

Challenges with Pipe Breaks and Maintaining Aged Infrastructure

March 1, 2016

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Utilities Division

Distribution & Collections – Water

The City's Distribution section operates, repairs, and maintains systems that include:

- 782 Miles of Water Mains
- 18,308 Water Valves
- 6,103 Fire Hydrants
- Over 62,629 Water Meters
- 37 Raw Water Wells
- 2 Elevated Water Tanks



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Utilities Division

Distribution & Collections - Wastewater

The City's Collections section operates, repairs, and maintains systems that include:

- 479 Miles of Sanitary Gravity Sewer Lines
- 113 Miles of Force Mains
- 186 Wastewater Pump Stations
- 10,257 Sanitary Manholes
- 754 Wastewater Valves



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20-Inch Water Main Break- Sunrise Blvd December 2015



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20-Inch Sewer Main Break- 540 NW 4th Avenue – February 2016



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20-Inch Sewer Main Break- 540 NW 4th Avenue – February 2016, continued



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16-Inch Sewer Main (A-7) -Himmarshee December 2015



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Pipe Failure Samples



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Pipe Failure Samples



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Pipe Failure Samples



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Reasons for Pipes Failures

Pipe Failure

- External loading (traffic, etc.)
- Hydrostatic pressure
- Deterioration of material (metal, concrete, etc.)
- Material defect / joint failure
- Construction - pipe bedding / installation

Pipe Failure- Underground Environment

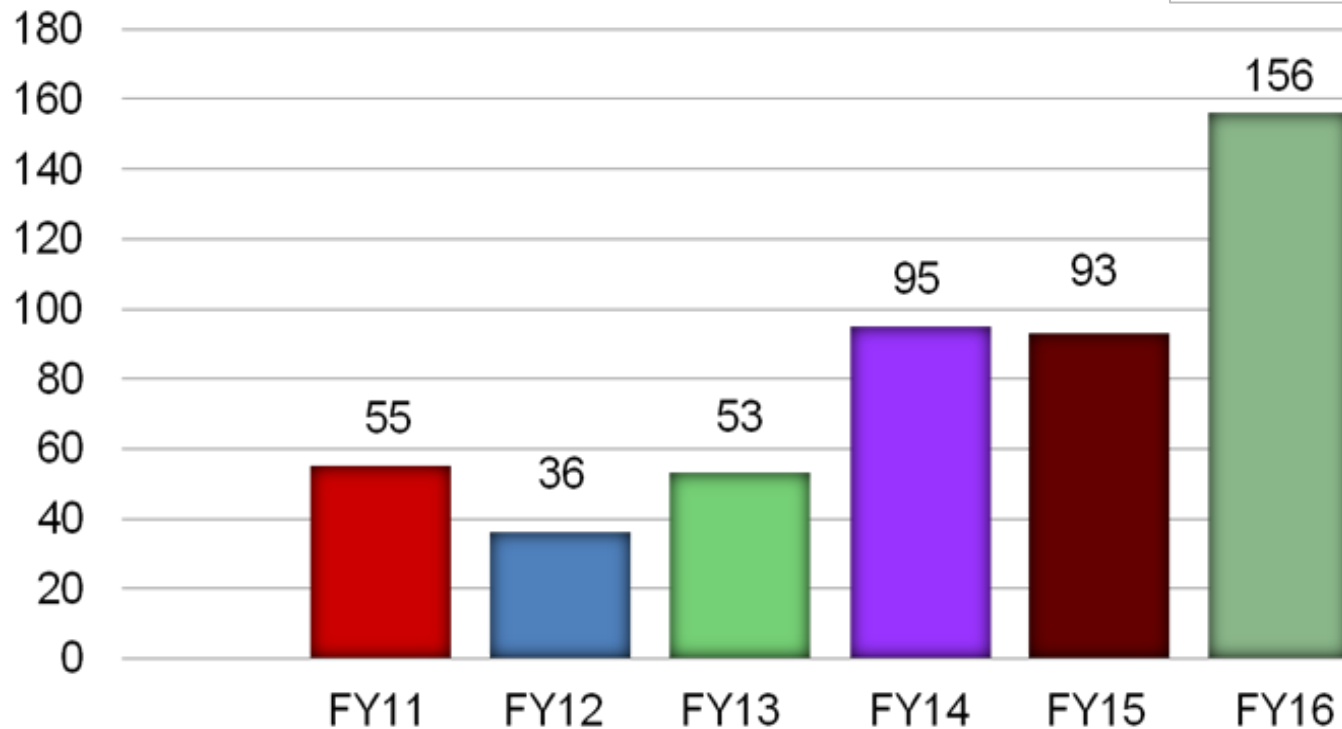
- Older pipes- beyond service life
- Pipes in salty groundwater
- Aggressive corrosion (concrete and metals)
- Overloaded distribution system (pressure)



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Water Pipe Breaks- Data

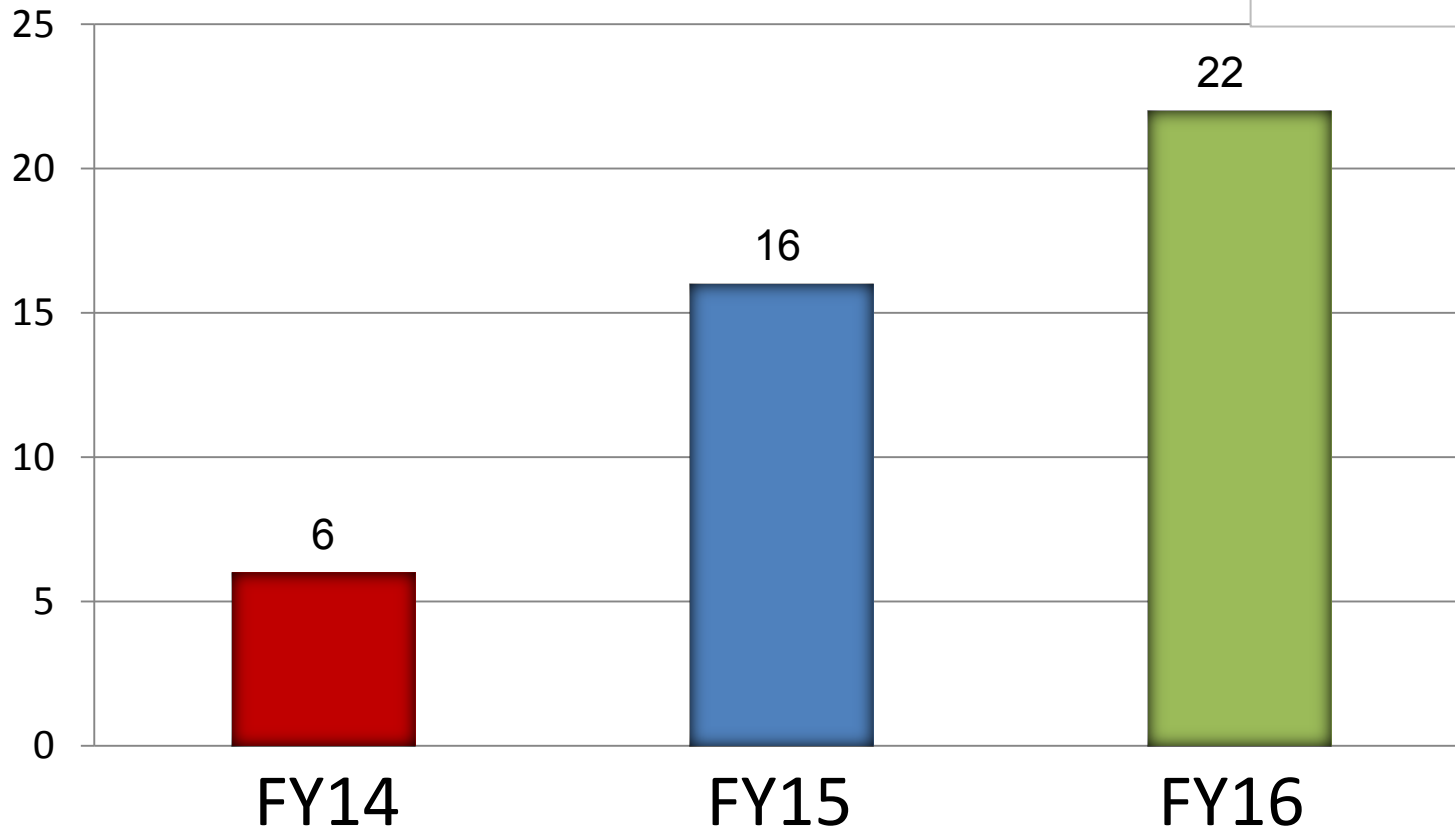
**FY2016 is estimated
based on 52 breaks
in 1st 5 months**



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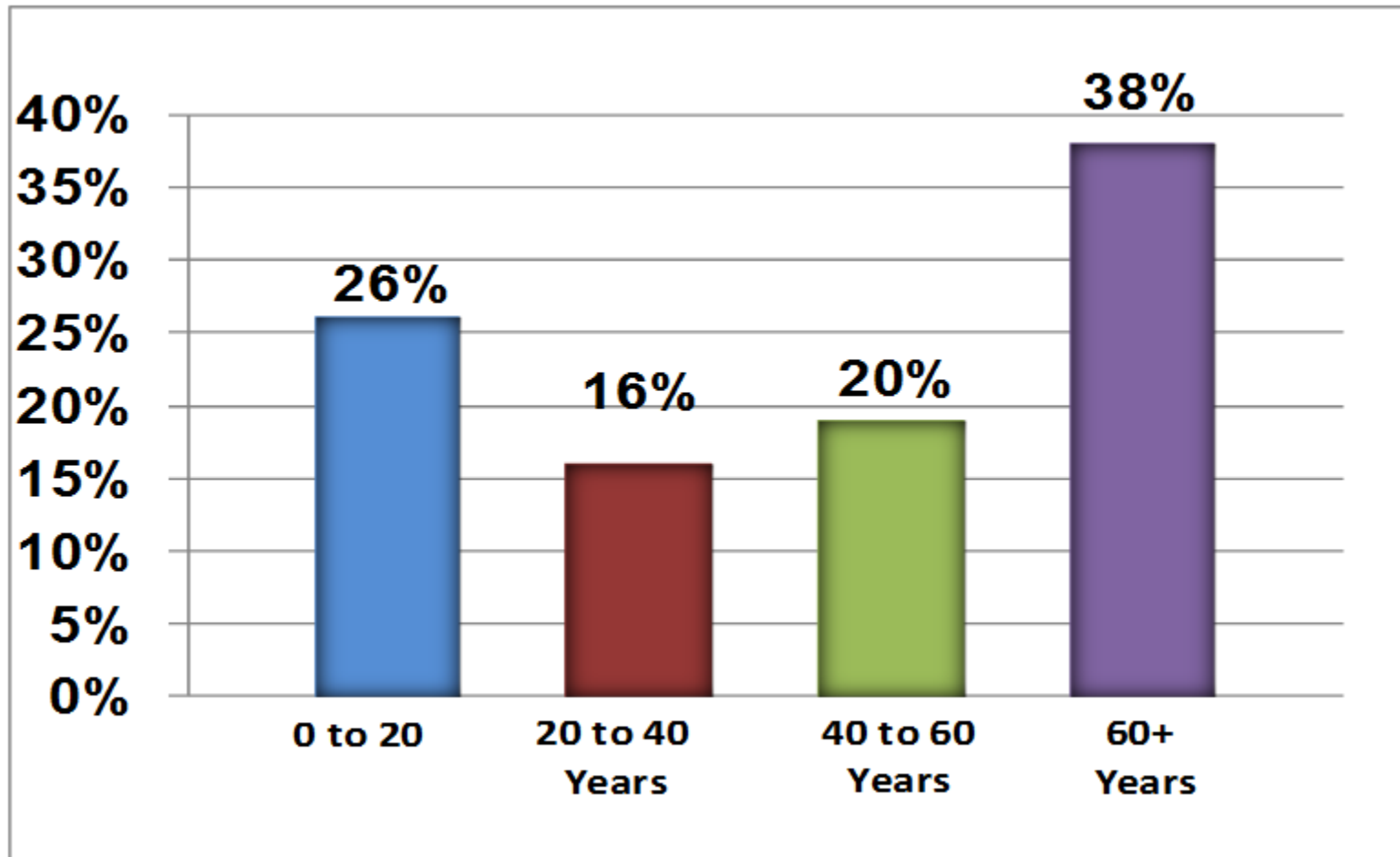
Sewer Pipe Breaks- Data

FY2016 is estimated
based on 9 breaks in
1st 5 months



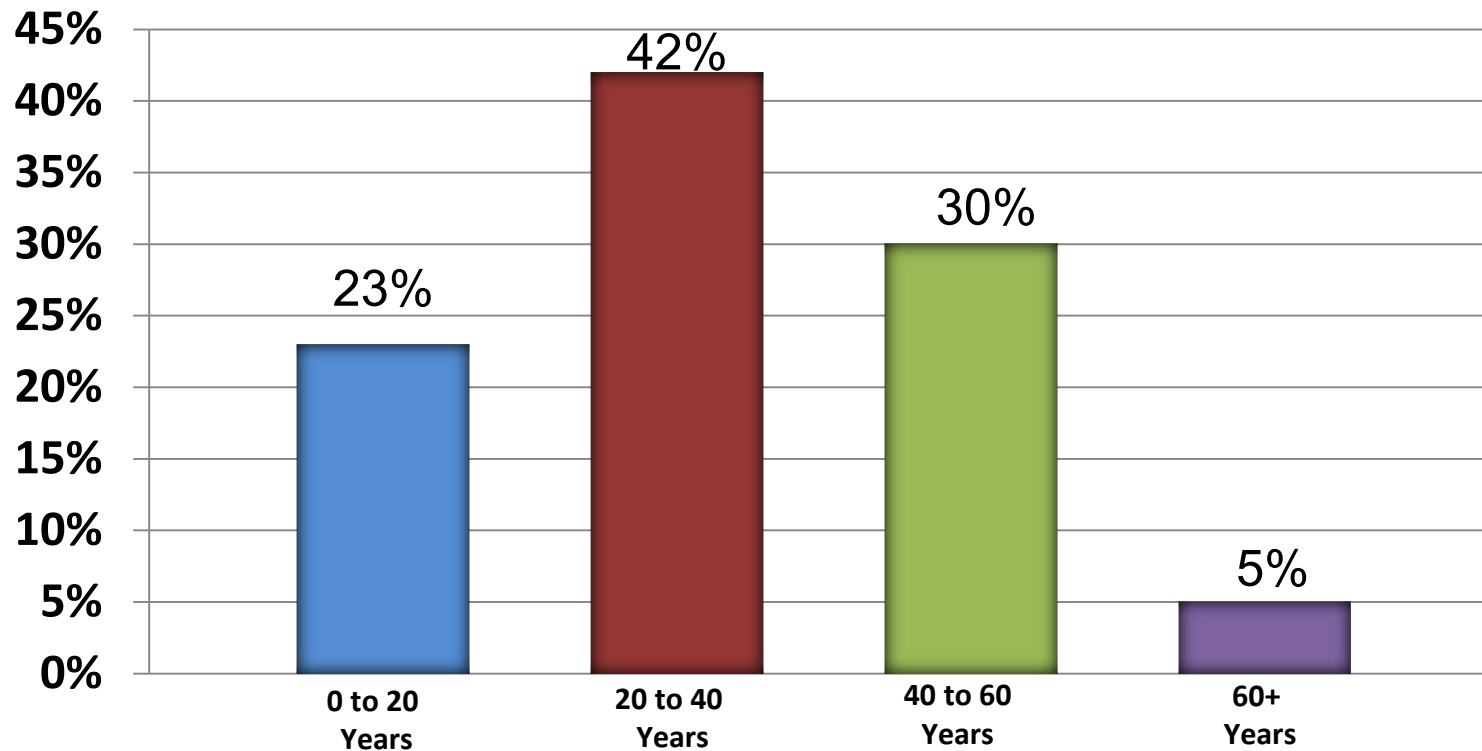
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Age of Water Mains



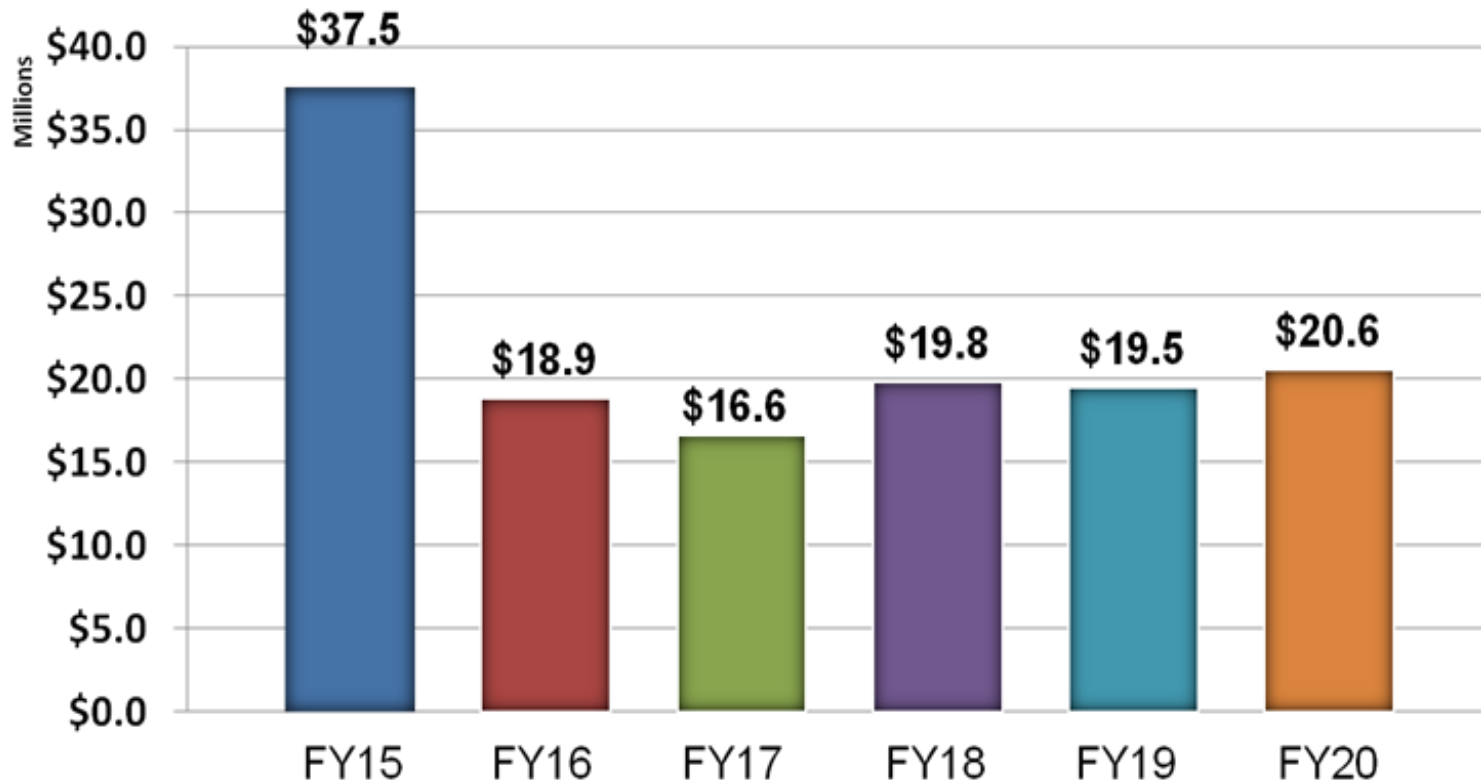
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Age of Sewer Force Mains



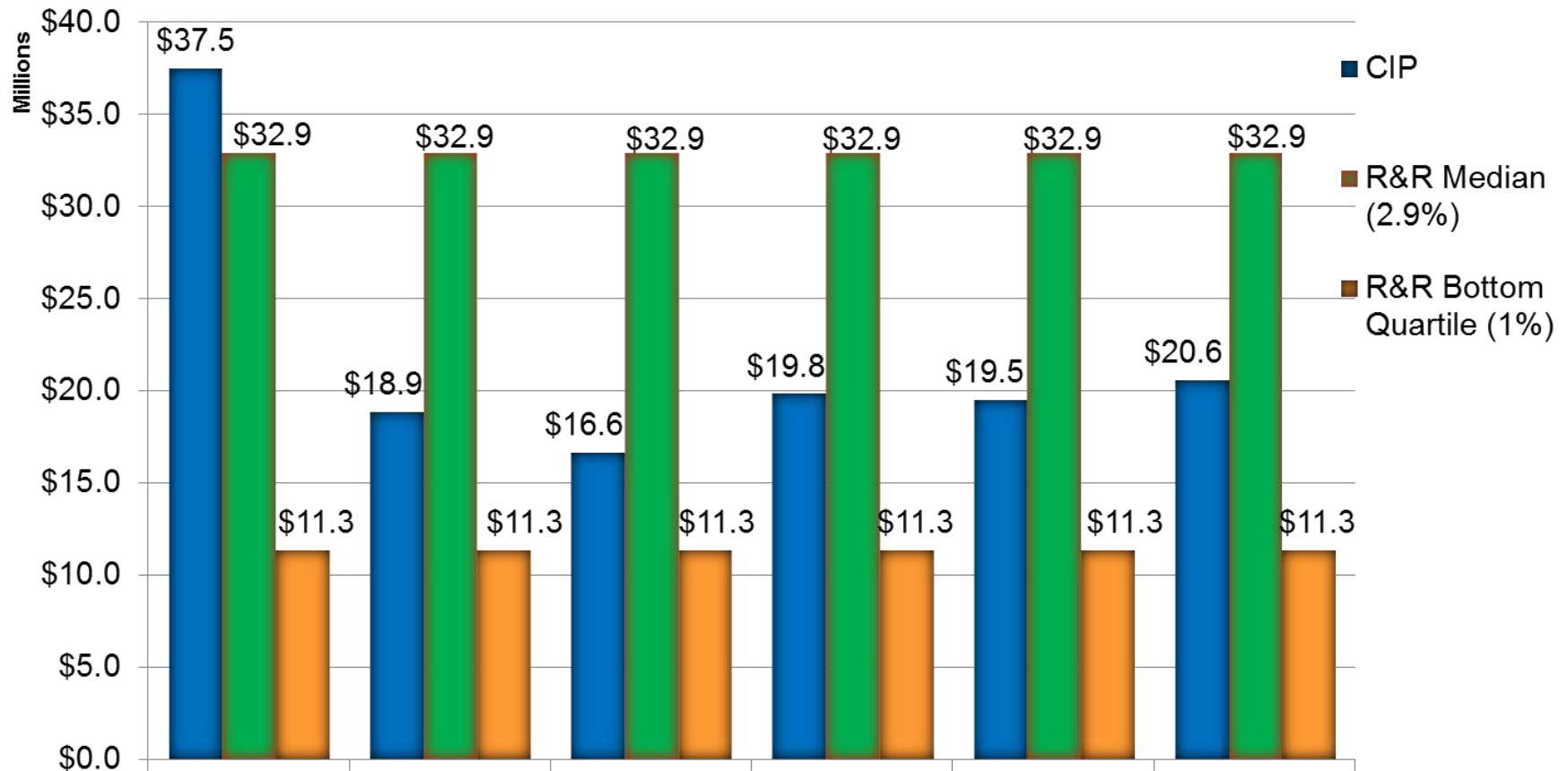
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Community Investment Plan (CIP) FY2015-FY2010 (Water and Sewer)



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CIP vs. Renewal & Replacement (R&R)



- R&R - From American Water Works Association (AWWA) Benchmarking Performance Indicators for Water and Wastewater: 2013 Survey. CFTL total asset value of 1.130 Trillion Dollars



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Distribution and Collection – Infrastructure Challenges

- Aged Infrastructure
- Inflow / Infiltration
- Asset Management System
- Climate Change and Infrastructure Resiliency
- Personnel training and equipment
- System Integrity and Risks
- Funding for annual repairs, replacement and accommodating development



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Actions – Short Term

1. Evaluate Pipe Integrity Technologies

- Consultant study via a Task Order

2. Pipe Sampling (coupons) and Testing

- Obtain pipe samples from various locations
- Testing of samples via independent laboratories

3. Rapid Response Trailer

- Procure and equip a rapid response trailer
- Reduce response time
- Reduce service interruption duration
- Obtain the right equipment for the job



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Infrastructure Integrity Program – Long Term

1. Conduct Pipe Integrity Assessment Program:

- Water Distribution Pipes (mains)
- Wastewater Collection Pipes (mains)
- Valve locations and conditions
- Valve Replacement / Valve Maintenance Program
- Fire Hydrant Testing and Maintenance Program
- Assess GIS database for pipe networks

2. Challenges:

- Logistics of assessment (service interruptions)
- Funding for program outcome



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Questions



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