



## CITY OF ATLANTA

City Auditor's Office  
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### ***Why We Did This Audit***

Several of our past audit reports have touched on meter reading as an important part of water billing and collections. The department estimated two years ago that more than 8,000 water meters needed repair and many accounts were delinquent and disputed because bills were based on estimated water use. The billing process depends upon accurate, complete, and timely water meter reads.

The audit addressed the major challenges to successful automated meter reading implementation and how they are being addressed by the department.

### ***What We Recommended***

In order to address current operational issues for the AMR installation project, department officials should:

- Impose available contract remedies, such as a 10% withholding of payments, to ensure the contractor's compliance with the contract's installation goals.
- Determine and implement the most efficient and cost-effective approach to address outstanding "return-to-utility" and other work orders.
- Accelerate large meter repairs/replacement and AMR installation.

We also recommend the department:

- Develop a maintenance plan for small meters that includes periodic site surveys or similar ways to identify operational problems – such as leaks and broken lids – that cannot be detected with AMR technology.
- Develop comprehensive maintenance plans for large meters, and replacement plans for both large and small meters.

For more information regarding this report, please contact Stephanie Jackson at 404.330.6678 or [sjackson@atlantaga.gov](mailto:sjackson@atlantaga.gov).

## ***Performance Audit:***

### **Automated Meter Reading Program**

#### ***What We Found***

The city entered into a contract with K&V Automation, LLC on July 25, 2006 to replace or retrofit the city's existing water meter population and install a radio-based automated reading system. The \$35 million contract is for 36 months, ending in July 2009.

The Department of Watershed Management did not coordinate critical aspects of the automated meter reading project (AMR), underestimating the resources needed and potentially overestimating project benefits. Although the department is upgrading the city's water system infrastructure, the system will require immediate as well as ongoing maintenance, based on our observations of recently installed and retrofitted meters.

The level of damage to recently installed meters indicates that the department will face ongoing challenges maintaining the system and achieving the anticipated gains in billing accuracy. More than three-fourths of the 138 meters we observed (installed or retrofitted between January 1 and June 30, 2007) had at least one problem that will need to be addressed by either the department or the AMR contractor. These problems included register damage, unlocked lids, plastic or damaged meter boxes, lids that did not fit the meter box, and meter interface units (MIUs) that were not tied to the meter lids. We were unable to verify electronic reads for 13% of the sampled meters; 9% of those reads could not be verified due to broken or malfunctioning equipment. The department lacks the resources to handle the needed site repairs, some of which may impede the progress of current AMR installations and may result in higher project costs.

Implementation of the AMR system will decrease the department's knowledge of meter conditions in the field; the department should develop a proactive and cost-effective way to identify when replacement or other site repairs are needed for small meters. The department should also continue its efforts to develop meter maintenance and replacement plans.

At the end of September 2007, the AMR installations were 29% short of the installation schedule. Inventory shortages have also affected the schedule. The department has asked the contractor to provide a recovery plan to complete the project by the contract end date.

Prior to April 2007, the department paid the contractor based on a list of completed installations submitted weekly. In April 2007, department inspectors notified the department that they were unable to obtain reads on some recently installed and/or retrofitted meters. As a result, the department changed its payment process to ensure that the contractor is only paid for confirmed work.

## Management Responses to Audit Recommendations

### Summary of Watershed's Responses

<b>Recommendation:</b>	1. Department officials should work with program IT staff to assign a program code in the data collectors to identify manual meter reading entries in order to more easily identify meters that need repair by the city or contractor.	
<b>Response:</b>	Interfaces need to be written between Equinox and MAXIMO.	<b>Agree</b>
<b>Proposed Action:</b>	Development of Computerized Interfaces between Meter Reading/Inspection and Distribution Maintenance	
<b>Timeframe:</b>	Complete Interfaces no later than June 30, 2008	
<b>Recommendation:</b>	2. Department officials should impose available contract remedies, such as a 10% withholding of any current and subsequent invoices, to ensure the contractor's compliance with the contract's installation goals.	
<b>Response:</b>	Department has understood it has the option to impose penalties under the contract.	<b>Agree</b>
<b>Proposed Action:</b>	Continue to evaluate the efficacy of imposing remedies to accelerate achievement of project goals.	
<b>Timeframe:</b>	Past, current and on-going.	
<b>Recommendation:</b>	3. Department officials should determine and implement the most efficient and cost-effective method to address the outstanding "return-to-utility" and other work orders, so that this work does not further impede the contractor's installation progress.	
<b>Response:</b>	Preliminary analysis indicates the department has three options to address the issue.	<b>Agree</b>
<b>Proposed Action:</b>	Department will meet with internal stakeholders in January 2008 to select the best alternative to address outstanding "return to utility" work orders.	
<b>Timeframe:</b>	Implement selected alternative no later than March 31, 2008.	
<b>Recommendation:</b>	4. Department officials should determine and implement the most efficient and cost-effective approach to accelerate large meter repairs/replacement and AMR installation.	
<b>Response:</b>	Department agrees that accelerating large meter installations is extremely important.	<b>Agree</b>
<b>Proposed Action:</b>	Department has notified the contractor that large meter activity must be increased and has assigned some large meter work to other contractors.	
<b>Timeframe:</b>	Immediately	
<b>Recommendation:</b>	5. Department officials should develop a maintenance plan for small meters that includes periodic site surveys or similar ways to identify operational problems – such as leaks and broken lids – that cannot be detected with AMR technology.	
<b>Response:</b>	Department plans to follow best practices.	<b>Agree</b>
<b>Proposed Action:</b>	Complete the development of a "Small Meter Maintenance Plan".	
<b>Timeframe:</b>	The plan is ongoing and is scheduled to be completed by June 30, 2008.	
<b>Recommendation:</b>	6. Department officials should develop a comprehensive maintenance plan for large meters that incorporates industry best practices.	
<b>Response:</b>	The Department is in the process of developing its large meter maintenance program.	<b>Agree</b>
<b>Proposed Action:</b>	Complete the development of a "Large Meter Maintenance Plan".	
<b>Timeframe:</b>	The plan is ongoing and is scheduled to be completed by June 30, 2008.	
<b>Recommendation:</b>	7. Department officials should develop a comprehensive replacement plan for both small and large meters. The department should continue to evaluate and select the most appropriate alternative in order to ensure the department has a meter inventory that functions at optimal, revenue-producing levels.	
<b>Response:</b>	See responses for recommendations #5 and #6.	<b>Agree</b>
<b>Proposed Action:</b>	The comprehensive replacement plan will be included in the large and small meter maintenance programs.	
<b>Timeframe:</b>	June 30, 2008	
<b>Recommendation:</b>	8. Department officials should ensure the business case reflects the full scope of the planned project to identify risks and needed resources, and use it as a framework to manage the project.	
<b>Response:</b>	The business case was completed prior to embarking on the Project.	<b>Partially Agree</b>
<b>Proposed Action:</b>	N/A	
<b>Timeframe:</b>	N/A	