



City of Atlanta, City Auditor's Office

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Performance Audit: Water Loss

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City Utilities Committee

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WHY THIS AUDIT?

- 2009 Assessment Found Water Loss Was High
 - Recommended Establishing Strategies to Monitor and Reduce Water Loss
- Residents Paid Second Highest Water Bills in 2015
- This Audit:
 - Reviews Results of State-Mandated Annual Audits
 - Evaluates the Department's Efforts Compared With Industry Benchmarks





AUDIT SCOPE AND METHODOLOGY

Scope

- Water Loss Audits from 2011-2015
- Two Most Recent Capital Improvement Plans
 - 2015-2019
 - 2017-2021
- City Processes as of December 2016

Methodology

- Interviewed Experts Associated with Water Loss Program
- Reviewed Industry Best Practices for Water Loss
- Reviewed Water Loss Audits and Consultant Memos
 - Followed Up on Implementation of Recommendations





BACKGROUND

- 2010: City Required to Submit Annual Water Loss Audit to State
 - Georgia Water Stewardship Act (GWSA)
- 2013: Department Hired Consultant to Complete Annual Audits and Evaluation
- 2014: Consultant Makes Recommendations to Improve Water Loss
- 2016: Consultant Updates Recommendations



TYPES OF WATER LOSS

REAL AND APPARENT



Source: Georgia Water System Audits and Water Loss Control Manual pg. 69



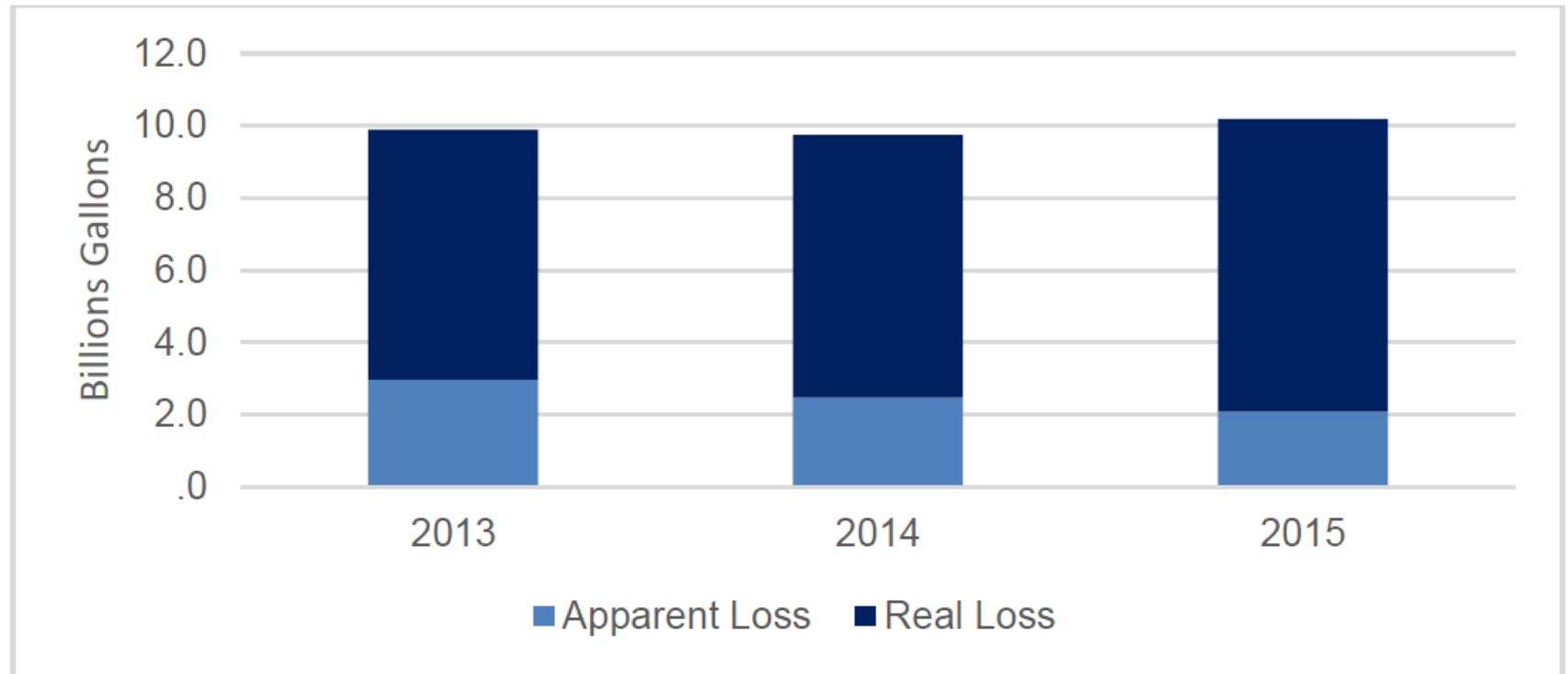


FINDINGS

- Aging Infrastructure and Lack of Active Leak Control Lead to Real Loss
- Department's Efforts Reduced Apparent Loss
- Department's Efforts Have Improved Data Validity
- Water Loss Control Program Elements Are In Place
- Adding Initiatives to Reduce Real Loss and Measurable Goals Would Strengthen Program



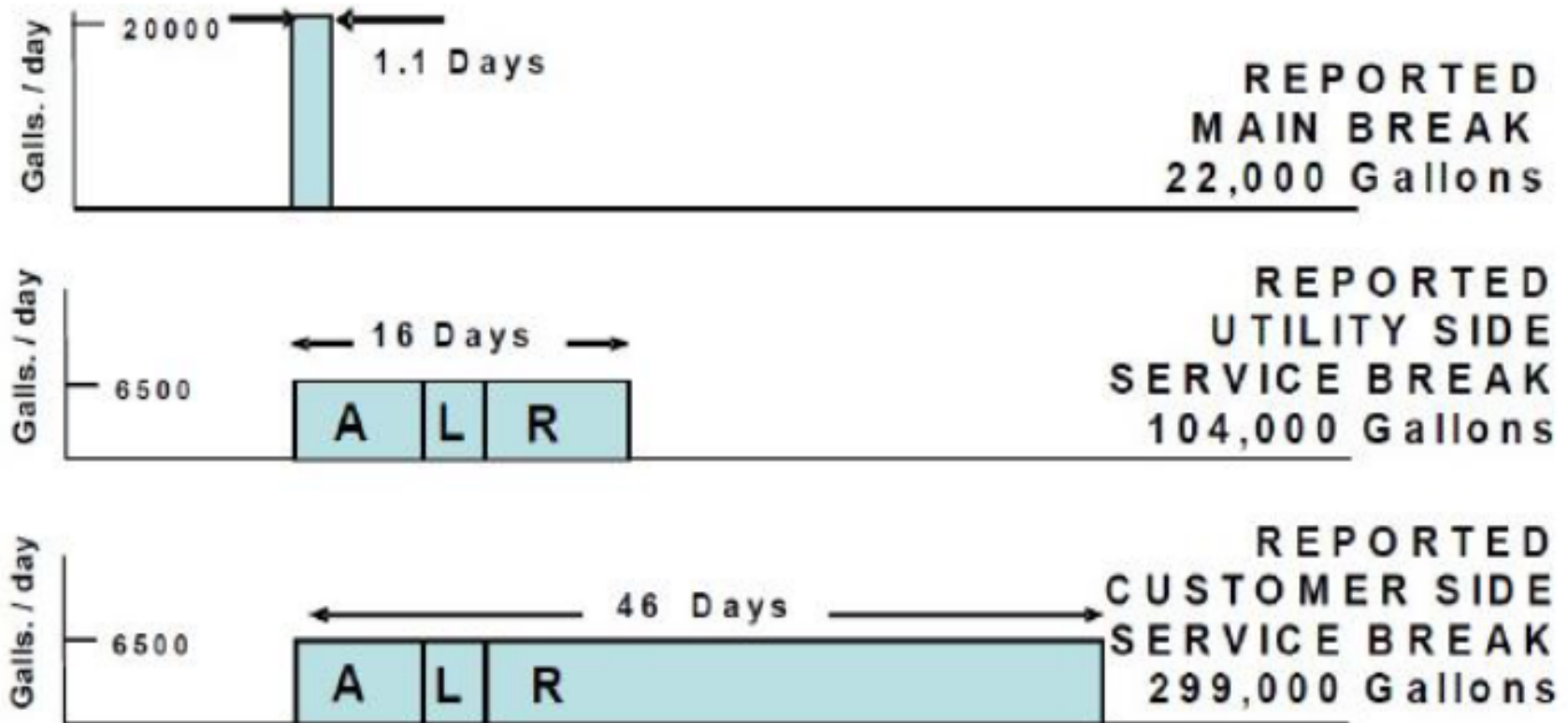
WATER LOSS AVERAGED 9.9 BILLION GALLONS PER YEAR



Source: City of Atlanta Water Loss Audits, 2013-2015



SMALL UNREPAIRED LEAKS LEAD TO SIGNIFICANT LOSSES



Source: Water Audits and Loss Control Programs: AWWA Manual M36, pg. 97





ACTIVE LEAK CONTROL PROGRAM COULD REDUCE REAL LOSSES

- Conducted Leak Surveys from 2010-2012
 - No Surveys Since 2012
- Department Did Not Implement Consultant's Recommendations to Reduce Real Loss
 - Assign Leak Detection Staff and Conduct Daily Surveys
 - Coordinate Valve Maintenance Program
 - Develop Clear Data Management Policies for Leak/Break Data
 - Estimate Volume of Water Loss





DEPARTMENT'S EFFORTS REDUCED APPARENT LOSS

- Apparent Loss Decreased By 30% from 2013-2015
- Implemented Seven of Eleven Consultant Recommendations to Reduce Apparent Losses
- Has Not Implemented Four of the Recommendations





PROGRESS TOWARD REDUCING UNAUTHORIZED CONSUMPTION BY 65%

- 52% of Total Apparent Loss Attributed to Unauthorized Consumption from Vacant Water Accounts
 - Valued at \$8.6 Million
 - 4,000 Vacant Accounts Registered Water Use
- Collections Division
 - Identified and Established Ownership
 - Recovered Outstanding Balances for 80-85% of Vacant Accounts





BILLED METERED WATER ACCOUNTED FOR 98% OF AUTHORIZED CONSUMPTION

- Consultant Recommended that Billing Division Audit Top 200 Customers
 - Audit Found Seven Accounts Registering Use Significantly Below Historical Levels
 - As of January 18, 2017, Three of the Seven Meters and Registers Had Been Repaired
- Consultant Recommended the Department Continue Large Meter Testing Program
 - Hired a Contractor in 2013 to Test Wholesale Meters and Large Meters Through End of 2015
 - Department Continued Program in 2016





ADDITIONAL EFFORTS TO REDUCE APPARENT LOSS

- Billing Adjustments Account for 54% of Apparent Loss
 - Department Chose Not to Revise Water Credits Policy and Enforcement
 - 13,234 Customers Received Billing Adjustments
 - 1.1 Billion Gallons of Water Loss from January 5 - December 31, 2015
- Department Reviews Wholesale Water Accounts Quarterly
 - 4% of Total Water Volume in 2013
- Meter Applications Division Had Difficulty Tracking and Verifying Water Use
 - Meter Rental Rates Were Favorable to Contractors
 - Drafted a Procedure in October 2016 for Renting, Collecting Payments, and Tracking Hydrant Meters





DEPARTMENT'S EFFORTS IMPROVED DATA VALIDITY

- Implemented Four of Six Consultant Recommendations
- Has Not Implemented Two of the Six Recommendations





WATER LOSS CONTROL PROGRAM ELEMENTS ARE IN PLACE

- Developing an Internal Plan
 - To Provide a Consolidated Description and Outline of Program
 - Establish Policies and Procedures
 - Identify Criteria Department Will Measure Progress
- City Missed State Mandated Deadline For Water Loss Control Program
 - Develop and Conduct Water Loss Control Program to Improve Water Supply Efficiency by July 1, 2016
 - Must Include Individualized Goals
 - Responsible for Demonstrating Progress Towards Improving Water Supply Efficiency





STRENGTHENING THE WATER LOSS PROGRAM

- Majority of Documented Program Mirrors Consultant's Technical Memos
 - Includes Recommendations Department Has NO Plans to Implement
- Lacks Division-Specific Information:
 - Leak and Data Management
 - Special Programs
- Program Lacks Goals Mandated by State Rule
 - Demonstrates Program Progress
 - Current Program Only Mentions Data Validity Score



OPERATIONAL PERFORMANCE INDICATORS

SHOW ROOM FOR IMPROVEMENT

Operational Performance Goals Rule 391-3-33	Min.	Max.	Median	2013 Actual	2014 Actual	2015 Actual
Infrastructure Leakage Index, ILI	2	10	3	4.19	4.38	4.84
Real Losses Normalized, gal/conn/day	20	100	40	94.33	98.49	108.89
Apparent Losses Normalized, gal/conn/day	2	15	5	40.51	33.59	28.06
Operational Performance Indicators GA WLA & Water Loss Control Manual	Min.	Max.	Median	2013 Actual	2014 Actual	2015 Actual
Variable Production Cost, \$/million gal	\$200.00	\$1,000.00	\$400.00	\$339.44	\$323.49	\$326.33
Customer Retail Cost, \$/1,000 gal	\$2.00	\$10.00	\$4.00	\$5.58	\$5.52	\$6.25





RECOMMENDATIONS

To Reduce Real Loss, the Department Of Watershed Should

1. Conduct Ongoing Leak Detection Surveys
2. Document Clear Data Management Policies to Track Municipal Leaks and Breaks
 - Estimate the Volume of Water Loss

To Reduce Apparent Loss, the Department of Watershed Should

3. Estimate Number of Staff Needed to Manage Expected Volume of Vacant Accounts Compared to Revenue Lost
4. Implement System to Alert Customers of Suspected Leaks
5. Finalize Draft Standard Operating Procedure for Tracking and Reporting Hydrant Meters
 - Enforce Provisions to Track Meters and Collect Billing Data





RECOMMENDATIONS

To Finalize and Implement the Water Loss Control Program in Compliance with Rule 391-3-33

6. Finalize Water Loss Control Program
7. Select Goals or Performance Indicators to Measure and Improve Water Supply Efficiency
8. Include Leak Management and Capital Improvements
9. Ensure Water Loss Team Meets at Least Twice a Year to Assess Water Loss Reduction





RECOMMENDATIONS

To Finalize and Implement the Water Loss Control Program in Compliance With Rule 391-3-33

10. Participate in Voluntary Distribution System Audits
11. Create Mechanism for Tracking Individual Goals and Volume of Water Saved from Apparent and Real Loss
 - Relate the Revenue Recovery Or Cost Reduction
12. Submit Annual Water Audits to American Water Works Association for Benchmarking and Comparison

