Performance Audit:
Work Order Management

January 2016

City Auditor's Office

City of Atlanta

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CITY OF ATLANTA
City Auditor's Office
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Performance Audit:

Work Order Management

Why We Did This Audit

We assessed potential barriers to the ability of the ATL311 system and departments to effectively address citizen-reported problems. The audit focuses on various stages of the service request and work order processes, including issue identification at intake and departmental feedback, integration of systems, controls to ensure accuracy in tracking and reporting, and departmental adoption of proposed process improvements.

What We Recommended

To standardize and control processes across business units, the chief operating officer should:

- Lead efforts for the Department of Watershed Management, Department of Public Works, and other departments that respond to service requests to design, document, and implement a standardized work order management process as previously recommended by the city's consultant, including developing resolution, activity, and department codes that facilitate reporting and tracking, and implementing controls to ensure that dates are valid and sequential
- Assist departments that respond to service requests in analyzing gaps between existing processes and the standardized process and to identify resources necessary to bridge the gaps
- Work with departments to develop and document consistent performance reporting
- Review departmental standard operating procedures

To improve the likelihood that departmental users accept new technologies and processes, the chief operating officer should:

- Establish a change management team including Atlanta Information Management (AIM) and representatives from departments to improve configuration and monitor process for change adoption
- Work with AIM and departmental stakeholders to identify a mobile application that meets user needs, obtain proper hardware, and train staff to use the mobile technology
- Work with AIM and departments to evaluate the viability of loading assets and asset locations into Siebel from Hansen

For more information regarding this report, please use the "Contact" link on our website at www.atlaudit.org

What We Found

City departments reported resolving most of their service requests within performance targets between October 2014 and March 2015, but more than 20% of service requests appear to have been closed without actual resolution. The Department of Public Works' internal assessment identified broken and inconsistent business processes, incorrect information from ATL311, and potential data manipulation as factors contributing to early closure of service requests. Our telephone survey confirmed residents' perceptions that service requests had been closed without resolution of the problem; early closure wasn't limited to public works.

Staff in public works and watershed management perceives that problems with ATL311 affect their ability to complete service requests promptly. The incompatible GIS records between the ATL311 and work order management systems affected over one-quarter of sampled requests. Duplicate service requests affected fewer records, but were a bigger problem in some business units than others. ATL311 customer service representatives entering incorrect problem types did not appear to be significant.

We found a lack of uniform processes across business units to standardize work order management despite consultants recommending doing so. Differences in how business units use the work order management system affect performance reporting, monitoring, and controls. Departments' dependence on manual processes and delayed data entry also weakens monitoring and tracking.

The majority of department service requests in our scope period were generated outside of ATL311, which could limit ATL311 leveraging cooperation in process standardization. Implementing recommendations to standardize and control processes across business units requires top-down direction. Strong change management can encourage departmental adoption of new technologies and processes.

Management Responses to Audit Recommendations

Summary of Management Responses		
Recommendation #1:	The chief operating officer should lead departmental efforts to design, document, and implement a standardized work order management process.	
Response & Proposed Action:	The COO will establish deadlines for operating departments to provide standardized process maps, timeframes and activity codes for each type of work order and service request, emphasizing high volume/high priority work.	**Agree**
Timeframe:	Q3 2016	
Recommendation #2:	The chief operating officer should assist operating departments in analyzing gaps between existing processes and standardized process and in identifying resources to bridge the gaps.	
Response & Proposed Action:	Departments responding to service requests shall conduct field-based analysis of high-volume work orders to identify such gaps, and the COO shall work with each department as necessary to address the gaps.	**Agree**
Timeframe:	Q4 2016	
Recommendation #3:	The chief operating officer should work with departments to develop and document consistent performance reporting across departments.	
Response & Proposed Action:	The FOR Atlanta team will update performance reports as needed to ensure uniform data across departments, based on results of recommendations 1 and 2.	**Agree**
Timeframe:	Q3-Q4 2016	
Recommendation #4:	The chief operating officer should review departmental standard operating procedures.	
Response & Proposed Action:	Departments shall provide the COO with briefings on all customer service SOPs.	**Agree**
Timeframe:	Q1 2016	
Recommendation #5:	The chief operating officer should establish a change management team to improve configuration and monitor process for change adoption.	
Response & Proposed Action:	The COO will establish a technology change management board including departments using work order management technology. The CIO will lead implementation of work order technology changes and change management.	**Partially Agree**
Timeframe:	Q1 2016	
Recommendation #6:	The chief operating officer should work with AIM and department stakeholders to identify a mobile application, obtain proper hardware, and train staff in its use.	
Response & Proposed Action:	AIM shall recommend appropriate mobile technology, and COO will identify required funding.	**Agree**
Timeframe:	Recommendation in Q1 2016, implementation complete in Q3 2016.	

Recommendation #7:	The chief operating officer should work with AIM and departmental stakeholders to evaluate viability of loading assets and asset locations into Siebel from Hansen.	
Response & Proposed Action:	The 311 Director has begun this evaluation with departmental stakeholders.	**Agree**
Timeframe:	Q1 2016	

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January 19, 2016

Honorable Mayor and Members of the City Council:

ATL311 is the most visible part of the city's customer service activities, but operating departments perform the work needed to satisfy callers' requests. ATL311 is only the starting point for customer service requests, which travel through two connected software applications and multiple contact points in the departments that perform the necessary work.

Citizen survey results have shown that callers to ATL311 are generally satisfied with their telephone contact but less favorable about the resolution of their problem. We opted to do this audit, in part, to better understand reasons for the discrepancy and ways to address it. Watershed management and public works handle nearly all work orders from 311 calls, so we focused on these departments.

Technological and process problems resulted in premature closure of unfulfilled service requests, inaccuracies in performance reporting, and difficulty in physically locating reported problems. Differences in implementation and use of systems and mobile technology blocked the adoption of consultant recommendations for creating an efficient process across departments. Our recommendations call for a cooperative and coordinated effort involving the operating departments and facilitated by the office of the Chief Operating Officer. The COO agreed with all seven recommendations, and estimates completion during 2016. The full response to our recommendations is in the appendix.

We appreciate the courtesy and cooperation of city staff throughout the audit. The team for this project included Brad Garvey, Nia Young, and Diana Coomes Lynn.

Leslie Ward
City Auditor

Marion Cameron, CPA
Vice Chair, Audit Committee

Work Order Management

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Introduction

We conducted this audit of work order management to assess potential barriers to the successful implementation of the city's ATL311 system. The city implemented the system to consolidate call centers and improve customer service. To support the implementation, the city undertook an effort to standardize work order management across operating departments. Managers in the Mayor's Office expressed concern about the extent to which employees have accepted new software and changes in processes.

Challenges in work order management could pose a barrier to achieving the goals of ATL311. According to recent citizen surveys, most residents who contacted the city were satisfied with the way they were treated during the interaction, but fewer were satisfied with the ultimate outcome.

Background

The city planned to spend roughly $10 million to implement ATL311, Atlanta's primary customer service contact for government information and non-emergency service, and to upgrade the work order management system used by operating departments. ATL311 has an annual operating budget of about $7.7 million in fiscal year 2016, which is financed through multiple city funds, including enterprise funds. The call center operates Monday through Friday from 7 am to 6 pm.

ATL311 became available for public use October 2014. Between October 2014 and March 2015, ATL311 handled an average of 1,600 calls per day with 27% generating service requests for department fulfillment. In its first six months of operation, the ATL311 website and email generated an additional 1,400 service requests per month.

The largest number of service requests for fulfillment was for the Department of Watershed Management, followed by the Customer Service Center and the Department of Public Works (see exhibit 1). The Customer Service Center reporting group is a specialized group of customer service representatives who mostly handle requests for new water service and billing issues.

Exhibit 1 Service Requests for Fulfillment Generated through ATL311

Department	Service Request – Fulfillment	Percent of Total
Department of Watershed Management	26,142	42.6%
Customer Service Center (new water service/billing)	16,603	27.0%
Department of Public Works	15,970	26.0%
Municipal Court	1,126	1.8%
Other Departments	1,571	2.6%
	61,412	**100.0%**

Source: Siebel monthly reports October 2014 through March 2015.

When a customer calls ATL311, the customer service representative obtains their contact information and the nature of their request, inputting the data into Customer Relationship Management (CRM) software. The representative uses keywords to query Siebel's knowledge database to identify the problem type. After verifying the problem type with the caller, the representative creates a service request in Siebel. If the service request requires an operating department to fulfill it, Siebel automatically generates a service request in Hansen 8. For requests related to water/sewer bills, the customer service representative enters information into the department's billing system.

Department staff queries Hansen to obtain the service requests for which they are responsible – indicated by the problem code. For example, a problem code of STPH indicates a pothole, SW918 is a request for a replacement bin for solid waste, and DWMCP is a water meter complaint.

Departments have developed service level agreements (SLAs) for how long it should take to resolve a request. These agreements are loaded in Siebel as service level response codes and in Hansen as priority codes. The customer service representative tells the caller how long it should take the city to resolve the problem according to the SLA response in Siebel. The caller can check on the status of the service request online. For example, the service level agreement to repair a pothole is 5 business days, to replace a solid waste bin is 7 business days, and to inspect a water meter is 8 hours. Departments send monthly reports to the Mayor's Office Innovation Delivery Team on percentage of service requests that met service level agreements. Selected performance metrics are reported on the city's website.

The city hired a consultant in 2012 to help standardize work order management across operating departments. Under the recommended process, the customer service representative enters the service request in the CRM system and provides the customer with a reference number. The service request then enters the operating department's queue. The department retrieves the service request from the queue and a supervisor reviews and assigns the request to an inspector who contacts the citizen for additional information, if necessary. If the service request requires city resources to complete, the inspector or supervisor creates one or more work orders and crews complete the work. Once the work is completed, work orders are closed in the system, initiating the closure of the service request in both the work order management and CRM systems. If the request does not require city resources to complete, the inspector fulfills the request and closes it in the system. Exhibit 2 illustrates the general process that the city's consultant recommended.
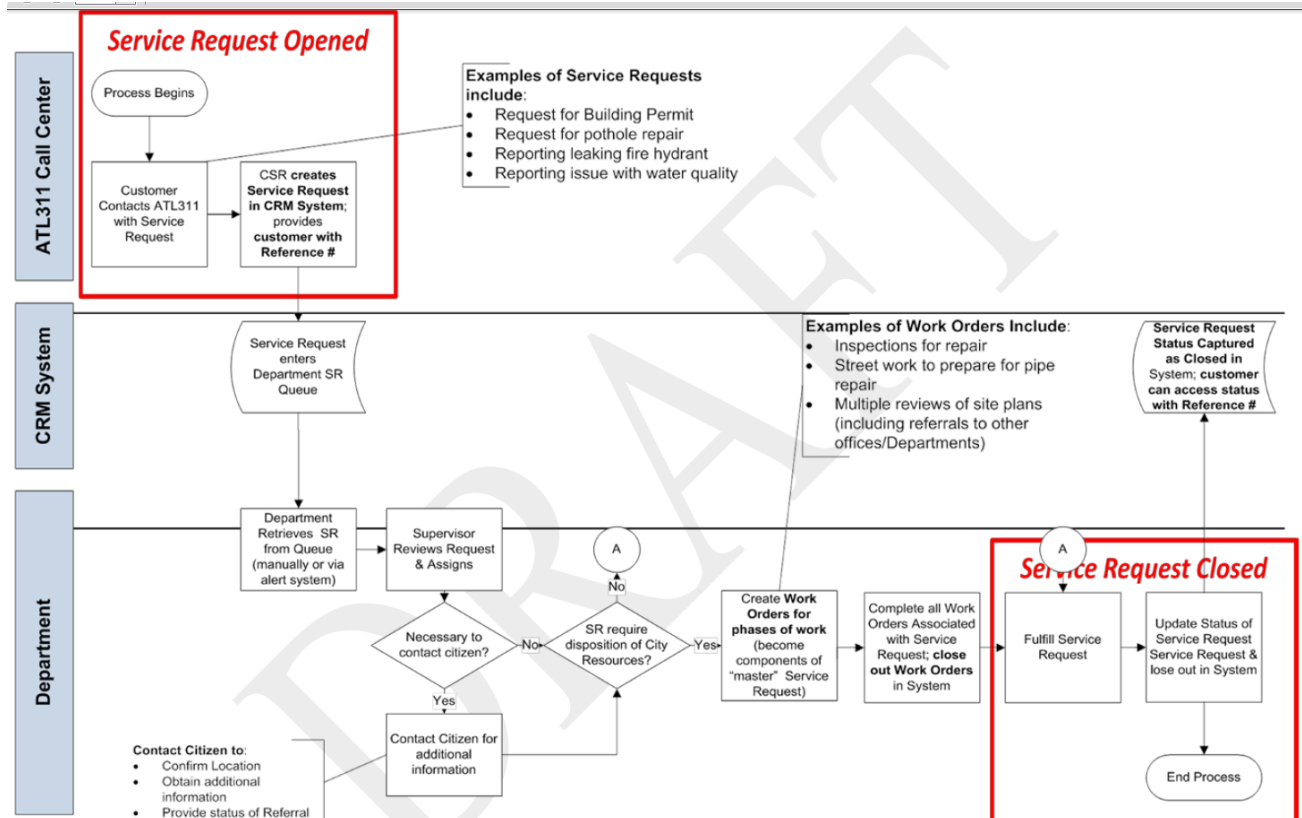
The city's consultant made three recommendations for primary process improvements considered necessary to streamline and standardize departmental processes for the most efficient use of the ATL311:

- In order to facilitate integration with the ATL311 process, departments must transition to the new service request and work order terminology required by the ATL311 system. This means following a standard definition for open and closed service requests and work orders within the ATL311 system.

- In addition, all City of Atlanta departments should be prepared to receive customer requests directly from ATL311 via the CRM system or the department's work order system, if it is integrated with the CRM system.

- Finally, service requests should be updated and closed within the CRM system to ensure accuracy and transparency in tracking and performance management for all departments. It is critical to close out all service requests immediately upon work completion, allowing customers to check the ATL311 call center or the website for real-time status updates. This constitutes a 'closed loop' process.

The consultants made numerous, unit-specific recommendations for secondary process improvements, which they considered either more independent of ATL311 or which would require significant customization of existing technology or the CRM system. The

secondary recommendations mostly focused on automating work order management through use of mobile technology and electronic transfer of information, using a geographic information system for more efficient dispatch and scheduling, and consolidating information on one technology platform to reduce redundancy, increase standardization and improve IT governance and control.

Exhibit 2 Recommended Service Request Fulfillment Process

Source: Turnkey Solutions, Final Report for the Department of Public Works Solid Waste Services ATL311 Envision Stage: Service Fulfillment Processes & Improvement Opportunities, October 2012, p. 4

Siebel and Hansen were interfaced in late January 2015. Prior to the interface, ATL311 customer service representatives entered service requests requiring department fulfillment into both systems, but did not follow a specific data entry convention to tie the records together. Since the interface, closing a service request in Hansen initiates the service request closing in Siebel.

Between October 1, 2014, and March 31, 2015, the city created 46,167 service requests and 83,857 work orders in Hansen. In implementing Hansen 8, the city decided not to use the Department field to identify the operating department responsible for the

service request. Generally, the first one to three characters indicate the organizational unit responsible for the work, e.g. ST=Street and Traffic; SW=Solid Waste; DW=Drinking Water. Some departments, such as the Office of Enterprise Asset Management and the Department of Parks and Recreation largely create their own service requests and work orders.

Since integration between Siebel and Hansen in January 2015, about 54% of service requests in Hansen related to public works and watershed management originated from ATL311 (see exhibit 3).

Exhibit 3 Origination of Hansen Service Requests Since Siebel Integration for Public Works and Watershed Management

	Request Originated			Percent
Problem Area	**311**	**Outside**	**Total**	**311**
Solid Waste	3,981	3,178	7,159	55.6%
Drinking Water	813	1,137	1,950	41.7%
Street and Traffic	852	320	1,172	72.7%
Water (leak, sink hole, catch basin)	510	436	946	53.9%
Traffic Control	278	623	901	30.9%
Street Maintenance	671	208	879	76.3%
Sewer	365	291	656	55.6%
Water (request)	3	229	232	1.3%
Street Lights	162	31	193	83.9%
Metal Plate (Water)	74	57	131	56.5%
FOG (Sewer)	0	122	122	0.0%
Manhole Lid (Water)	55	26	81	67.9%
Odor Problem (Sewer)	14	9	23	60.9%
Total	7,778	6,667	14,445	53.8%

Source: Records extracted from Hansen that were initiated January 24, 2015, through March 31, 2015.

Audit Objectives

We assessed potential barriers to the ability of the ATL311 system and departments to effectively address citizen-reported problems, focusing on various stages of the process, including issue identification at intake, integration of systems, controls to ensure accuracy in tracking and reporting, and departmental adoption of proposed process improvements. We did not review material management or labor cost modules.

This report addresses the following objectives:

- How well do existing work order processes support ATL311?

- What challenges in work order management pose barriers to the goals of ATL311?

Scope and Methodology

We conducted this audit in accordance with generally accepted government auditing standards. We analyzed data from Siebel and Hansen for records created between October 1, 2014, and March 31, 2015. We reviewed business processes in three units in the Department of Public Works and two units in the Department of Watershed Management as of June and July 2015, and interviewed a random sample of ATL311 callers in August 2015.

Our audit methods included:
- Visiting the ATL311 call center to interview and observe customer service representatives, watershed back office, and watershed dispatch to understand call intake and service request creation processes

- Analyzing the resolution statuses of service requests in Hansen, whether departments reported they completed work

- Interviewing 44 citizens who called the ATL311 call center within a two-week period to determine when and whether departments had resolved issues as well as whether ATL311 staff had communicated an expected time for resolution

- Interviewing staff at business units within public works and watershed to understand and document business processes to resolve ATL311 call center service requests

- Reviewing consultant process recommendations and comparing to processes within public works and watershed management

- Analyzing whether Hansen service requests and work orders from October 2014 through March 2015 met their target times and quality of information in records to aid in resolution

- Analyzing address information between GIS systems in Siebel and in corresponding Hansen records for 60 service requests that originated in the ATL311 call center from the time of system integration in January through March 2015

- Interviewing staff to determine challenges in using technology to aide in service request resolution

Generally accepted government auditing standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Findings and Analysis

Overcoming Challenges Requires Top-Down Approach

While city departments reported resolving most of their service requests within performance targets between October 2014 and March 2015, more than 20% of service requests appear to have been closed without actual resolution. The Department of Public Works' internal assessment identified broken and inconsistent business processes, incorrect information from ATL311, and the potential for data manipulation as factors contributing to early closure of service requests. Our telephone survey confirmed residents' perceptions that service requests had been closed without resolution of the problem and that early closure wasn't limited to public works.

Staff from the departments of public works and watershed management perceives that problems with ATL311 affect their ability to complete service requests promptly. We confirmed that incompatible GIS records between the ATL311 and work order management systems affect many requests. Duplicate service requests affected fewer records, but were a bigger problem in some business units than others. We found little evidence that ATL311 customer service representatives entering incorrect problem types was a significant problem.

Although the city's consultant recommended in 2012 that departments adopt standard definitions of service requests, work orders and when they are opened and closed, we found continued lack of uniform processes across business units. Differences in how business units use the work order management system affect performance reporting, monitoring, and controls. Departments' continued reliance on manual processes and after-the-fact data entry also weaken monitoring and tracking.

The majority of department service requests in our scope period were generated outside of ATL311, calling into question the extent to which ATL311 is able to leverage cooperation in standardizing processes. Implementing recommendations to standardize and control processes across business units requires top-down direction. Strong change management should improve the likelihood that departmental users accept new technologies and processes.

Non-Uniform Practices Limit Transparency and Contribute To Unresolved Complaints

Poorly defined processes have led to the city closing unresolved service requests. To its credit, the Department of Public Works identified the problem and reported it to the Mayor's Office, along with a proposal to strengthen its internal quality control processes. Our telephone survey of residents suggests that the problem is not limited to public works. Our review of resolution codes in Hansen found that 18% of service requests closed during our scope period had resolution codes indicating that work was not completed. "Resolving" a service request in the system closes it in both the work order management system and in the ATL311 system, and in many cases includes the request in the department's performance metrics. Overall, 71 % of resolved internal and external service requests opened during our scope met their target time. These measures may not accurately reflect the outcome from customers' viewpoints if the request was closed because it was transferred to another agency or cancelled because it duplicated another request.

Departments have closed service requests without resolving complaints from citizens. The Department of Public Works' director of performance reported to the Mayor's Office that the department had closed an estimated 10% to 15% of its service requests in the system without having completed work in the field. The department's internal assessment identified as problems lack of a uniform definition across business units for when to close a service request and lack of a uniform process for closing them. It also identified three contributing factors:

- **Duplicate service requests or wrong problem types** – Customer service representatives entered service requests with incorrect problem types, incomplete information, or without checking for duplication with existing service requests.
- **Broken processes** –Data entry staff assumed that some service requests had been resolved and closed them without documentation, such as a service request for a missed collection on the resident's scheduled collection day.
- **Data manipulation** – Crews could have missed targets and misreported data to avoid accountability.

To monitor the customer satisfaction problem, Department of Public Works reported that its project management team created a quality assurance team to assess service delivery. Installation Chiefs will

perform two audits in the field per day to review the service delivery of crews.

We contacted residents who had called the city for service to determine whether the city had resolved the problem. We randomly sampled service requests closed during a two-week period in August 2015 across all parts of the city. Four of the 44 (9%) residents we talked to said that the problem they had reported remained unresolved. These problems included a loose or slipped metal plate on the street, missed residential garbage collection, having no water, and a water leak. Three of the four service requests had a resolution code indicating that work had been completed (see exhibit 4).

Exhibit 4 Sample of Customer Assessment of Closed Service Requests

Quad	Problem	Resolution	Open Date	Close Date	Resolved?
NE	Loose or Slipped plate	Work Completed	8/6/15	8/6/15	No
SW	Missed Collection Residential Garbage	Work Completed	8/14/15	8/14/15	No
NW	No Water	Completed as Assigned	8/12/15	8/17/15	No
NW	Check for Leak/Break	No Problem Found	8/11/15	8/14/15	No
NE	Missed Residential Yard Trimmings	Work Completed	8/18/15	8/18/15	Yes
NE	Missed Collections Residential Garbage	Work Completed	8/18/15	8/18/15	Yes
NE	ROW Street Sweeping Out Of Quad	Work Completed	8/17/15	8/18/15	Yes
NE	Concrete/Sidewalk Small Repairs	Inspection Completed	8/13/15	8/13/15	Yes
NE	Bin Pick Up	Work Completed	8/11/15	8/13/15	Yes
NE	Concrete/Sidewalk Small Repairs	Referred To Water Bureau	8/11/15	8/12/15	Yes
NE	Missed Collections Residential Garbage	Work Completed	8/11/15	8/12/15	Yes
NE	Check For Leak/Break	Work Completed	5/12/15	8/10/15	Yes
NE	Missed Residential Yard Trimmings	Work Completed	8/6/15	8/6/15	Yes
NE	Missed Residential Yard Trimmings	Work Completed	8/18/15	8/18/15	Yes
SW	Missed Collections Residential Garbage	Property Owner Responsibility	8/17/15	8/17/15	Yes
SW	Missed Collections Backyard Garbage	Work Completed	8/17/15	8/17/15	Yes
SW	Replacement Bin	Work Completed	8/13/15	8/17/15	Yes
SW	Missed Recycling Backyard	Work Completed	8/17/15	8/17/15	Yes
SW	Dead Animal Removal	Work Completed	8/14/15	8/17/15	Yes
SW	Cave In/Sink Hole	Work Completed	8/10/15	8/14/15	Yes
SW	Dead Animal Removal	Work Completed	8/13/15	8/14/15	Yes
SW	Replacement Bin	Work Completed	8/12/15	8/14/15	Yes
SW	Replacement Bin	Work Completed	8/12/15	8/14/15	Yes

SW	Replacement Bin	Work Completed	8/10/15	8/13/15	Yes
SW	Missed Recycling Residential	Work Completed	8/13/15	8/13/15	Yes
SW	Missed Collections Residential Garbage	Work Completed	8/13/15	8/13/15	Yes
SW	Meter Complaint	No Problem Found	1/27/15	8/13/15	Yes
SW	Missed Residential Yard Trimmings	Work Completed	8/13/15	8/13/15	Yes
SW	Turn off burst pipe	Work Completed	8/10/15	8/13/15	Yes
NW	Replacement Bin	Work Completed	8/13/15	8/17/15	Yes
NW	Missed Collections Residential Garbage	Work Completed	8/17/15	8/17/15	Yes
NW	Missed Residential Yard Trimmings	Work Completed	8/14/15	8/14/15	Yes
NW	Replacement Bin	Work Completed	8/11/15	8/14/15	Yes
NW	Bin Pick Up	Work Completed	8/12/15	8/13/15	Yes
NW	Missed Collections Day of Service	Work Completed	8/13/15	8/13/15	Yes
NW	Missed Residential Yard Trimmings	Work Completed	8/12/15	8/12/15	Yes
NW	Missed Collections Residential Garbage	Work Completed	8/12/15	8/12/15	Yes
SE	Check For Leak/Break	No Problem Found	4/28/15	8/15/15	Yes
SE	Replacement Bin	Work Completed	8/10/15	8/11/15	Yes
SE	Replacement Bin	Work Completed	8/5/15	8/10/15	Yes
SE	Replacement Bin	Work Completed	8/4/15	8/7/15	Yes
SE	Missed Residential Yard Trimmings	Work Completed	8/6/15	8/7/15	Yes
SE	Replacement Bin	Work Completed	7/31/15	8/5/15	Yes
SE	Replacement Bin	Work Completed	8/11/15	8/12/15	Yes

Source: Hansen and City Auditor's Office telephone survey conducted August 24-26, 2015 of citizens who called for service.

Resolution of a service request closes it from the business unit's perspective. Our review of resolution codes in Hansen found that 18% of service requests closed during our scope period had resolution codes that indicated that work was not completed, including "no problem found," "duplicate," or referral to another unit, department, or agency, such as the Georgia Department of Transportation, Fulton County, or Georgia Power (see exhibit 5). City departments have defined 277 unique resolution codes in the work order management system. Our data set includes 147 of these codes. About 5% of closed service requests indicate that some type of work was performed, but it is not clear whether the task fully resolved the problem, such as "reset signal monitor," "replaced red bulb," or "repaired hydrant." We categorized the codes into seven categories for analysis.

Exhibit 5 Closed Service Requests by Resolution Status

Resolution Categories	Sum	Percentage
Work Completed	32,946	77.1%
Work Performed	2,016	4.7%
Unclear	2,700	6.3%
No Problem Found	2,287	5.4%
Duplicate Request	2,207	5.2%
Referred	456	1.1%
No work performed	94	0.2%
Total	42,706	

Source: Records extracted from Hansen that were initiated October 1, 2014, through March 31, 2015.

"Resolving" a service request in the system closes it in both the work order management system and in the ATL311 system, and in many cases includes the request in the department's performance metrics. Service requests with unclear, referred, or no work performed statuses logged in Hansen were classified as completed and closed on the ATL311 website, which is what the customer sees. While referring a request to another agency is a reasonable action, it could contribute to citizen perceptions that the work hasn't really been completed and could inflate the percentage of service requests meeting the performance targets.

Different processes exist across business units in public works and in watershed management to resolve service requests and open and close work orders (see exhibit 6). These differences in how business units use the work order management system affect performance reporting, monitoring, and controls. Departments' continued reliance on manual processes and after-the-fact data entry also weaken monitoring and tracking and create opportunity for error or data manipulation.

The ATL311 call center is intended to be the entry point for service requests during business hours. During business hours, ATL311 staff enters service requests into Siebel, which creates corresponding service requests in Hansen. After business hours, watershed management dispatchers enter emergency service requests directly into Hansen; in these cases there are no corresponding records in the ATL311 system to communicate the status of the request to customers. Watershed management dispatch is located on the same floor as the ATL311 call center.

Exhibit 6 Comparison of Service Request Resolution Processes

Steps	Public Works				Watershed			
	Signs & Signals (non-emergency)	Signs & Signals (emergency)	Streets	Solid Waste	DWM Dispatch	DWM Dispatch After Hours	Drinking Water	Wastewater
SR entry in Siebel	311	311	311	311	311	NA	311	311
SR entry in Hansen	Siebel	Siebel	Siebel	Siebel	Siebel	DWM dispatch	Siebel	Siebel
SR queried and communicated	paper - area supervisors to crews	radio - operators to crews	inspectors	email and paper - tech to facility tech to facility crew	radio - dispatch to inspector	radio - dispatch to inspector	paper - analyst to supervisor	radio - dispatch operators to inspectors
SR verified	crew	crew	inspector	crew	inspector	inspector	NA	inspector
SR communicated back	NA	radio - crews to operator	NA	paper - crew to facility tech	radio	radio	NA	radio - inspectors to supervisors
SR resolution/ WO generation prior to work	NA	operator	inspector	NA	DWM dispatch or managers - water managers - sewer	DWM dispatch or managers - water managers - sewer	analyst	supervisor
WOs queried	NA	NA	CSR	NA	NA - process goes to drinking water or wastewater	NA - process goes to drinking water or wastewater	NA	NA
WOs communicated for completion	NA	radio - operator to crews	paper - CSRs to supervisors to crews	NA	NA	NA	paper - analyst to supervisor to crew	paper - supervisor to supervisor to crew
WO completion communicated	paper - crews to operator	paper - crews to operator	paper - supervisors/ crews to CSR	NA	NA	NA	paper - crews to supervisor to analyst	paper - crews to sueprvisors to data entry staff
WO generated after work	operator	NA	NA	NA	NA	NA	NA	NA
WO information recorded in Hansen	operator	operator	CSR - labor; warehouse manager - materials	NA	NA	NA	analyst	data entry staff
WO closed	operator	operator	CSR	NA	NA	NA	analyst	supervisor
SR closed in Hansen	Hansen	Hansen	Hansen or CSRs if Hansen does not close	facility tech	NA	NA	Hansen	supervisor

Source: Developed by audit staff based on walkthroughs of business units in public works and watershed management from April through July 2015.

Public works is responsible for service requests related to signs and signals, solid waste, and streets. These include activities such as replacing street signs, collecting missed garbage pickups, and repairing potholes. All three of these business units have different processes for resolving service requests. Staff within signs and signals uses different processes when recording emergency and non-emergency requests.

- For non-emergency signs and signals requests, area supervisors query service requests and provide paper copies to crews. Crews perform work if necessary and return the printed documents with handwritten notes to Hansen operators. Hansen operators generate and complete work

orders, if needed, based on the information crews provided and close the service request.

- For emergency signs and signals requests, Hansen operators query service requests and radio crews, who verify the problem in the field. Crews radio back and the operators can generate work orders, and then communicate with crews prior to performance of work. Crews then complete blank work order forms and return them to the operator to complete and close work orders and service requests.

- For requests related to streets, inspectors query and self-assign service requests. They then perform inspections and generate work orders if necessary. Departmental customer service representatives query work orders and provide crews with paper copies. Crews complete work in the field and return the printed work orders with handwritten notes to the departmental customer service representatives to close work orders and service requests.

- For requests related to solid waste, Hansen techs query service requests and email lists by request type to facility techs. Facility techs print the lists and provide them to crews, who return them at the end of the day indicating what they addressed for service request closure.

Watershed management is responsible for service requests related to drinking water and wastewater. These include activities such as hydrant leak repairs and addressing sewer overflows and spills. Drinking water and wastewater each follow different processes for service request resolution and opening and closing work orders.

- Watershed management dispatch staff query Siebel for emergency service requests during ATL311 call center business hours. Dispatchers create emergency service requests in Hansen when the ATL311 call center is closed. There are no corresponding Siebel service requests for these Hansen entries. Dispatchers communicate service requests to inspectors via radio. Dispatchers or watershed management managers create work orders for drinking water; managers create work orders for wastewater. Resolution of service requests and closure of work orders are the responsibility of watershed management field staff, not dispatchers.

- For service requests related to drinking water, analysts query service requests, create work orders, and print copies for supervisors. Supervisors assign and provide work orders to

crews, and crews return the work orders with completed activity sheets to supervisors to provide to analysts to enter into Hansen and close.

- For service requests related to wastewater, dispatchers radio inspectors who confirm whether a work order is necessary. Inspectors radio supervisors to create work orders when needed. Supervisors print work orders and provide crews with activity sheets to record materials and labor. Crews return completed documents to supervisors, who then provide them to data entry staff to enter work order information. Data entry staff returns documents to supervisors to close service requests and work orders. Data entry staff also queries open service requests to ensure crews are addressing them due to the time-sensitive nature of some complaints.

After departments close service requests, Hansen communicates with Siebel to automatically close corresponding records. This functionality began in January 2015. Prior to the interface between the systems, Hansen did not automatically close service requests in Siebel. The lack of an interface resulted in service requests remaining open in Siebel when departments had resolved them in Hansen.

The city's consultant recommended in 2012 that departments use service request and work order terminology consistent with that of ATL311. While public works and watershed management report some efforts to consolidate codes, differences in how units decide whether to create a work order suggest that the terminology remains inconsistent. About 85% of service requests in Hansen have no associated work orders; about half of these are solid waste. Under the recommended process, service requests that can be resolved without use of city resources do not require a work order. Curbside inquiries and missed collections generally wouldn't require city resources, but many other problem types, such as signal repairs or pothole repairs would require city resources. About half of requests for emergency signal repairs and 40% of service requests for pothole repairs were resolved without work orders. The majority of these were resolved as no problem found or transferred to another agency, but about 6% of the signal repairs and 17% of the pothole repairs that were completed without a work order had a resolution code indicating that work was completed (see exhibit 7).

Exhibit 7 Number of Service Requests by Resolution and Work Order Status—Pothole and Emergency Signal Repairs

Resolution Category	Emergency Signal Repair			Pothole Repair		
	WO	No WO	Total	WO	No WO	Total
Work Completed	74	29	103	660	81	741
Work Performed	567	41	608	0	0	0
Unclear	21	47	68	59	107	166
No Problem Found	9	450	459	4	48	52
Duplicate	0	72	72	3	117	120
Referred	0	16	16	4	124	128
No work performed	1	18	19	0	0	0
	672	673	1,345	730	477	1,207

Source: Records extracted from Hansen that were initiated October 1, 2014, through March 31, 2015.

About 89% of work orders in Hansen have no associated service request; 20% of these are catch basin cleaning and 36% are collecting garbage and collecting litter, possibly from parks or other city facilities. Because the city isn't populating the department field in Hansen and there are about 350 activity codes, it is difficult to tie work orders to departments. Creating a work order without a service request might make sense for scheduled preventive maintenance, but there isn't a clear rule on the circumstances when it should occur.

The consultant recommended that departments receive service requests through ATL311. The consultant also recommended that departments enter service requests into the ATL311 system that did not originate in ATL311. Watershed management receives service requests from its dispatch unit through Hansen as well as from ATL311. Watershed dispatch does not create corresponding Siebel records for these service requests they generate after ATL311 call center hours. The consultants recommended real-time updating of service request statuses and closure. All business units in public works and watershed use paper in their work order processes, which results in a delay in resolving associated service requests.

Differences in how business units use the work order management system affect performance reporting, monitoring and controls. The Department of Public Works reports to the Mayor's Office performance metrics derived from data in the work order management system for 53 problem types related to solid waste and transportation. These measures gauge the amount of time

needed to resolve service requests. Public works currently does not measure time to close work orders. The department could measure times needed for inspections and for performing work, which would better allow for diagnosis of delays or missed performance targets.

The Department of Watershed Management reports performance on 26 problem types, related to the Offices of Linear Infrastructure Operations and Watershed Protection, to the Mayor's Office. Sixteen measures are based on the time it takes to resolve segments of service requests and ten measures are based on work orders. Performance measures for service requests such as possible sewer spills, cave-ins, or street flooding are calculated as the response time from the time of the call to completion of inspection. Because the department measures performance based on segments of service requests, a service request that remains open at the end of the month could be double-counted as having met the performance target. While these measures allow the department to monitor operations, they provide an incomplete picture of customer service delivery.

Although it wasn't our objective to assess controls in this audit, both the departments of watershed management and public works told us in previous audits that they issue materials from inventory based on work orders. To the extent that the departments are conducting work without opening work orders, inventory controls are weakened. Further, the work order screens in the system provide more fields for tracking work activities than the service request screens, which compile information about the problem from the requestor and the inspector. Some of the business units appear to be using resolution codes for service requests to track activities completed instead of opening a work order.

Overall, 71 % of service requests opened during our scope met their target time, almost a quarter (23%) did not, 5% had no priority assigned, and 0.5% were still open and within the target timeframe (see exhibit 8). "Open past SLA" indicates the service request was open, but already outside the target timeframe.

Exhibit 8 Percent of Service Requests Meeting Time Target

Met Target	Count	Percent of Total
Yes	32,844	71.1%
No	8,070	17.5%
Open Past SLA	2,549	5.5%
No Priority	2,455	5.3%
Open within SLA	249	0.5%
Total	46,167	100.0%

Source: Records extracted from Hansen that were initiated October 1, 2014, through March 31, 2015.

We also calculated the percentage of work orders completed within the target timeframe. About 19% of the work orders in our population contained data errors in which the completion date was before the initiation date or the completion date was invalid; 42% had no priority code to calculate performance metrics, and 12% were still open as of the date we extracted the data. Staff in the Department of Watershed Management told us that although they use the work order dates to track performance, they were limited in establishing controls to require fields to be completed or to prevent data errors such as entering a completion date before the start date because changing a global setting in Hansen affected all users. According to staff, as of August 2015, Atlanta Information Management added controls to prevent out-of-sequence dates.

Implementing recommendations to standardize and control processes across business units will require top-down direction. Even after the ATL311 and work order management systems were interfaced in January 2015, 56% of department service requests originated outside of ATL311, which calls into question the extent to which ATL311 can leverage cooperation in standardizing processes. The Mayor's Office had started developing a consolidated citywide work order process in 2013; it's not clear what happened to derail that effort. We recommend the Mayor's Office take the lead in developing, documenting, and implementing standardized work order management processes as recommend by the city's consultant.

New Technology and Better Use of Current System Would Streamline the ATL311 Process

Staff from the departments of public works and watershed management told us that problems with ATL311 affect their ability

to complete service requests promptly. We confirmed that incompatible GIS records between the ATL311 and work order management systems affect many requests. Duplicate service requests affected fewer records, but were a bigger problem in some business units than others. We found little support that ATL311 customer service representatives entering incorrect problem types was a significant problem.

Finding a solution to the GIS incompatibility could require upgrading technology. Similarly, developing a user-friendly mobile interface for Hansen could reduce staff resistance to implementing mobile technology to enable real-time tracking. The city could also improve processes through better use of its current system including using the department field, cleaning up its activity and resolution codes and implementing controls to ensure that dates are valid and sequential.

Siebel GIS unable to locate records in 27% of sampled service request locations. Departmental staff told us that incorrect addresses on service requests result in crews being unable to locate assets. The ATL311 call center uses eGIS in its Siebel system to map problems, and departments use Hansen and its internal GIS system. eGIS contains standardized address information, and Hansen contains user-created addresses and mapped assets. Multiple records for the same address can exist in Hansen.

We sampled 60 Hansen service requests from the time of the Hansen and Siebel integration in January through the end of March 2015. We examined corresponding Siebel service requests for this sample. Siebel was unable to locate the addresses for 16 of the 60 service requests. The location types in Siebel included street addresses and intersections. The address fields appeared complete for three of the records where Siebel could not locate the addresses. Some of the Siebel records contained incorrect or incomplete information in location fields. This could be due to customers providing incorrect information or user error. 38 of the 60 records in Siebel contained location information in the comments field.

Staff stated that Hansen address fields do not populate from a Siebel service request unless the address records in the two systems match exactly. Address fields were complete in Hansen for five of the records in which Siebel was unable to locate records. Our Hansen sample contained information in address fields for 45 of the 60 records. Three of the fifteen Hansen records that did not contain

information in the address fields also lacked location information in the comments field.

The Department of Watershed Management developed a third web-based GIS application, arcGIS, to work around the incompatibility problem. The new GIS pulls and displays asset locations directly from Hansen, but is not interfaced to communicate with Siebel in any way. ATL311 management expressed concern about adding another web-based application to the process because it would require the customer service representatives to switch between the arcGIS and Siebel websites to complete a service request. ATL311 stated that the asset location feature in arcGIS would be a better solution as a layer in Siebel to match assets in Hansen. We recommend the Mayor's Office and AIM work with all stakeholders to evaluate the viability of loading assets into Siebel from Hansen.

Department of Watershed Management staff told us ATL311 customer service representatives have limited knowledge about issues in the field, which caused duplicate service requests for the same or similar addresses, and expressed frustration with spent time querying to remove duplicates. During our review period, 5% of service requests were resolved as a cancelled or duplicate request. While duplicate service requests do not appear to be a significant problem, they affected some business units more than others. About 22% of the duplicates were requests for watershed management to check for leaks and about 10% were requests for the department to check hydrants.

We found little evidence that ATL311 customer service representatives entering incorrect problem types was a significant problem. Business units within the departments of public works and watershed management stated that ATL311 was selecting incorrect problem codes for service requests in Siebel, which was preventing the proper business unit from responding and creating longer resolution times. We compared Hansen service requests with corresponding Siebel service requests since system integration to determine whether the problem descriptions between the systems matched. Less than 1% of service requests in both systems had different problem descriptions. Over the same time, business units returned 2.1% of service requests to the call center.

Staff identified barriers to implementing mobile technology to enable real-time tracking as recommended. Factors include lack of training and employee resistance, software issues for mobile devices, and lack of hardware. Public works managers said the

department has not used mobile technology in the field due to not having the hardware. Managers also indicated that staff would need training on any mobile technology. Watershed management managers said that they tried using a mobile application for about a week and that staff was uncomfortable with it because the user interface was small and difficult to use. Crews also had difficulty accessing the application at some locations and experienced an unsatisfactorily short battery life on their "tough book" devices. We recommend the Mayor's Office and AIM work with all stakeholders to identify a mobile application that meets user needs, obtain proper hardware, and train staff to use the mobile technology.

While fixing the GIS compatibility and developing a more user-friendly mobile interface will likely require investment in new technology, the city could make better use of its existing work order management system. In designing a standardized work order management processes, the Mayor's Office should work with all stakeholders to develop resolution, activity and department codes that facilitate reporting and tracking and implement controls to ensure that dates are valid and sequential.

Recommendations

To standardize and control processes across business units, the chief operating officer should:

1. Lead efforts for the Department of Watershed Management, Department of Public Works, and other departments that respond to service requests to design, document, and implement a standardized work order management process as previously recommended by the city's consultant, including developing resolution, activity, and department codes that facilitate reporting and tracking, and implementing controls to ensure that dates are valid and sequential.

2. Assist the Department of Watershed Management, Department of Public Works, and other departments that respond to service requests in analyzing gaps between existing processes and the standardized process and to identify resources necessary to bridge the gaps

3. Work with departments to develop and document consistent performance reporting across departments

4. Review departmental standard operating procedures

To improve the likelihood that departmental users accept new technologies and processes, the chief operating officer should:

5. Establish a change management team including AIM and representatives from departments to improve configuration and monitor process for change adoption

6. Work with AIM and departmental stakeholders to identify a mobile application that meets user needs, obtain proper hardware, and train staff to use the mobile technology

7. Work with AIM and departmental stakeholders to evaluate the viability of loading assets and asset locations into Siebel from Hansen

Appendix

Management Review and Response to Audit Recommendations

Report # 15.03	Report Title: Work Order Management	Date: Nov 2015

Recommendation Responses – Chief Operating Officer

Rec. # 1	The chief operating officer should lead efforts for the Department of Watershed Management, Department of Public Works, and other departments that respond to service requests to design, document, and implement a standardized work order management process as previously recommended by the city's consultant, including developing resolution, activity, and department codes that facilitate reporting and tracking, and implementing controls to ensure that dates are valid and sequential.	Agree

Proposed Action:	Each identified department should provide standardized process maps, SLA timeframes and activity codes for each unique kind of work order and service request that they process. High volume/high priority activities will be prioritized. The COO's Office will work to establish specific deadlines for these departments to provide this information.	
Implementation Timeframe:	Q3 2016	
Comments:		
Responsible Person:	COO, with each Commissioner responsible for their department's analysis	

Rec. # 2	The chief operating officer should assist the Department of Watershed Management, Department of Public Works, and other departments that respond to service requests in analyzing gaps between existing processes and the standardized process and to identify resources necessary to bridge the gaps.	Agree

Proposed Action:	Once to-be process maps are completed, each department shall conduct field-based analysis of high volume work orders to identify any gaps between existing processes and what is laid out on paper. The COO can then work with each department to address these gaps as necessary.	
Implementation Timeframe:	Q4 2016	
Comments:		
Responsible Person:	Department Commissioners	

Rec. # 3	The chief operating officer should work with departments to develop and document consistent performance reporting across departments.	Agree
	Proposed Action: FOR Atlanta will update performance reports as necessary based on any process changes implemented by undertaking steps 1 and 2	
	Implementation Timeframe: Q34 2016	
	Comments: The FOR Atlanta team already delivers regular performance reporting. This action is more about ensuring that the data being reported to the team is uniform across departments, which will be accomplished through steps 1 and 2.	
	Responsible Person: Director of Innovation Delivery and Performance	
Rec. # 4	The chief operating officer should review departmental standard operating procedures.	Agree
	Proposed Action: Departments shall provide COO with a briefing on all customer service SOPs	
	Implementation Timeframe: Q1 2016	
	Comments:	
	Responsible Person: COO	
Rec. # 5	The chief operating officer should establish a change management team including AIM and representatives from departments to improve configuration and monitor process for change adoption.	Partially Agree
	Proposed Action: Establishment technology change management board, to be led by COO and include representatives from heaviest user agencies. The CIO will incorporate this board into existing technology governance routines.	
	Implementation Timeframe: Q1 2016	
	Comments: While the COO can oversee the establishment of this team, direct responsibility for technology implementation change management shall fall within the purview of the Chief Information officer.	
	Responsible Person: COO to establish, CIO to lead	
Rec. # 6	The chief operating officer should work with AIM and departmental stakeholders to identify a mobile application that meets user needs, obtain proper hardware, and train staff to use the mobile technology.	Agree
	Proposed Action: AIM shall provide recommendation as to most appropriate mobile technology to move forward with; Once recommendation is made, COO and team will identify required funding for implementation.	
	Implementation Timeframe: Recommendation by Q1 2016, Implementation complete in Q3 2016	
	Comments:	
	Responsible Person: CIO	

Rec. # 7	The chief operating officer should work with AIM and departmental stakeholders to evaluate the viability of loading assets and asset locations into Siebel from Hansen.	Agree
	Proposed Action: Evaluation process has already begun. The next step is to make a decision on the appropriate path forward. 311 Director is coordinating departmental input and evaluation of Siebel. **Implementation Timeframe:** Q1 2016 **Comments:** Discussions with departments on viability of Siebel as a replacement for Hansen have already begun **Responsible Person:** 311 Director	