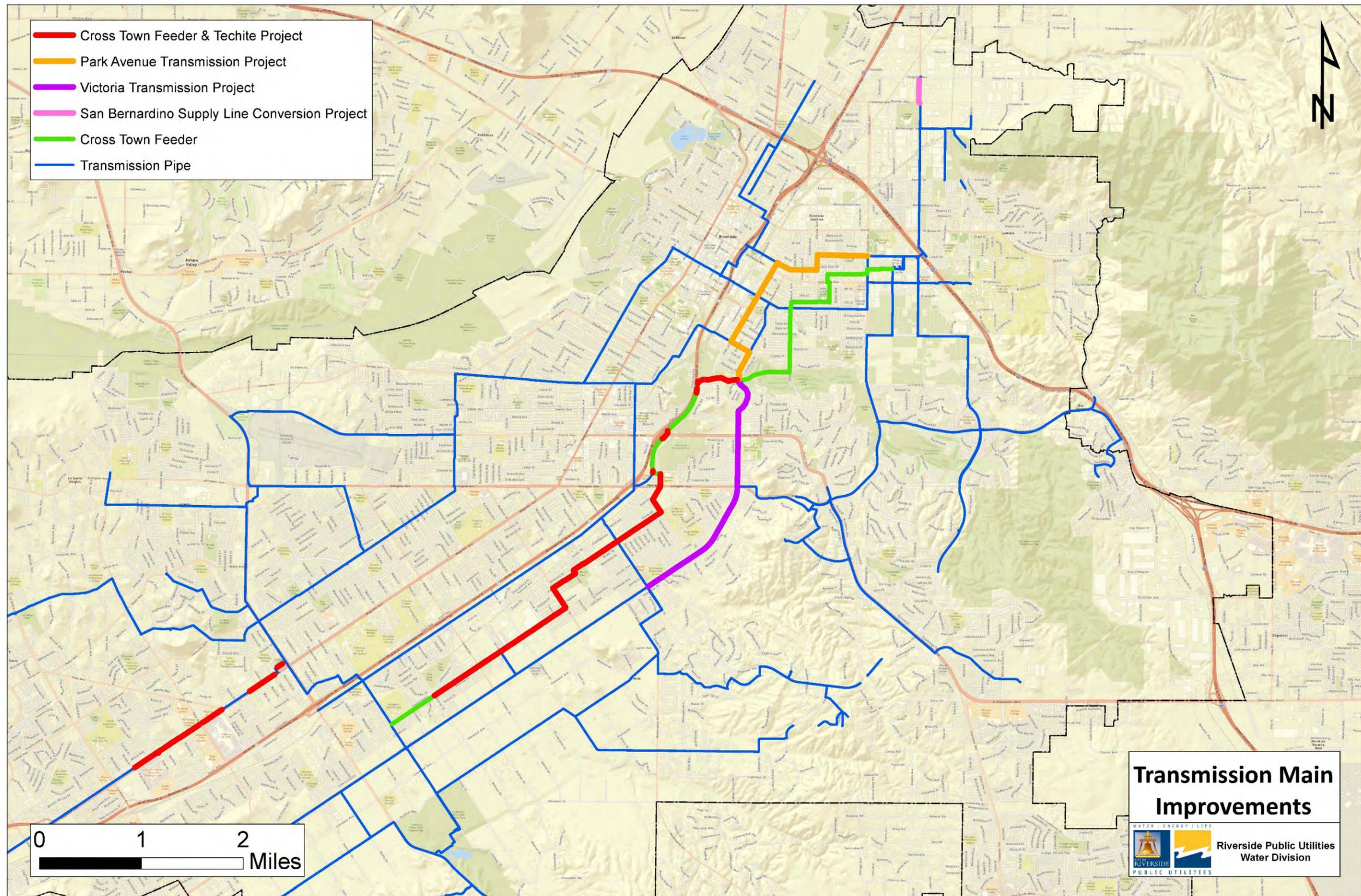
Distribution Pipeline Options

Option 1	Option 2	Option 3	Option 4
130-Year Life Cycle	100-Year Life Cycle		75-Year Life Cycle
Increased leaks and disruptions as Cast Iron pipe ages	Capture “tsunami” if Cast Iron Life Cycle is slightly longer		Capture DM “tsunami” if Cast Iron pipe Life Cycle is shorter
\$86M	\$110M		\$150M

Supply Transmission Mains – Good Condition



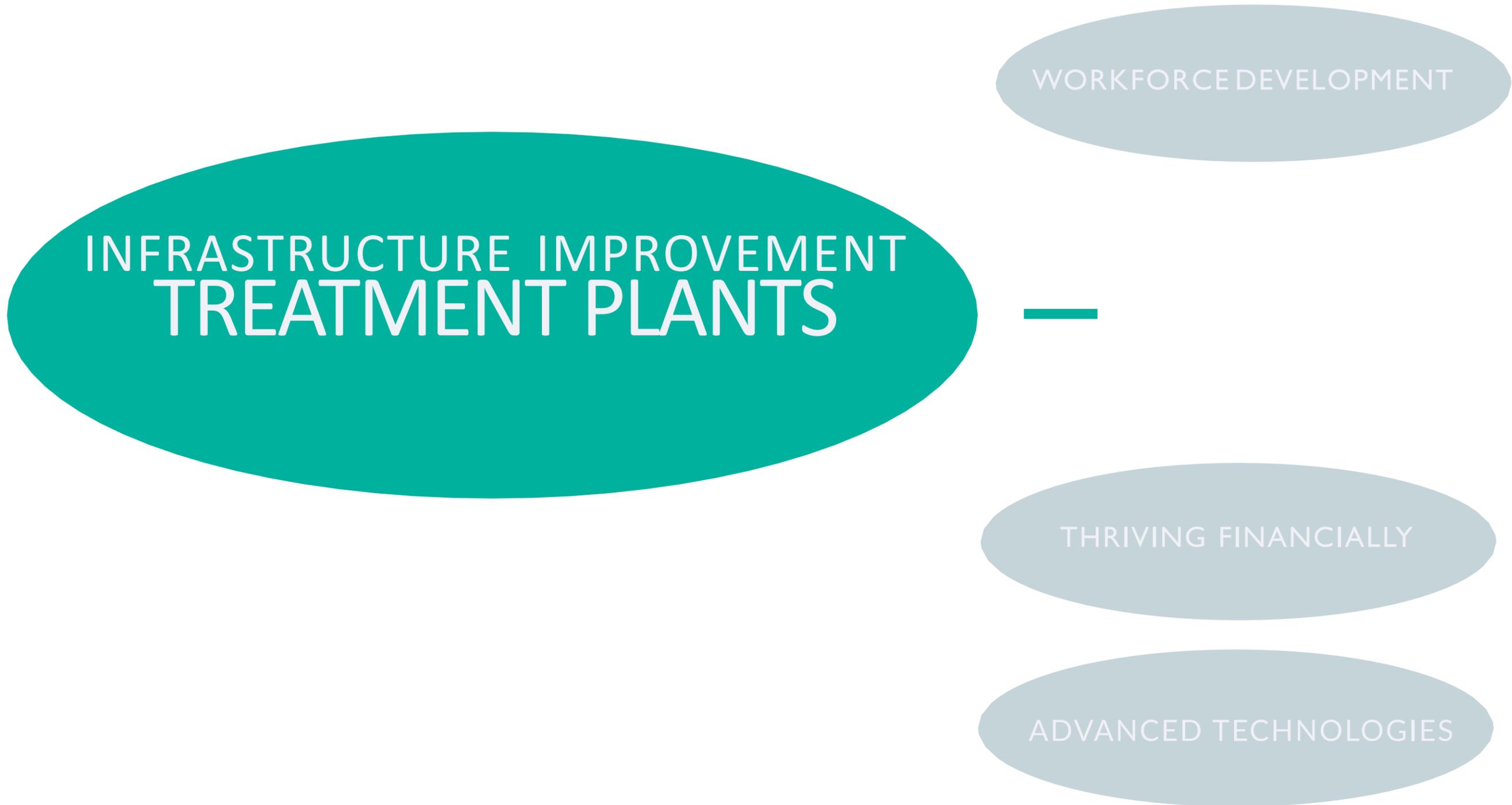
Distribution TM – Undersized/At Risk



Transmission Main Pipeline Options

Option 1	Option 2	Option 3	Option 4
Handle TM projects driven by others (Street, Bridge and RR projects)	Address Techite Pipeline and replace in like and kind	Address major bottlenecks in TM system	Include moderate bottlenecks in TM system
Increased risk of major failure	Reduce major risk, retain system inefficiencies	In-lieu of \$22M Reservoir project	Most projects can wait 10+ years unless major demand increase
\$6M	\$28M	\$67M	\$94M

ROAD MAPS – INFRASTRUCTURE IMPROVEMENT - WATER



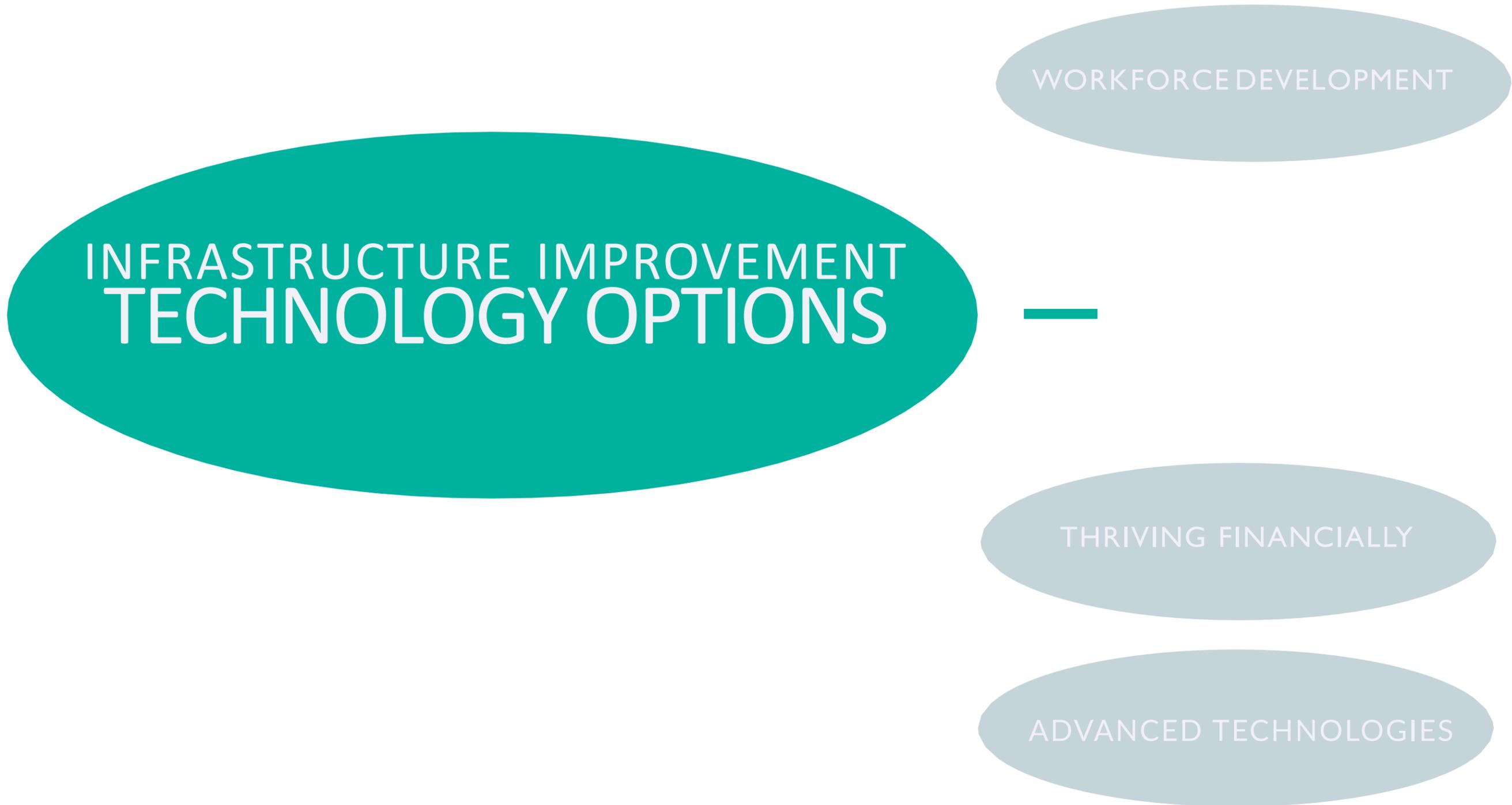
What about the North Waterman Treatment Plant?

- Higher levels of Perchlorate in North Waterman Wells
 - Levels expected to increase
- Possible changes to regulations
 - MCL could be reduced from 6 parts per billion (ppb) to 2 or 1 ppb
- Impacts to blending capacity
 - Without additional treatment, lose up to 20% of our supply

Treatment Plant Options

Option 1	Option 2	Option 3	Option 4
J.W. North Treatment Plant Maintenance	North Waterman Treatment Plant		Riverside Canal Treatment Plant
Replace membranes on a regular basis	Address risk of rising Perchlorate levels and lower MCL		Improve water quality sent to the Gage Canal
\$2.5M	\$16M		\$22M

ROAD MAPS – INFRASTRUCTURE IMPROVEMENT - WATER



Water and Technology

CUSTOMER FOCUSED

Directly influence customer experience and provide customer interaction

- Customer Information System (CIS)
- Customer Relationship Management (CRM)
- Customer Web Portal (CWP)
- Interactive Voice Recognition (IVR)

INFORMATION BASED

Decision and analysis, data management and process implementation based primarily on large databases

- Meter Data Management (MDM)
- Geographic Information Systems (GIS)
- Operational Data Management System (ODMS)
- Work Management System (WMS)
- Asset Management System (AMS)
- Warehouse Inventory System (WIS)

REAL-TIME OPERATIONAL

Used in real-time operations and control of water and energy delivery systems

- Advanced Metering (AMI)
- Automated Vehicle Loading (AVL)
- Network Communications System (NCS)
- Land Mobile Radio (LMR)
- Distribution Automation (DA)
- Substation Automation (SA)
- Outage Management System (OMS)
- Distribution Management System (DMS)
- Supervisory Control and Data Acquisition System (SCADA)

Technology Options

Option 1	Option 2	Option 3	Option 4
Baseline OT projects, ODMS, Asset Management	Increased SCADA functionality and continue system automation	AMI System	
Mostly "In-Flight" projects	Increased water system efficiencies	Operational Efficiency, Improve customer outreach, Increased Conservation	
\$36M	\$41M	\$55M	

ROAD MAPS – INFRASTRUCTURE IMPROVEMENT - WATER

INFRASTRUCTURE IMPROVEMENT
INVESTMENT OPTIONS

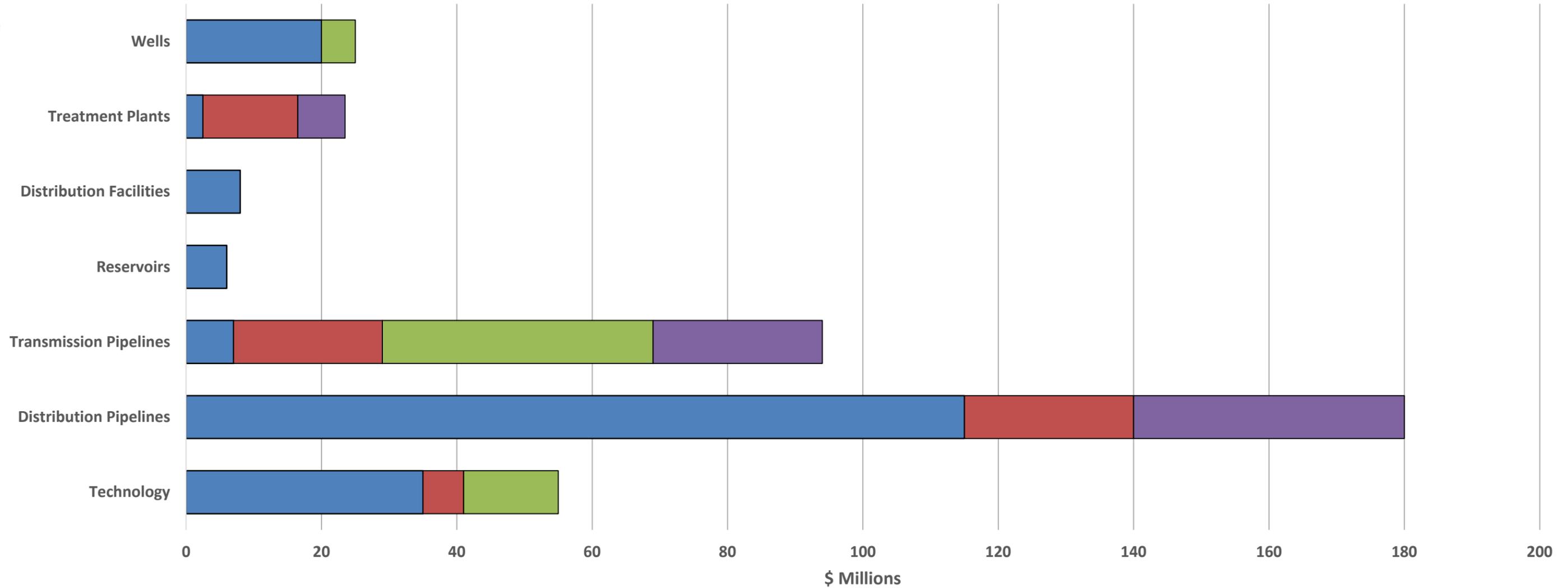
WORKFORCE DEVELOPMENT

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Options



- Option 1 = \$170-\$216 Million
- Option 2 = \$226-\$293 Million
- Option 3 = \$279-\$357 Million
- Option 4 = \$342-\$437 Million

Stay the same with replacements, DM Replacement 130-Yr Cycle

Address major TM Risks, DM Replacement 100-Yr Cycle, North Waterman Treatment

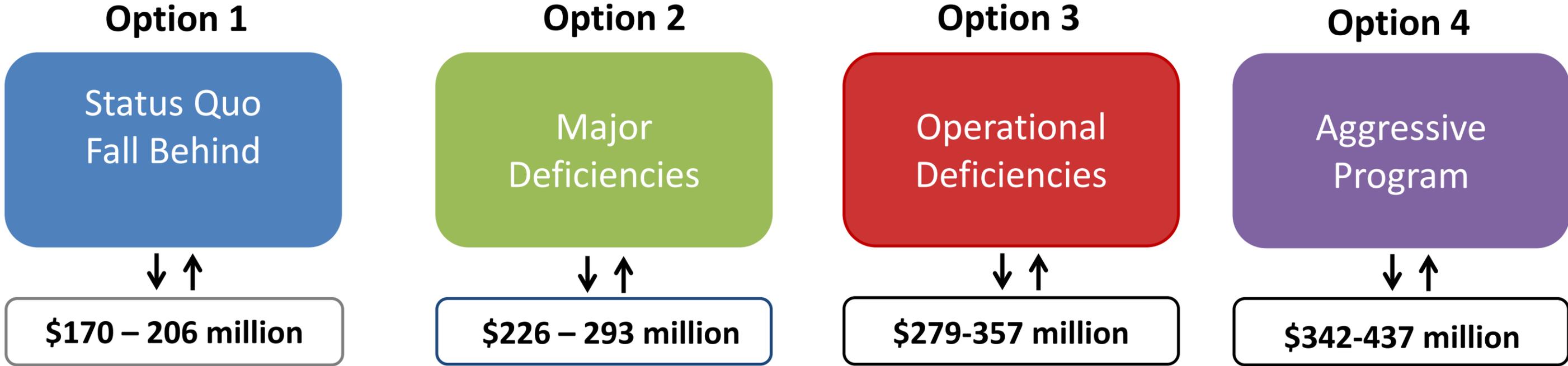
Improve TM Operations, Install AMI

DM Replacement 75-Yr Cycle, Additional TM, Riverside Canal Treatment



Summary of Investment Options

Additional financial investment is required to address current backlog and improve maintenance.



Next Steps

- Incorporate Comments
- Formulate Detailed recommendations
- Review
- Report Back

ROAD MAPS –

FEEDBACK

WORKFORCE DEVELOPMENT

INFRASTRUCTURE IMPROVEMENT

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