

ZBR Recommendation Theme: Trenchless Technology																			
ZBR Recommendations	Water Services Analysis																		
<p>Status</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p>	<ul style="list-style-type: none"> Trenchless excavation technology is a diverse industry with multiple applications already used successfully on large scale capital projects in the Water Utility. Gaining access to a customer's wastewater connection is time consuming and inconvenient to the customer. As the wastewater system ages, and maintenance demands increase, leveraging no-dig technology to control repair costs and reduce customer interruptions is an effective solution. Use of cure-in-place pipe lining is a method that can reduce repair costs, and minimize disruption to traffic, businesses and maximizes use of existing budgets. 																		
Progress and Research																			
<p>Key Initiatives</p> <p>Establishing a no-dig maintenance program to complete the long-term renewal of customer connections to the wastewater network, using no-dig cure-in-place technology.</p> <p>Targeting high-maintenance wastewater pipe to increase service reliability and reduce in-home maintenance visits.</p> <p>Researching the implications of offering customers the option to line the wastewater connection on their property.</p>	<p>Cumulative Financial Benefits of a Wastewater Connection Lining Program</p> <table border="1"> <caption>Data for Cumulative Financial Benefits of a Wastewater Connection Lining Program</caption> <thead> <tr> <th>Year</th> <th>Cumulative capital investment (Millions of dollars)</th> <th>Cumulative financial benefit (Millions of dollars)</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td>~2.0</td> <td>~1.5</td> </tr> <tr> <td>2017</td> <td>~4.0</td> <td>~3.5</td> </tr> <tr> <td>2018</td> <td>~6.0</td> <td>~5.5</td> </tr> <tr> <td>2019</td> <td>~8.0</td> <td>~7.5</td> </tr> <tr> <td>2020</td> <td>~10.0</td> <td>~9.5</td> </tr> </tbody> </table>	Year	Cumulative capital investment (Millions of dollars)	Cumulative financial benefit (Millions of dollars)	2016	~2.0	~1.5	2017	~4.0	~3.5	2018	~6.0	~5.5	2019	~8.0	~7.5	2020	~10.0	~9.5
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<p>ZBR Estimated Efficiency Range</p> <p>\$900,000 - \$1.8M /year</p>	<p>Story Behind the Lining Program</p> <ul style="list-style-type: none"> By using trenchless technology approaches to wastewater repairs, to lower repair costs, Water Services can increase the number of customers assisted by two thirds, maximizing the existing budget. To test the new trenchless approach, Water Services will invest \$2.0M /yr of existing capital funds until 2018 in a pilot a program that leverages trenchless technology to rehabilitate wastewater connections. As future repairs are avoided over time, the original investment will result in a net cumulative financial benefit of approximately \$2.4M by 2020. Financial benefits will grow as the program expands. 																		
<p>Water Services Efficiency Improvement</p> <p>Estimated 2016 \$800,000</p> <p>Estimated 2020 \$2.4M</p>	<p>Direction Forward</p> <ul style="list-style-type: none"> Establish and grow programs that leverage trenchless cure-in-place approaches to maximize budgets, assist more customers, and reduce long-term maintenance. Expand the introduction of trenchless repair approaches across the Water Utility to maximize the financial and customer benefits in the drainage and water lines of services. Leverage work to strengthen the customer experience to explore options for cost-sharing with customers in the wastewater connection lining program. 																		
<p>Customer Outcomes</p> <ul style="list-style-type: none"> Maximize the number of customers that can be helped within existing budget allocations. Provide a long-term cost effective solution that increases reliability. Reduce repeated maintenance visits to customers' homes. 																			
<p>Strategic Alignment</p> <p>Water Action W2.3</p> <p>Leverage tools and technology to support operations and realize efficiencies.</p> <p>Water Action W6.2</p> <p>Maintain levels of service through reliable and resilient infrastructure.</p>																			

ZBR Recommendation Theme: Resource Optimization

ZBR Recommendations

1. Optimizing construction crew size to suit the type of repair underway.
2. Reduce repair costs by reducing the excavation size and avoiding rehabilitation costs.
3. Develop in-field decision tools to standardize the prioritization of wastewater service issues.
4. Update the Service Level Agreement with Roads to reflect current customer levels of service.
5. Collaborate with Roads on levels of service that reduce wastewater repair costs.
6. Explore on-site soil storage options to reduce wastewater repair costs.
7. Centralize customer appointment and route planning for trouble crews.
8. Modernize video inspection equipment, data storage, and analysis capacity.

Progress and Research

Status

- Ongoing
- Ongoing
- Complete
- Ongoing
- Ongoing
- Ongoing
- Research
- Ongoing

Water Services Analysis

- This theme contains the most diverse collection of recommendations that drive the need to address growing maintenance and customer service demands as efficiently as possible with existing resources.
- An expanding wastewater network and aging infrastructure are straining available budget allocations.
- Strengthening service relationships with other business units will result in financial efficiencies and customer experience gains.

Business Change Drivers

Key Initiatives

- Utilizing no-dig repair technology to undertake wastewater spot repairs to reduce costs.
- Optimized manpower and equipment requirements for crews working on wastewater system repairs.
- Revised repair procedures that reduced soil handling to reduce repair costs.
- Streamlined in-field guidelines for consistent prioritization of wastewater repairs.
- Collaborating with 311/Citizen Services to test upgrades for potential expanded customer scheduling capability.

ZBR Estimated Efficiency Range

\$575,000 - \$1.4M/Year

Water Services Efficiency Improvements

Realized 2015 **\$595,000**
Full Implementation **\$1.9M/ Year**

Customer Outcomes

- Consistent and predictable customer experience.
- Resolution of customer inquiries/questions on first call.
- Better online tools and information for customers.
- Reduced customer disruption.

Wastewater Repair Costs



Story Behind Repair Costs

- Demand on resources for wastewater repairs was exceeding available budget.
- Introducing consistent prioritization guidelines controlled demand.
- Adjusting resource and equipment allocation has reduced repair costs.
- Introduction of trenchless repair tools reduced costs.
- 2015 wastewater repair costs are below budget without impacting customer service.

Direction Forward

- Integrate customer appointment and route planning capability with mobile technology.
- Complete the introduction of inspection and repair robotics and connectivity to centralized data analytics.
- Grow the One City, One Voice approach with strengthened communication and collaboration between Water and Roads for coordinated rehabilitation of roadways.

Strategic Alignment

Water Action W5.2

Provide responsive and quality service while balancing capacity and value for money.

Water Action W8.2

Collaborate across departments for alignment of service delivery to citizens.

ZBR Recommendation Theme: Customer Experience

ZBR Recommendations

1. Link customer information and address history for employees to have full customer picture to support informed customer decisions.	Planning
2. Improve access to customer data held outside of Water Services.	Initiated
3. Centralize customer appointments for planned work.	Planning
4. Reduce customer inquiries and promote self-service tools for customers.	Initiated
5. Consider user fees for responding to sanitary issues on private side of sanitary service or discontinue service.	Planning
6. Strengthen customer communication practices before and after a service interruption.	Initiated
7. Re-assess the service cost of providing water/wastewater connection re-use appraisals for third-party developers.	Complete
8. Negotiate services level agreements for customers to assist with Customer Experience.	Planning

Progress and Research

Key Initiatives
Centralizing customer information to improve decision making.
Strengthening water and wastewater trouble-response processes to improve 311 ability to support customer issues.
Developed water/wastewater service re-use guidelines for redevelopment.
Implementing proactive customer notifications for wastewater service repair or replacements and restored water service.
Determining service levels for work performed on private side.

ZBR Estimated Efficiency Range

\$280,000 - \$800,000 /year

Water Services Efficiency Improvement

Estimated 2018 \$390,000 /year

Full Implementation \$890,000 /year

Customer Outcomes

- Enhanced response times and reduced home visits.
- Resolution of inquiries on first call.
- Better online tools and information for customers.

Strategic Alignment:

Water Action W7.1

Support the implementation of a Customer Service Strategy in alignment with the Corporate Customer Service Framework.

Water Services Analysis

- Determining the level of service for work on the private side of water and wastewater connections must link to the levels of service work in the Water Resources Zero-Based Review. This will confirm customer expectations and create clarity and consistency in service delivery.
- The Water Utility is investing in technology improvements, such as increasing access to 311 information in the field; improving response times through process changes; and enhancing notification to customers for service disruptions.
- Technology improvements to enable access to information will require a significant investment in the business throughout the remainder of this business cycle and are fundamental to achieve efficiencies and improved customer experience in the long term.

Implementation Timeline and Direction Forward

Planned Initiative	2015	2016	2017	2018	2019 - 2022
Customer Data Initiative					
Appointment systems, self-serve tools, electronic notification					
Determine Service Levels – private side					

Story Behind the Key Initiative Timeline

- The Customer Data Initiative is critical to pursuing centralized appointments and self-service in the future and must align with corporate customer initiatives.
- A robust customer database will inform the establishment of online self-serve customer tools, and support targeted electronic notification and appointment systems.
- Analysis to determine service levels of private side work will commence in Q3 2016 and will link to Water Resources Service Review.

Water Action W7.2

Empower staff to continue to deliver excellent customer service as part of The City's culture.

ZBR Recommendation Theme: Risk Based Maintenance

ZBR Recommendations

1. Reduce dead-end water mains in the system to maximize field crews and pursue efforts to minimize further proliferation.
2. Optimize field crews by reducing inspection effort for non-critical water system valves.
3. Optimize air-valve inspection practices to focus on critical components.
4. Minimize pressure-reduction valve inspections to increase field crew efficiency.
5. Advance Risk Based Maintenance practices to balance risk and economical use of resources.
6. Implement life cycle planning to maximize maintenance resources.
7. Use condition monitoring of critical equipment to performance maintenance as needed.

Progress and Research

Key Initiatives

- Implementing Risk Based Maintenance practices to change when and how assets are maintained to avoid unplanned repairs.
- Guiding major maintenance decisions with asset-specific lifecycle plans.
- Monitoring condition and performance data to trigger maintenance activities.
- Reducing dead-end mains that can be addressed cost-effectively through a multi-year program.

ZBR Estimated Efficiency Range

\$500,000 - \$800,000 /year

Water Services Efficiency Improvement

Estimated 2016 \$600,000 /year
Full Implementation \$860,000 /year

Customer Outcomes

- Consistent and reliable service availability
- Efficient use of rate dollars

Strategic Alignment

Water Action W5.2

Provide responsive and quality service while balancing capacity and value for money.

Water Action W6.1

Ensure maximum value from the Infrastructure Investment Plan.

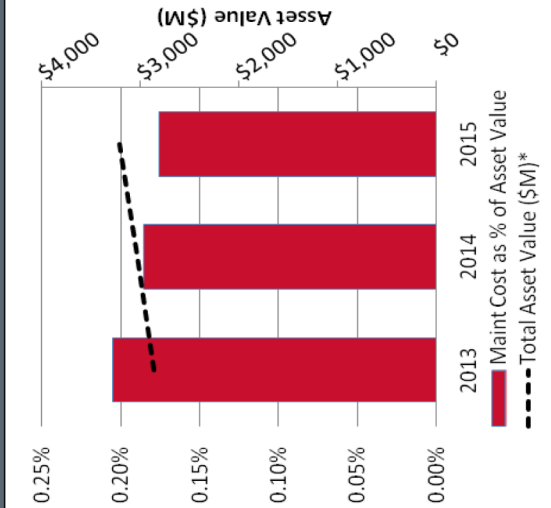
Status

Initiated
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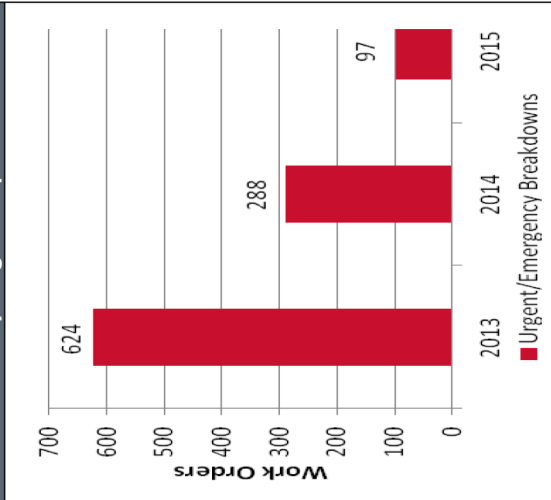
Water Services Analysis

- Risk Based Maintenance (RBM) is an asset management approach that includes a variety of strategies that focuses the right level of maintenance on the right assets at the right time to balance the level of service and operational risk.
- Water Services is transitioning to the risk-based approach for both corrective and preventative maintenance in which work is prioritized based on the level of risk.

Maintenance costs as % of Asset Value



Asset Reliability: Urgent Repairs



Story Behind Maintenance and Reliability

- Taking an RBM approach to equipment maintenance have reduced maintenance costs despite growth in asset numbers.
- Implementing a standardized and consistent prioritization approach enabled the focus of resources on critical assets without affecting reliability.

Direction Forward

- Expand remote-monitoring of critical system assets to increase crew efficiency.
- Advance Risk Based Maintenance practices across the Water Utility.
- Invest in real-time monitoring of critical equipment to maximize maintenance budgets.

ZBR Recommendation Theme: Performance Measurement

ZBR Recommendations:

1. Strengthen reporting of performance measures.
2. Review measures supplied for national benchmarking collectives.
3. Link performance measures to big picture and make performance data available for employees.
4. Develop a single, compound performance measure that quantifies utility performance.
5. Set internal targets that track business-specific performance.
6. Continually improve performance measurement systems.

Progress and Research

Key Initiatives

Building a strategic level utility performance report for quarterly review by senior management.

Maximizing value of benchmarking initiatives through further utilization of peer network, surveys and sharing of benchmarking results.

Increasing the visibility of business data to employees through operational hubs, displays, and infographics.

Advancing of customer focused performance measures through level of service initiative as part of Water Resources service review.

ZBR Effectiveness Benefits

Ensure accountability, so employees see how they contribute and drive continuous improvement.

Water Services Effectiveness Benefits

Consistent understanding, increased awareness on performance, improved decision-making, and improved customer experience.

Customer Outcomes

- Performance measures are used to assess how successfully the Water Utility is performing to ensure customers are getting the best value for the services provided.
- The addition of customer focused measure to performance measure reports supports business discussions on 'is anybody better off?'

Strategic Alignment:

Water Action W2.2

Measure, benchmark, and report performance to drive continuous improvement and support decision making.

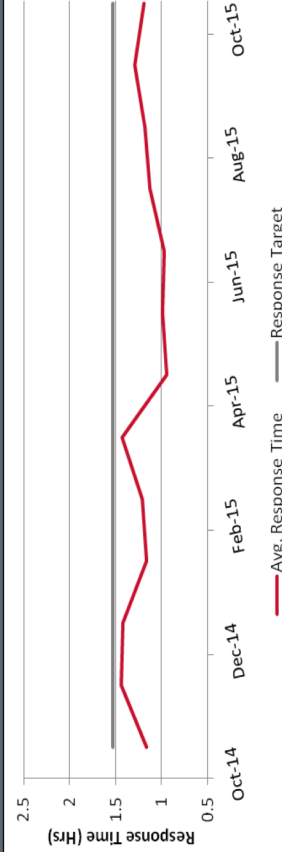
Status:

- Ongoing
- Complete
- Ongoing
- On Hold
- Ongoing
- Ongoing

Water Services Analysis:

- The Water Utility recognizes the importance in performance measurement in tracking and assessing the business' effectiveness in delivering customer value.
- The Water Utility relies on measures to drive improvement by creating visibility and accountability.
- As the Water Utility advances its use of performance measurement, there is significant opportunity to share best practices and introduce technology solutions to improve performance.

How Performance Measures Are Used: Watermain Break Response Times



Direction Forward:

- Alignment with Results-Based Accountability across the Water Utility.
- Build and activate web-based centralized data repository for utility-wide performance data.
- Advancing performance measurement through the Water Resources ZBR will enable the Water Utility to improve customer focused decision-making.

Story Behind the Response Times:

- Response times to water system emergencies outperformed set targets due to improved emergency triage, fewer severe weather events and better measurement definitions.
- Tracking this measure resulted in improved customer response capability and improved risk assessment for critical infrastructure.

Water Action W9.3

Foster a supportive culture where employees see how they contribute to achieving business goals.