

OFFICE OF THE CITY CONTROLLER



**PUBLIC WORKS AND ENGINEERING DEPARTMENT
UTILITY CUSTOMER SERVICE DIVISION**

**PERFORMANCE AUDIT OF WATER METERS AND ELECTRONIC
RADIO TRANSMITTERS (ERT)**

Ronald C. Green, City Controller

David A. Schroeder, City Auditor



**OFFICE OF THE CITY CONTROLLER
CITY OF HOUSTON
TEXAS**

RONALD C. GREEN

October 30, 2013

The Honorable Annise D. Parker, Mayor and Honorable Council Members

**SUBJECT: REPORT #2014-01
PUBLIC WORKS AND ENGINEERING DEPARTMENT (PWE), UTILITY CUSTOMER SERVICE DIVISION
(UCS) – PERFORMANCE AUDIT OF WATER METERS AND ELECTRONIC RADIO TRANSMITTERS
(ERT)**

Dear Mayor Parker and Council Members:

The Office of the City Controller's Audit Division has completed a Performance Audit of the City of Houston's UCS processes as administered by PWE. After conducting our initial research based on ordinances, policies, desk guides, and interviews with key personnel to gain an understanding of the functions performed by UCS, we refined the audit objectives to be as follows:

1. Assess the accuracy of meters and ERTs that support residential customers' billings and/or the processes that are in place;
2. Assess UCS compliance with applicable ordinances;
3. Assess the policies and business processes for working through service/usage concerns internally identified by PWE or expressed by customers (e.g. re-checking meters, reasonableness of billing amount, recourse, billing options, appeals, etc.).

We concluded that the:

- Meters are accurately recording and providing consumption data that reasonably supports the billing process;
- UCS was in overall compliance with application of the Ordinances reviewed.; and
- Policies related to service and usage concern are adequately designed.

In performing our work, we noted the following issues:

- UCS has the opportunity to improve business processes and internal controls related to interpreting misreads, enforcing fieldwork technician performance and analyzing system notations from fieldwork orders to more efficiently schedule workloads. Based on information provided by PWE/UCS, remediation efforts could lower technician re-read work orders by up to 267,881 and thus potentially reduce technician cost by \$2,670,774 during the 18 month period reviewed; (*See Findings #1 and 2*)
- The ERTs have had some history of malfunction and recall, which is being addressed between UCS and the vendor; and
- The business processes related to fieldwork activity and some aspects of customer service were not consistent with policies and require improved internal controls. (*See Findings #3 and 4*)

We appreciate the time and efforts extended to the Audit Division during the course of the project by PWE, UCS management and staff.

Respectfully submitted,

Ronald C. Green
City Controller

cc: Dan Krueger, Director, Public Works and Engineering Department
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Susan Bandy, Deputy Director, Resource Management
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EXECUTIVE SUMMARY

INTRODUCTION

The Office of the City Controller's Audit Division (IA) has completed a Performance Audit of the Public Works and Engineering Department's (PWE) Utility Customer Services Division (UCS). The purpose of this audit was to assess the accuracy and reliability of the primary functions and business processes that are used to track and communicate consumption information which supports customer billing. This project began as a result of a specific request of City Council in response to various constituent complaints and concerns related to the water bills and/or billing process.

AUDIT METHODOLOGY

The audit was performed in accordance with *Generally Accepted Government Auditing Standards* as promulgated by the Government Accountability Office (GAO) and the engagement was conducted in conformance with *the International Standards for the Professional Practice of Internal Auditing* as issued by the Institute of Internal Auditors (IIA). Those standards require that we plan and perform the audit to obtain sufficient and 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 objective.

AUDIT SCOPE AND OBJECTIVES

The engagement scope was from September 2011 through December 31, 2012. In some instances, our time frame may have included dates outside of that range due to capturing the history and subsequent events of the customer's experience. Our original objectives were broadly defined as:

1. Assess the accuracy of meters that support residential customers' billings and/or the processes that are in place;
2. Assess the policies/ordinances and business processes that accumulate and validate information supporting customer billing;
3. Assess the policies/ordinances and business processes for working through service/usage concerns internally identified by PWE or expressed by customers (e.g. re-checking meters, reasonableness of billing amount, recourse, billing options, appeals, etc.).

After conducting our initial research based on ordinances, policies, desk guides, and interviews with key personnel to gain an understanding of the functions performed by UCS, we further refined the objectives as follows:

1. Assess the accuracy of meters and ERTs that support residential customers' billings and/or the processes that are in place;
2. Assess UCS compliance with applicable ordinances;
3. Assess the policies and business processes for working through service/usage concerns internally identified by PWE or expressed by customers (e.g. re-checking meters, reasonableness of billing amount, recourse, billing options, appeals, etc.).

The scope of our work did not constitute an evaluation of the overall internal control structure of PWE UCS, only those specifically related to the business processes contained within the audit scope. Management is responsible for establishing and maintaining a system of internal controls to ensure that financial activity is accurately reported and reliable. The objective is to provide management with reasonable, but not absolute assurance that the controls are in place and effective.¹

¹ This audit was not a financial audit; a financial audit provides reasonable assurance through an opinion (or disclaim an opinion) about whether an entity's financial statements are presented fairly in all material respects in conformity with generally accepted accounting principles (GAAP), or with a comprehensive basis of accounting other than GAAP.

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PROCEDURES PERFORMED

In order to obtain sufficient evidence to achieve engagement objectives and support our conclusions, we performed the following:

- Performed detailed analysis of the following:
 - Damaged Meter Adjustments
 - Meter Master Accounts (October 2012 & February 2013)
 - Electronic Radio Transmitters (ERT) Master Accounts (October 2012; December 2012; February 2013)
 - Work Order Transactions Files (May 2012 - October 2012)
 - Eighteen (18) months of Work Order Transactions files containing all work order transaction codes related to ERT/Meter Re-Reads by field technicians
 - Analyzed UCS provided files containing replaced Meters and or ERT units for calendar year 2012
 - Retained Customer Comment files (May 2012 - October 2012)
 - Customer Billing Transaction Data Files (May 2012 - October 2012)
- Reviewed and verified policies and procedures, desk guides, flow charts and business processes, including a limited number of customer complaints; and
- Reviewed and verified compliance with the City Ordinances related to UCS.

BACKGROUND AND HIGHLIGHTS

The UCS is responsible for reading and maintaining customer water meters, producing bills, receiving and processing payment, depositing cash receipts into City of Houston (COH) bank accounts and handling customer inquiries and maintaining records of all related activities.

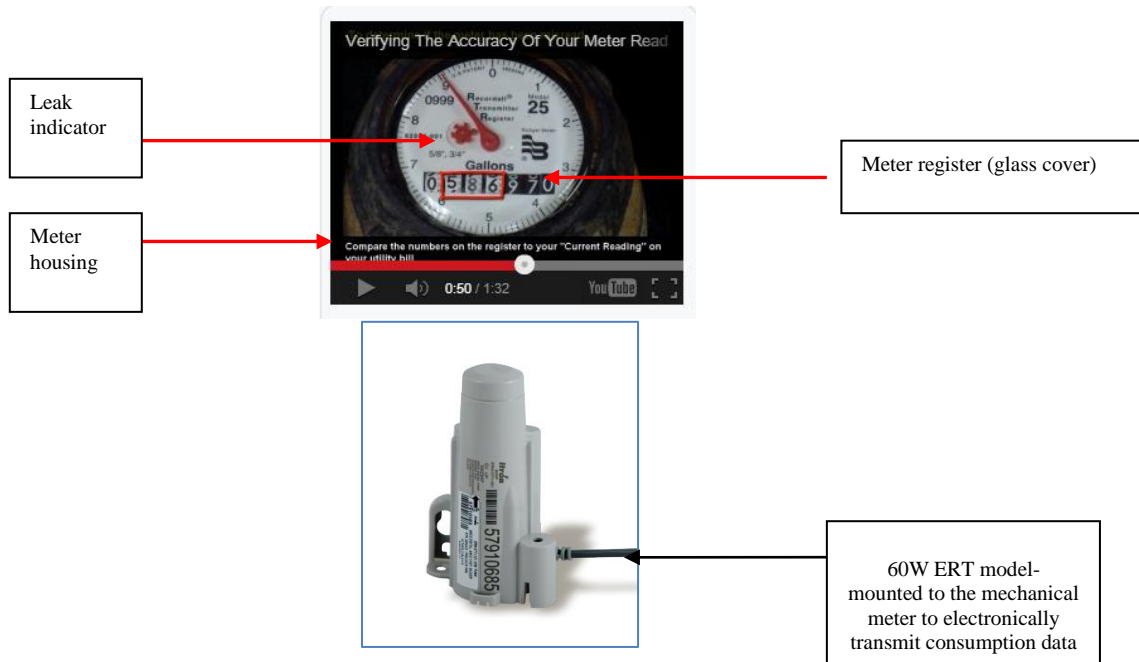
UCS is an important contributor in its service to our citizens as well as to COH; listed below are some of the facts for calendar year 2012 as provided to the audit team by UCS:

- Revenue exceeded \$1 billion;
- Customer Service received over 667,000 customer calls with a staff of 64 employees;
- The Field Technicians responded to 562,307 work order calls with a staff of 111 full-time and part-time employees.
- UCS sent out over 5.5 mm bills;
- UCS had 470,276 active meters;
- UCS had 460,935 installed ERTs.

| Table 1 – Financial Highlights | | |
|--------------------------------------|--------------------|-----------------|
| Account Type | Number of Accounts | 2012 Revenue |
| Single- and Multi-Family Residential | 407,464 | \$508,029,119 |
| Commercial | 44,202 | \$235,708,177 |
| Other | 2,175 | \$102,083 |
| Lawn Meters | 248 | \$46,349,048 |
| Contract | 17,293 | \$425,485,947 |
| Total Water/Sewer Accounts | 471,382 | \$1,215,674,374 |
| Drainage Only | 252,191 | |
| Drainage Revenue | | \$119,469,751 |
| Total Accounts | 723,573 | \$1,335,144,125 |

- ¹ Represents revenue for water and sewer only and does not include MUD rebates, contract service charges, or any adjustments.
- ² Represents revenue for water only and does not include MUD rebates, contract service charges, or any adjustments.
- ³ Represents revenue for drainage and does not include adjustments or allowance for doubtful accounts. The Drainage Revenue is not part of the Water & Sewer system revenue.

The following photos show the basic differences between a meter, register, leak indicator, and an ERT;



ERT PRODUCT RECALL AND REPLACEMENT HISTORY

In December 2005 the City of Houston (COH) formally requested remedy from Leroy Nosbaum, Itron's Chairman and Chief Executive Officer, regarding 188,918 non-performing and under-performing ERTs representing 48% of the 393,000 ERTs that had been installed by that date. Of those ERTs, 133,918 had been removed, packaged and returned to Itron for adjudication of non-performance and 55,000 additional ERTs were not performing. Itron ERTs were represented to COH as having a 97% reliability rate.

In October 2011, Itron notified UCS of a greater than expected failure rate in its 60W model ERTs resulting from "green encapsulant material" used in the manufacturing process based on UCS questions related to defects/returns for that model. The suspect ERTs were manufactured between April 2009 and May 2010. Itron determined it was prudent to perform a recall of all ERTs manufactured with this material. At the time of identification 112,527 of these ERTs were installed in the UCS system. Itron provided 60W model ERTs for this in-warranty replacement at no charge.

UCS determined that older model ERTs (40W and 50W series models) were at the end of their useful life and should be replaced. The 40W and 50W series models do not have the enhanced battery capacity of the 60W model or the battery and storage capacity of the new 100W model which are specifically designed for network data collection. These are deemed non-warranty replacements and were purchased from Itron.

In April 2012 UCS and Itron agreed on a project to have Itron personnel install 182,517 ERTs (109,000 suspect 60W models and 73,517 50-2W models). The non-warranty replacement portion of the project specifically targeted the 50-2W model as many of the 40W series models could not be easily accessed. (The population of 40W models is being addressed by a separate internal project team.) This project does not include newer ERTs that may malfunction or become damaged. Although 112,547 suspect ERTs were installed at the time of Itron's discovery, more than 3,500 had been replaced by UCS staff during service calls prior to project implementation. Non-warranty replacements were to be installed by Itron for \$20 per install. ERTs deemed too difficult or time consuming for Itron personnel to access were pulled from the project scope in January 2013.

During the period from October 2011 through April 2012 182,517 ERTs installed in the UCS system were targeted for replacement as a result of the recall or because they were at the end of their useful life. This represents 39.5% of the ERTs installed in the UCS system as of December 2012. By March 2013 there were approximately 10,350 of the designated ERTs (2.2%) awaiting replacement by UCS staff due to location or difficulty to reach issues (ex: covered by rocks/shale).

SUMMARY OBSERVATIONS:

- The following are those areas that we believe UCS excels:
 - In 1999, UCS began installing ERTs, as a cost-savings and efficiency initiative with the goal of attempting to eliminate the need for manually read meters (to the extent possible). In December 2005, UCS had installed 393,000 ERTs; as of February 2013, there were approximately 461,837 ERTs installed out of a total of approximately 470,583.
 - UCS has installed an Automatic Meter Reading (AMR) system which is a network of ERTs (endpoint devices) placed on each water meter. These endpoint devices transmit meter reading signals for capture by both mobile and fixed network systems receivers.
 - UCS has created a website, www.houstonwaterbills.org, for its customers that reflect some significant strides in communication and customer service they have made over the last few years. The site is easy to use, contains customers' account information, explains leaks and their impact on consumption, describes the types of adjustments available to the customer, provides an excellent online chat service, and explains the billing and payment choices, among other items of interest. The site is state of the art for those customers that have internet capability. (Audit Objectives 2 and 3)
 - Using UCS's 2012 data, the damaged meter replacement rate was 0.95% (4,463 of 470,276), and the damaged meter register replacement was only 2.5% (11,792 of 470,276). (Audit Objective 1)
 - The City of Houston is considered a leader in implementing a project on this scale, and has remained committed to the success of its implementation.
 - Addresses a large volume of customer calls for a wide range of questions, concerns and complaints.

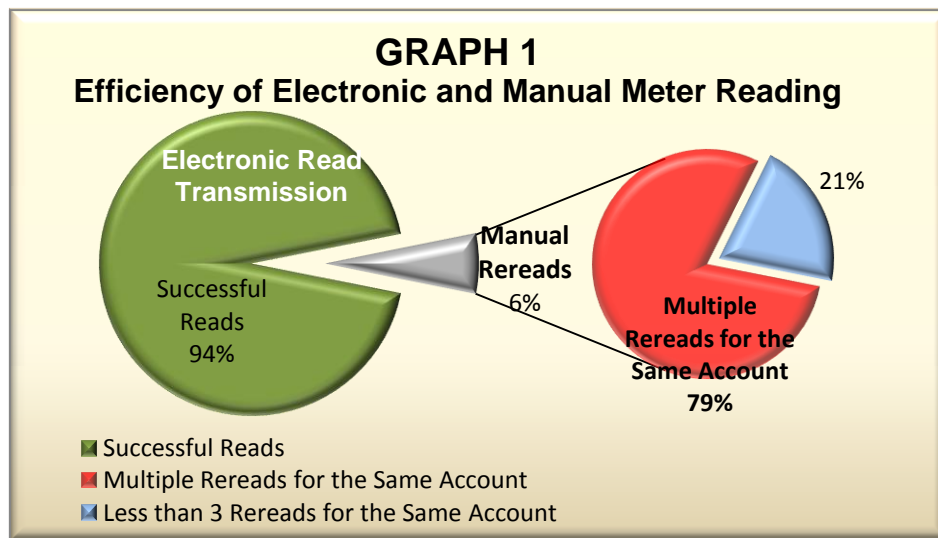


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✦ The following are areas that represent residual risk² (the remaining unmitigated) and have an economic impact, which provide the opportunity for UCS to improve business processes and internal controls:

- When an automated meter read transmission attempt fails (approximately 3% to 6% of the time), the processes in place to obtain accurate and timely data for billing forces repeated visits to the same addresses and represents approximately 60% of all fieldwork orders. This shows a significant amount of the reread activity (approximately 80%) involves having reread the same account repeatedly (three or more times). The economic impact of this inefficiency is approximately \$2,670,774 for the 18-month period tested.³ This underscores the opportunity to improve efficiency and implementation of consistent processes which has the potential for direct cost-savings results. (See also Finding #1 and tables 1&2 below).



- **Graph 1** (Main Pie Chart on Left) shows the effectiveness of the electronic devices as it relates to transmitting a signal containing water consumption data sufficiently reliable to use for billing purposes, while the Sub-Pie Chart on the Right expands the view of the content of the volume of rereads.

² The Remaining Unmitigated or (Residual) Risk is the remaining risk after considering the design and implementation of management controls.

³ The cost per reread provided by UCS was \$9.97.



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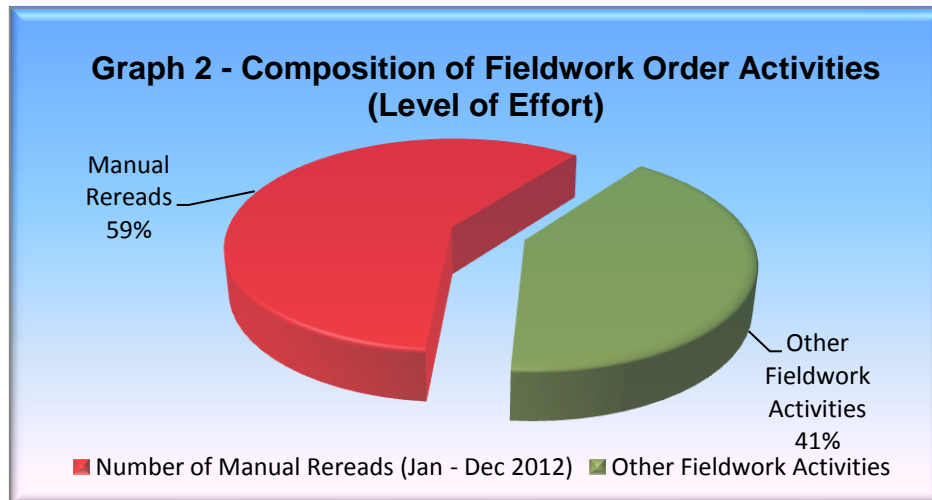
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- This also unnecessarily triggers estimated consumption and backbilling and is primarily due to the following factors: (*Audit Objectives 1 and 3, Findings #1 & 2, Graphs 1 & 2 and Tables 2-4 below*)
 - Field notes entered into the system are not being reviewed timely or efficiently via management reporting;
 - Field technicians not consistently performing the required 20 point task checklist; and
 - Lack of confidence in the ERTs due to historical problems and recalls (this has caused UCS to visit all sites where “0 consumption” is reported, even when accurate, which increases the reread volume to 6%).

| October 2011 – April 2013 | |
|--|-------------|
| Table 2 - Rereads as a Percentage of Total Reads | |
| Total ERT Reads (18 month period) | 8,306,406 |
| Successful Reads | 7,790,598 |
| Required Rereads | 515,808 |
| Manual Rereads as a Percentage of Total Reads | 6.2% |

| Table 3 - Multiple Rereads for the Same Account as a Percentage of Total Rereads | |
|--|--------------|
| Required Rereads | 515,808 |
| Reread 3 or more times for the Same Account | 408,862 |
| Multiple Rereads as a Percentage of Total | 79.3% |

| January 2012 - December 2012 | |
|---|--------------|
| Table 4 - Manual Rereads as a percentage of Total Field Work Orders | |
| Total Field Work Orders (Jan - Dec 2012) | 562,307 |
| Number of Manual Rereads (Jan - Dec 2012) | 332,075 |
| Manual Rereads as a Percentage of total level of effort | 59.1% |



Graph 2 reflects the level of effort required in attempting to obtain an accurate reading of consumption data, when the electronic transmission failed. The data shows that approximately 60% of all fieldwork activity is directly related to manual rereads of customer meters.

- When Meters malfunction, fail or get stuck, the estimation process applied often underestimates the customer account (our limited testing data averaged 75%). The current procedures create the need to then perform a Damaged Meter Adjustment or backbill for the difference. This often results in significant spikes to customer bills. Additionally, 10% of the accounts with faulty meters that had been estimated were adjusted, while the rest were not. This creates the appearance of inconsistency in customer service and revenue adjustments. (See Finding #3)
- Customers calling the UCS call center are not consistently provided with relevant information to address concerns regarding; meter rereads, checking for leaks, reasons for high bills, and adjustments available (e.g. Unusually Large Bill Adjustment, Leak Adjustment, Payment Plans and Administrative Reviews/Hearings). (See Finding #4)

SUMMARY CONCLUSIONS:

AUDIT OBJECTIVE 1

Assess the accuracy of meters and ERTs that support residential customer's billings and/or the processes that are in place.

- Based on the results of the procedures performed, the Meters are accurately recording and providing consumption data that reasonably supports the billing process, however:
- *The ERTs have had some history of malfunction and recall, which is being addressed between UCS and the vendor.*
- *UCS has the opportunity to improve business processes and internal controls related to interpreting misreads, enforcing fieldwork technician performance and analyzing system notations from fieldwork orders to more efficiently schedule work loads.*

AUDIT OBJECTIVE 2

Assess UCS compliance with applicable ordinances.

- Based on the analysis of the Ordinances related to UCS, we noted overall compliance with application. Of the 17 City Ordinance excerpts reviewed, examples of the applicable conditions to test were found related to 12 of them. Ten of the 12 of the examples found within our limited sample population were compliant with the language in the ordinance with only two examples were not compliant with the applicable ordinance language.

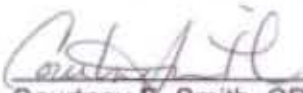
AUDIT OBJECTIVE 3


Assess the policies and business processes for working through service/usage concerns internally identified by PWE or expressed by customers (e.g. re-checking meters, reasonableness of billing amount, recourse, billing options, appeals, etc.).

- In general, policies related to service and usage concern are adequately designed, *however* the business processes related to fieldwork activity and some aspects of customer service were not consistent with policies and require improved internal controls.

ACKNOWLEDGEMENT AND SIGNATURES

The Audit Team would like to thank PWE/UCS management for their time and efforts throughout the course of the engagement.


Courtney E. Smith, CPA, CIA, CFE
Audit Manager


David Schroeder, CPA, CISA
City Auditor

DETAILED FINDINGS AND RECOMMENDATIONS

TECHNICIAN AND SITE VISITS (FIELDWORK AND MANAGEMENT INFORMATION ANALYSIS)

FINDING # 1 – INEFFICIENT FIELD TECHNICIAN ERT/METER REREAD PROCESS
RISK RATING (IMPACT AND MAGNITUDE) = MED/HIGH

BACKGROUND:

UCS has installed an Automatic Meter Reading (AMR) system which is a network of encoder receiver/transmitter (ERT) endpoint devices placed on each water meter. These endpoint devices transmit meter reading signals for capture by both mobile and fixed network systems receivers.

As of December 2012, UCS has two vendor models of ERTs; the 40W, 50W and 60W models (419,850 units) are made by Itron and the other, Orion (41,617 units), are made by Badger. Badger is also the vendor for the mechanical water meters used by UCS. There are 286,856 ERT units on the fixed network in which signals are read automatically from nearby repeater towers and then transmitted to UCS office. The remaining 174,611 ERT units are read each month by specially equipped vans that drive by the unit to obtain their current meter readings.

When signals are not received or the reading is suspect, the Rumba computer system then dispatches automated work orders to UCS field technicians for manual on-site visual ERT and meter re-reads. While the technicians are re-reading the meters an inspection of equipment is required and any faulty equipment is replaced, repaired, reprogrammed or an additional work order is generated by the technician for repairs by appropriately trained field staff.

The suspect reads, along with those ERTs in which no signal was obtained, are coded with one of three job codes. The three job codes are as follows:

1. Active No Reads (Job Code RL) – ERT reads that result from a meter having very low volume, meaning the customer did not use enough water to advance the thousand gallon dial reading due to the property being vacant, or the customer was away from home for an extended period of time or no water was used during the billing cycle.
2. Lower than Previous Read (Job Code MM) – Current ERT meter read is lower the last billing cycle meter read. This, for the most part, indicates some type of equipment problem since meters do not run backwards.
3. Missed Read (Job Code MR) – No ERT meter read was received by the Fixed Network System or the Mobile Route System. The results of missing equipment, low batteries, or faulty equipment.

Management reported that a large percentage of follow-up manual rereads related to Active No Usage, revealed that the original read was correct.

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Additional review of these field work orders revealed repeated monthly technician re-reads of the same meter/ERT site. As a result of this observation the audit team requested a copy of all work orders for the last 18 months (Rumba's total history). After combining all the work order history for these job codes by individual meter/ERT account we stratified the data to obtain the count of each manual re-read on the account over the eighteen month period. While reviewing individual accounts we found technicians repeatedly requesting work order to repair faulty equipment over several months on the same account. In other cases ERTs were reported as not transmitting but were never replaced or reprogrammed which resulted in technicians returning to re-read the same meter month after month. The counts represented in our charts below show the number of meter/ERT manual re-reads during this time frame and provide an overall view of possible faulty equipment not repaired or replaced timely. Early detection and replacement could reduce the staff resource dollars spent on these manual reads considerably thus allowing these resources to be used in other needed areas by UCS management.

| Table 5 | |
|---|--------------|
| October 2011 – April 2013 | |
| Rereads as a Percentage of Total Reads | |
| (Includes all three categories) | |
| Total ERT Reads (18 month period) ⁴ | 8,306,406 |
| Successful Reads | 7,790,598 |
| Required Rereads ⁵ | 515,808 |
| Manual Rereads as a Percentage of Total Reads | 6.2% |
| Table 6 | |
| Multiple Rereads for the Same Account as a Percentage of Total Rereads | |
| (Includes all three categories) | |
| Required Rereads | 515,808 |
| Reread 3 or more times for the Same Account | 408,862 |
| Multiple Rereads as a Percentage of Total | 79.3% |

⁴ Calculated this by multiplying the number of active accounts times 12.

⁵ Actual system data as provided by PWE/UCS.

Active No Usage Accounts Meter Re-Reads:

| Table 7 | | | | |
|--|--------------|------------------|------------------|----------------|
| Job Code RL - Active No Usage Oct-2011 to April 2013 | | | | |
| Total Reads to Same ERT | ERT Accounts | Percent of Count | Percent of Field | Read Count |
| <3 | 36,381 | 59.45% | 25.64% | 48,605 |
| 3-5 | 15,394 | 25.16% | 30.43% | 57,697 |
| 6-10 | 7,226 | 11.81% | 28.22% | 53,507 |
| 11-15 | 1,737 | 2.84% | 11.49% | 21,787 |
| 16-21 | 451 | 0.74% | 4.12% | 7,817 |
| >21 | 6 | 0.01% | 0.09% | 173 |
| Totals | 61,195 | 100% | 100% | 189,586 |
| Manual Reads greater than 3 times for the Same Account (Job Code "Active No Usage") | | | | 140,981 |

Missed Reads and Lower than Previous Reads:

| Table 8 | | | | |
|--|--------|------------------|------------------|----------------|
| Job Codes MM,MR Oct 2011 to April 2013 | | | | |
| Total Reads to Same ERT | Count | Percent of Count | Percent of Field | Read Count |
| <3 | 43,658 | 54.30% | 17.88% | 58,341 |
| 3-5 | 17,857 | 22.21% | 20.69% | 67,505 |
| 6-10 | 10,928 | 13.59% | 25.62% | 83,574 |
| 11-15 | 5,096 | 6.34% | 19.71% | 64,289 |
| 16 - 21 | 2,713 | 3.37% | 14.89% | 48,569 |
| >21 | 155 | 0.19% | 1.21% | 3,944 |
| Totals | 80,407 | 100% | 100% | 326,222 |
| Manual Reads greater than 3 times for the Same Account (Job Codes MM, MR) | | | | 267,881 |

We also compared the re-read occurrences of the Itron vendor ERT units to the Badger Orion Model to determine if the re-read rates were different. We concluded that the Itron unit re-read count rates was more than two times higher than the Orion units as shown below.

| Table 9 | |
|--|---------|
| Itron vs. Orion | |
| Six Month Comparison of Technician Re-Read Count by ERT Vendor as a percentage of installed units | |
| Vendor | Average |
| Itron | 4.2% |
| Orion | 1.8% |

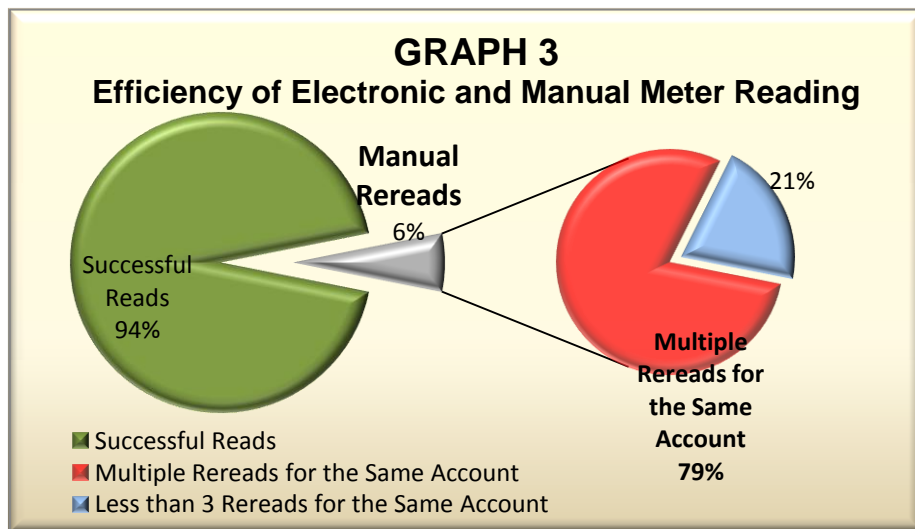
FINDING:

- There are a proportionally high amount of repeated manual rereads (three or more rereads for the same account).

To measure impact and magnitude, we performed a resource cost calculation that combined the count of two re-read categories (Missed Reads and Lower than Previous).

Although the Active No Usage re-reads could indicate the ERT is not performing correctly, we removed this category from our *resource cost calculations* for determining impact and magnitude but provided a chart showing the amount of these type re-reads and suggest that management work to reduce these types of work orders with additional system automation and/or less frequent tech visits in response to this type of job code.

We also subtracted the first two technician re-reads of any account to allow for special weather conditions that could affect signal transmissions. Our charts above show if faulty or poorly performing ERTs (36,749 units) were detected and replaced by the third re-read UCS could lower technician re-read work orders by 267,881 potentially reducing technician cost by \$2,670,774⁶ for an 18 month period.



- No reports showing rereads to specific accounts with high manual re-reads.
- No management reports or timely review of these reports from the Advantage system showing technician field notes indicating faulty equipment identified while on site performing the re-reads.

RECOMMENDATION:

Management should create and/or enhance current reporting of technician ERT re-read by reviewing technician field notes entered into the field service computer system. This will allow UCS to quickly detect and repair faulty ERTs and prevent repeated re-reads. We also recommend implementing a coding system for identifying closed accounts/vacant properties to prevent un-needed rereads.

NOTE: FOR PWE/UCS MANAGEMENT RESPONSE AND THE AUDIT DIVISION ASSESSMENT OF MANAGEMENT RESPONSE, SEE EXHIBIT 1

⁶ The cost per reread provided by UCS was \$9.97 per reread.



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FINDING # 2 – INCONSISTENT PERFORMANCE OF FIELD TECH SITE VISIT PROCEDURES **RISK RATING (IMPACT AND MAGNITUDE) = MEDIUM**

BACKGROUND:

Part of the process to validate accuracy and functionality of the meters and ERTs is the Technician site visit activities, related testing, and resulting documentation. The Techs have a standard 20 point check contained in the Standard Operating Procedure, *Field Operations Manual* (SOP) that states:

“Standard Procedures – These are the step or procedures that the technician will take on each account to ensure a complete and qualitative result for one time visitation of an account.”

We analyzed the Techs’ activities using the Rumba screens, and found that for the 20 customers tested, a Tech went out 77 times. We based our testing on the following testing criteria, which we deemed relevant:

- Locate Meter;
- Perform Before Flow Test to ensure meter and ERT are equal;
- All automated accounts are to have the ERT checked for functionality;
- If ERT is not the same as meter; reset ERT and perform After Flow test;
- All damaged meters i.e. stuck or broken glass will be changed out and made AMR ready; and
- Replace ERT if it cannot be fixed.

FINDING:

Based on reviewing the actions noted by the Techs in the Transaction screens in the Water Customer Information System, the Techs did not always perform the tasks as stated in the Procedures. During our review, we noted instances where required tests and equipment repairs were not performed. Those areas were:

- The Techs did not perform the on/off test 45 of the 77 times (58.4%);
- The Techs did not perform a Before and After flow test 3 of 37 times (8%) (does not include turn offs);
- The Techs did not perform an After flow test, when required, in 20 of the 72 times (27.7%);
- The Tech did not replace or reset faulty ERTseven of the 37 times (19%);
- The Tech did not perform a preaudit site visit based on the high exception report for 2 months in a row on one customer;
- The ERT reading was not captured during 24 visits.

Impact of not performing all the required tests: (See also Finding #1 and #3)

- Three customers had instances where faulty Meters and/or ERTs were not replaced timely by Techs. During the process, the customers received estimated bills. Once the faulty equipment is discovered a “true-up” adjustment is performed. One customer was adjusted for four months, and two customers were adjusted for the maximum period of 24 months. One customer had faulty equipment for 4 months; one had faulty equipment for 26 months, and the third had faulty equipment for 37 months; and
- Current procedure dictates that techs should not turn off water if a leak is on the customer’s side without making customer contact. One of the Presenters had a leak resulting in a bill of over \$9,000.

RECOMMENDATIONS:

- The Techs should perform all the required tests and document that activity when going to the site, so that leaks and faulty equipment can be identified and corrected within no more than two site visits.
- Management should consider requiring the on-off test be performed at each site visit. The on-off test performs two functions; one is to ensure the meter is associated with the correct address; and equally important, this test can determine if the meter is stuck and therefore not operating properly, thereby, getting placed in the que for replacement.

NOTE: FOR PWE/UCS MANAGEMENT RESPONSE AND THE AUDIT DIVISION ASSESSMENT OF MANAGEMENT RESPONSE, SEE EXHIBIT 1



CUSTOMER SERVICE PROCESSES

FINDING # 3 – IMPACT OF IMPROPER OR INACCURATE ESTIMATES

RISK RATING (IMPACT AND MAGNITUDE) = MEDIUM

BACKGROUND:

The first sentence of Chapter 47, Article II Section 47-61 states "Subject to the provisions of the article, the department shall charge for all water that passes through the water meter." Water meters are an inline component of the City's water distribution system. The utility billing systems, customer service representatives, and utility management rely on the accuracy of the water meter as the major driver in water utility operations including customer billing, even as advances in technology have occurred in methods used to gather readings from the meters. The UCS currently has more than 470,000 active meters in service. During calendar year 2012 UCS personnel addressed 16,255 meter repair issues representing 3.5% of the total meter population. When meters are damaged in some way, Chapter 47, Article II Section 47-73 (c) states in part, "if the meter or register is defective, the department shall repair or replace it. If a meter is damaged so that it cannot be tested, the customer's account may be adjusted for up to 24 months based on the average usage." The ordinance does not mandate that each customer's account must be adjusted, provide thresholds, evaluation or selection criteria. UCS management and staff rely on the Damaged Meter (DEM) policy and adjustment desk procedures to guide this activity. Customers with damaged meters may be billed on an estimated basis each month until meter repairs are made.

Many factors may be considered during the adjustment process; however, the speed of the repair, the quality of the estimated consumption billed prior to the repair, and number of months allowed for adjustment can have a significant impact on the customer.

We tested the process used by UCS to adjust customer accounts to determine if the adjustment process was adequately documented, consistently applied to customer accounts, and equitable. A sample of 14 DEMs for various adjustment periods (six to twelve months, twelve to eighteen months and eighteen to twenty-four months) was obtained and evaluated during our audit.

FINDING:

- Of the 14 accounts adjusted, 7 accounts (50%) received adjusted billings that were 75% higher than the estimated billing they received prior to their meter repair. The total monetary impact to the customers was \$17,380.62.

RECOMMENDATION:

We would recommend that UCS management consider the following:

- Evaluate the methodology used to establish estimated customer billing during the meter damage period to determine if it can more accurately estimate the billing until meter repairs occur (e.g. review prior months adjusted to identify trends, inflation, etc.).
- Complete the ongoing Estimated Read Elimination Project.
- Evaluate the impact of shortening the number of months that can be retroactively adjusted.
- Utilize the Estimate and eliminate backbilling.

NOTE: FOR PWE/UCS MANAGEMENT RESPONSE AND THE AUDIT DIVISION ASSESSMENT OF MANAGEMENT RESPONSE, SEE EXHIBIT 1

FINDING # 4 –INCONSISTANT APPLICATION OF CUSTOMER SERVICE HIGH WATER BILL QUICK REFERENCE GUIDE

RISK RATING (IMPACT AND MAGNITUDE) = LOW/MEDIUM

BACKGROUND:

The Customer Service High Water Bill Quick Reference Guide (Guide) states the Customer Service Representative (Rep) will review the following screens to help the customer with their concerns when they call in about a high water bill:

- CO – Consumption Screen
- RD – Daily Read on Fixed Network
- TR – Transaction Screen
- TO – Hold Screen
- GI – General Information Screen

The guide further instructs the Rep to review the account for seasonal use, such as a lawn watering or an increase in the number in the household; and indications of a leak, such as a sharp increase or a continual increase in consumption. After the Rep has determined possible causes of a higher bill, they can discuss possible remedies available to the customer, such as a Leak Adjustment (LKA) or Unusually Large Bill adjustment (ULB).

We listened to the recordings of 19 customers phone calls comprised of some complaints to City Council and other judgmentally selected sample of customers along with a judgmentally selected sample of customers who had spikes in consumption between five and ten times there average consumption.and reviewed the Transaction Screens in their accounts in the Customer Information System for adherence to customer service stated procedures.

FINDING:

We found no instances where the Rep informed the customer of how to check for leaks, why high bills might occur, and the options available to them that might result in an adjustment that would credit their account.

RECOMMENDATIONS:

UCS may wish to consider sending a consistent form letter (electronic or hardcopy) to any customer that has consumed more than 200% of its average usage rate, which is in line with the Ordinance language in Chapter 47 Section 47-75. The form letter should explain the common leak scenarios and how to detect them; their impact on the customers' consumption/bill, along with the remedies/adjustments available to the customer. This option would provide the customer with all the elements they need to know in written form, rather than relying on a verbal communication which may be inconsistent.

Alternatively, the existing water bills could be expanded to include the leak and adjustments information on the backside of the paper copies of the monthly statements; they already have information related to the Administrative Hearings.

Improperly functioning ERTs should be replaced within two site visits in order to reduce the billing impact on customers.

NOTE: FOR PWE/UCS MANAGEMENT RESPONSE AND THE AUDIT DIVISION ASSESSMENT OF MANAGEMENT RESPONSE, SEE EXHIBIT 1

FINDING # 5 – INCORRECTLY CALCULATED LATE CHARGES ON PARTIAL PAYMENTS

RISK RATING (IMPACT AND MAGNITUDE) = LOW

BACKGROUND:

Chapter 47, Article II Section 47-69(a) states that "All potable water bills shall be payable in full based upon the rates and schedules provided in this division, on or before the due date stated on the customer's bill, unless the customer notifies the department in writing that he or she desires to challenge the correctness of the bill in an administrative hearing as described in section 47-70.1. If payment in full is not received by the department or an authorized agent by the due date and the customer has not requested an administrative hearing, the department shall bill such customer ten percent of the past due amount as a charge for late payment." The ordinance does make an exception for senior citizens in Section 47-69(b).

Customers included in our testing population had received high water bills and were therefore more likely to owe past due amounts because of an inability to pay the bill following the receipt of a bill reflecting a sudden increase in consumption. Senior citizens in our population did not receive late charges which is appropriate per Section 47-69(b) of the Code of Ordinances.

FINDING:

- Penalties are not calculated correctly when partial payments are made on past due amounts.

A water utility customer's December 2011 bill was \$205.15 (Water - 88.92, Sewer - 106.21, Drainage - 10.36 less overpayment credit of \$.34). The customer made a payment of \$200.00 which was credited to the account on the due date of the payment (12/19/11). The customer was charged \$20.55 in late penalties (\$8.89 - water penalty, \$10.62 – sewer penalty, and \$1.04 drainage penalty) which represents 10% of the entire December 2011 bill rather than 10% of the past due amount of \$5.15.

RECOMMENDATION:

We recommend that late charges assessed customers should be based only on the past due amount as stated in Chapter 47, Article II Section 47-69(a) of the Code of Ordinances.

NOTE: FOR PWE/UCS MANAGEMENT RESPONSE AND THE AUDIT DIVISION ASSESSMENT OF MANAGEMENT RESPONSE, SEE EXHIBIT 1

OTHER

FINDING # 6 – LACK OF PROGRAM/SYSTEM DOCUMENTATION SUPPORTING SOFTWARE DEVELOPMENT LIFE CYCLE (SDLC) CHANGES

RISK RATING (IMPACT AND MAGNITUDE) = MED/HIGH

BACKGROUND:

UCS is using a 30 year-old internally developed system to manage the business processes within the UCS Division. The system has been updated and maintained using “patches” which were also developed internally. The UCS IT staff exceeds 20 employees, and includes 24 hour staff coverage.

As a stop-gap measure to mitigate some of the risk resulting from this situation, management purchased a COBOL analyzer product and stated that it ran it against the current IT system. The analyzer was reported to provide documentation on all programs that currently comprise the billing system so that if personnel were to leave, management and staff would have this information available.

UCS stated that a new system is in the process of being developed, which is supposed to incorporate sufficient documentation and logging of system changes for software development life-cycle controls.

FINDING:

During the audit no formal documentation (manuals, Power Points, etc) regarding the key data elements of the system were provided to the audit team to support the claims of the COBOL Analyzer. Systems process explanations and definitions of systems data were provided via email narratives or Excel spreadsheets, but not from raw system generated reports and thus could not be adequately verified. Also, system changes made throughout the SDLC were not indicated or reflected in the information provided. As a result of the deficiency in program documentation, institutional knowledge of the system used by UCS to manage daily business processes is concentrated in one IT manager as supported by the significant resource issues encountered during the audit in obtaining system data from the UCS group in a timely manner.

RECOMMENDATION:

We recommend that UCS management ensure the new system is thoroughly documented as part of installation / implementation requirements and that the documentation is updated as changes to the system are made. In addition, several employees should be trained and developed so that institutional knowledge critical to the operational success of the Division is not concentrated in one individual.

NOTE: FOR PWE/UCS MANAGEMENT RESPONSE AND THE AUDIT DIVISION ASSESSMENT OF MANAGEMENT RESPONSE, SEE EXHIBIT 1



CITY OF HOUSTON

Public Works and Engineering
Department

Interoffice

Correspondence

To: David Schroeder
City Auditor

From: Assistant Director
Utility Customer Service
Resource Management Division

Date: September 27, 2013

Thru: 
Daniel W. Krueger, P.E., Director

Subject: UCS AUDIT RESPONSES


Susan Bandy, CPA, Deputy Director
Resource Management Division

Attached are the Public Works and Engineering Department final responses to the subject audit, as you requested in your message of September 12, 2013 and previously transmitted electronically on September 25, 2013.


Tommy McClung

Attachments

Exhibit 1
PWE/UCS Management Responses
and Audit Division's Assessment
of Management Responses

FINDING #1 – INEFFICIENT FIELD TECHNICIAN ERT/METER REREAD PROCESS
RISK RATING (IMPACT AND MAGNITUDE) = MED/HIGH

UCS MANAGEMENT RESPONSE:

UCS management has a broad array of reports geared to monitor efficiency and efficacy of field personnel. However, as standard operating procedure requires field technicians to provide notes and comments for each site visit and more than 1,500 work orders are completed daily, management review of all individual field notes is neither feasible nor the appropriate tool to assist UCS in reaching its ultimate goal of resolving all field-related issues before the fourth billing cycle. Rather, management uses summary reports to benchmark, goal-set and identify trends and outliers. When an outlier or unfavorable trend emerges, then management “drills down” into the detail (including, but not limited to, field notes). For example, as a tool to identify and manage re-reads, field management developed an ad-hoc report addressing re-reads on a daily and monthly basis from available system data¹.

As another example, management implemented a Consecutive Re-Read Analysis Project in the summer of 2012 that went live in FY13. Management monitors and analyzes a system-generated report identifying automated accounts with three or more consecutive monthly manual reads (manual reads for billing or “re-reads” as used in the audit finding) in order to gain a more in-depth understanding of trends, patterns and procedural inefficiencies resulting in consecutive manual reads or re-reads. UCS management uses this report to identify potentially malfunctioning, damaged or vandalized ERTs and enhance procedures to reduce unnecessary manual reads.

With regard to identifying vacancies, a coding system is in place in both our system and our processes (coding system was established in 2004). The identification of a vacant account generally occurs by an on-site field technician. (This categorization is in the field “a_read_mode” in the data set sent by UCS where “H” indicates vacant house, “L” indicates vacant lot, B” indicates vacant building).

For example, the system automatically generates work orders on automated zero-consumption reads for those coded as non-vacant properties. Once on site, the tech verifies the zero-consumption reading and, within reasonable constraints, investigates the property to make a determination if it is vacant. If it is determined that the property is vacant, the tech codes the account appropriately in the system. A field tech on site responding to any work order may code an account as vacant, if appropriate.²

Clarification of Background and Finding

Overall, our understanding of this finding is that the auditors were concerned that UCS is manually reading some accounts for multiple months without actually correcting the problem causing the need to manually read those accounts repeatedly. And, in order to quantify the impact of this perceived inefficiency, an attempt was made to calculate the total cost of these reads over a period of time to demonstrate the resources we could have reallocated if we had fixed the problems sooner.

¹ See Appendix 2-A for report data.

² See Appendix 2-B for screen shots of coding.

Our operational goal is to reach a point at which actual infrastructure problems (meter damage, malfunctioning endpoints, etc.) are corrected before the fourth billing cycle. We believe that we can largely reach this goal by the end of FY14. It is important to note, however, that the risk described in this finding is that we might not keep up with corrective actions to the metering/automated systems in a timely fashion, and not that the customer bills will be incorrect. We have been, and will continue, systematically working through any remaining issues with the system itself, as described throughout the responses to these audit findings. But so long as a read is obtained either through the automated system or manually from the meter, the customer is receiving an accurate bill.

As we continue to move our focus to first-time fixes, resources that become available will be reallocated to mitigating risk in other areas, such as: Ensuring periodic quality checks on all meters and automatic reading devices; efforts to locate unauthorized users of the water system; collections; continued enhancements that will allow for more automation of accounts, etc. However, it is not accurate to state or imply that any existing or past inefficiencies will result in savings (reduction of the budget).

It is necessary to make some clarifications to the background and findings. First, since UCS is a fairly complex and multi-faceted organization, it is important that we provide a clear definition of several of the terms used in this finding.

Definitions

Re-Read vs. Manual Read for Billing

Because there is a significant difference in cost per activity, it should be noted that there is a distinct difference between a **re-read** and a **manual read for billing**. Admittedly, even UCS staff use the two terms interchangeably at times (Ex: the Consecutive **Re-read** Analysis Project mentioned above should be called the Consecutive **Manual Read** Project), but below is how we generally use them and will use them in the remainder of this response.

A **re-read** occurs when a read was obtained from the Fixed Network or van, but needed a follow-up manual read due to:

- An excessively high or low read
- A lower than the previous read
- Accounting-required read for adjustment or correction
- Customer-requested re-read

A **manual read for billing** occurs when

- No read was obtained from the Fixed Network or Van
- The account is not automated (approximately 8,000 accounts are not automated)

Lower than Previous Read (Job Code MR)

A lower than previous read indicates that the consumption used for billing in the prior month is higher than the consumption read in the current month. While “some type of equipment problem” (e.g. a stuck endpoint) is often the cause of a lower than previous read, it should be noted that there are other causes. For example, suppose the Fixed Network failed to pick up a read for billing on an account due to inclement weather and an estimate was used for billing. If the estimation logic resulted in consumption that was too high, it is quite possible that the actual Fixed Network read the following month would be lower than the estimated consumption used for billing in the prior month.

Missed Read (Job Code MM)

A missed read occurs when a read for billing is not obtained from the automated system. While this can be the result of a malfunctioning endpoint, it can also be due to inclement weather or obstruction (e.g. a car parked over the meter box) of an endpoint, both of which interfere with the signal transmission. If the missed read is not the result of equipment malfunction, the transmission of the signal starts again after the inclement weather, parked car, etc. is rectified.

Active No Consumption Read (Job Code RL)

When an account is active (open), but an automated read indicates no consumption, UCS historically has generated a work-order to verify the no-consumption read. As the integrity and reliability of our automated systems have increased, we found that the majority of the no-consumption reads truly had no registered consumption (as opposed to an endpoint problem). UCS began auditing the active no-consumption reads in FY13 to determine the feasibility of moving to less frequent manual verification in FY14. As of July 1, 2013 Active No Consumption reads are verified on a quarterly basis rather than monthly.

Cost to Manually Read an Account - \$1.98

While it would be expensive to read all meters manually, and we could not provide customers with any of the new initiatives we are providing them through use of the fixed network (see response to finding # 5), it is still the quickest and, therefore, least expensive work order our field inspectors currently handle. We performed an analysis of the cost per manual read for the group of 8-10 inspectors dedicated to obtaining a manual read (as defined above). They are not expected to fix anything; they are simply there to read the meter so that we can ensure the customer gets an accurate bill.

In determining the total cost, we added 2 layers of overhead to the group: Direct (field supervisors, equipment, clothing, etc.) and indirect (IT, business services, high level management) and allocated these costs using the methods detailed in the analysis.

The cost per manual read for obtaining a manual read (as defined above) is \$1.98.

| Cost of Manual Reads | | | |
|--|---|---------------------------|-------------------------|
| Description | Description of Cost Associated | | Monthly Cost |
| Personnel Costs | | | |
| Field Operator receives work order (~125/day/person) | ~10 dedicated FTEs (salary + benefits) | | \$21,500.00 |
| Vehicle Costs | | | |
| | | Average Monthly Mileage | |
| Costs associated with total average # miles driven per month (for all trucks assigned to dedicated meter readers) | ~ 1,000/month/employee at 2013 IRS mileage allowance of \$0.565/mile | 10,000 | \$5,550.00 ¹ |
| Supervision, dispatch and direct supplies | | | |
| Costs associated with hand-held reading devices, specialized clothing, workboots, safety glasses, field office supervision, etc. | 5% Direct Costs | | \$1,352.50 |
| UCS Overhead | | | |
| | | % of UCS Operation Budget | |
| Costs associated with Business Operations, Customer Information Systems, HR, Training, etc. | Direct Costs related to Work-Orders as a percentage of Total UCS Operation Budget | 0.0882% ² | \$3,889.33 ³ |
| Total Monthly Cost | | | \$32,291.83 |
| Average Cost Per Re-Read | | | \$1.98 |
| ¹ Cost is in line with FY2013 projected annual fuel and vehicle maintenance expenditures, as | | | |
| ² Personnel + Vehicle + Supervision, dispatch, supplies | | | |
| | \$28,403 | | |
| Total UCS Operating Budget | \$32,185,928 | | |
| % of Total UCS Operating Budget | 0.0882% | | |
| ³ Cost Center 50007 (Business Operations) Budget | | | |
| | \$1,929,400 | | |
| Cost Center 50008 (Customer Information Systems) Budget | | | |
| | \$2,181,200 | | |
| High-Level Management Costs | \$296,818 | | |
| Total (UCS) | \$4,407,418 | | |

Cost to Re-Read an Automated Account - \$9.97

In the case of a re-read, there are a number of steps the Water Service Inspectors (WSI) are expected to take in order to ensure accurate identification of the issues and that the “fix” made actually corrects the problem. While there are much more expensive work orders, particularly those related to large meters, a re-read is more time consuming and, therefore, costs significantly more than the manual read for billing described previously.

In order to prepare a cost to re-read an automated account, we attempted to segregate the costs incurred specifically related to “re-read” work orders. Unlike the group performing manual reads for billing, there is no dedicated group for performing re-reads. Rather, any of our WSIs may perform re-reads in the course of his or her daily activities.

However, WSI Is are the primary group performing re-reads as more senior inspectors are largely utilized for more complex tasks. Again, while WSI Is are the primary group performing re-reads, re-reads are not the only type of work order WSI Is complete. There are more than 40 types of work orders these techs may be assigned. As would be expected, some of these work orders are able to be handled more quickly than others (replacing a cracked meter box lid is significantly faster than repairing a leak or pulling a meter), so our best measure of cost for a re-read is the average cost per work order for the WSI Is. In fact, we believe that this is a conservative estimate as a re-read is a relatively straight-forward work order compared to some of the others.

Because this group is not performing first-time reads for billing, they are expected to spend more time on each work order to ensure that any issues are found and corrected. This has allowed UCS to build steps into the Standard Operating Procedures which add value to the overall distribution system. For example, verifying (and correcting, if necessary) the type user and meter size ensures not only the accuracy of our account information database, but also that the customer is billed at the proper rate. Similarly, technicians verify the address, meter location and number, account status as well as other physical account attributes critical to maintaining the integrity of our systems.

Our analysis focused on the 28 WSI I's, each of whom performed more than 15 re-reads in February 2013. Using all work orders this group completed, we found the average cost per work order. This group completed slightly more than 13,000 work orders in February, of which less than 25% were re-reads.

Based on the information described above, the analysis detailed below shows that, conservatively, the cost to re-read a meter is less than \$10.

| Average Cost Per Work Order ¹ | | | |
|--|-----------------------------------|---|---------------------------|
| Description | Description of Cost Associated | | Monthly Cost |
| Personnel Costs | | | |
| WSI 1 | ~28 FTE WSI I (salary + benefits) | | \$89,583.67 |
| Vehicle Costs | | | |
| Costs associated with total average # miles driven per month (for all trucks assigned WSI 1s completing work orders including re-check reads) | | Average Monthly Mileage (For 28 vehicles) ~ 1,200 miles/month/employee at 2013 IRS mileage allowance of \$0.565/mile 33,600 | \$18,984.00 ² |
| Supervision, dispatch and direct supplies | | | |
| Costs associated with hand-held reading devices, specialized clothing, workboots, safety glasses, field office supervision, etc. | | 5% Direct Costs | \$5,428.38 |
| UCS Overhead | | | |
| Costs associated with Business Operations, Customer Information Systems, HR, Training, etc. | | Direct Costs related to Work-Orders as a percentage of Total UCS Operation Budget 0.3542% ³ | \$15,610.18 ⁴ |
| Grand Total | | | \$129,606.23 |
| Average Cost Per Work Order | | | \$9.97⁵ |
| Notes: | | | |
| ¹ It should be noted that the WSI 1s complete more than 40 different types of workorders including (but not limited to) meter maintenance and repair, endpoint maintenance and repair, manual reads on non-automated accounts, flow tests and leak checks. Re-check reads account for less than 25% of the work orders completed by the field operations group. | | | |
| ² Cost is in line with FY2013 projected annual fuel and vehicle maintenance expenditures, as well as depreciation expense. | | | |
| ³ Personnel + Vehicle + Supervision, dispatch, supplies \$113,996 Total UCS Operating Budget \$32,185,928 % of Total UCS Operating Budget 0.3542% | | | |
| ⁴ Cost Center 50007 (Business Operations) Budget \$1,929,400 Cost Center 50008 (Customer Information Systems) Budget \$2,181,200 High-Level Management Costs \$296,818 Total (UCS) \$4,407,418 | | | |
| ⁵ These 28 employees complete, on average, 13000 work orders per month. | | | |

Gauging Inefficiencies

The fundamental flaw in determining the number of work orders deemed repetitive (or unnecessary had we been more efficient) in this finding is due to the lack of understanding that a manual and/or re-read of a specific account multiple times is only indicative of a problem if those manual and re-reads are consecutive.

It is important to understand that even with the automated systems operating at optimum capacity, some level of manual reads will always be required due to:

- Inability of the automated system to obtain a monthly read due to weather, environment, etc.
- Some relatively small number of accounts being too difficult or impractical to automate
- Due diligence on system accuracy will always lead us to physically read the meters manually at least once during some fixed time period (optimally, every 12 to 18 months)

We fully understand that additional efficiencies can be realized. Specifically, we are continuing to work on the following three areas:

- Manual reads for billing as a result of >3 consecutive missed automated reads
- Re-reads as a result of >3 consecutive lower than previous automated reads
- Manual reads to verify consecutive confirmed “active, no usage” accounts

The first 2 categories represent recurring manual requirements on automated accounts and are likely a result of equipment in need of repair or replacement. It should be noted that there are situations in which this is not the case. (For instance a customer might place a dumpster over the meter/endpoint for several months preventing automated reads.) We consider the majority of these > 3 consecutive manual reads and re-reads potential gains in efficiency and have been actively reducing these populations (and will continue to do so).

The 3rd bullet, “Active no Usage” accounts, represents an area we targeted for monitoring until the end of FY13. As of July 1, 2013, we have moved these to a quarterly manual reading cycle and current data shows that this has reduced the issuance of type of work order by 40%.

Finally, we have the manual reads which are simply the cost of doing business (singular missed or lower than previous reads, internally requested/customer-requested reads, and the quarterly active “no usage” verification reads). These reads have no associated gains in efficiency.

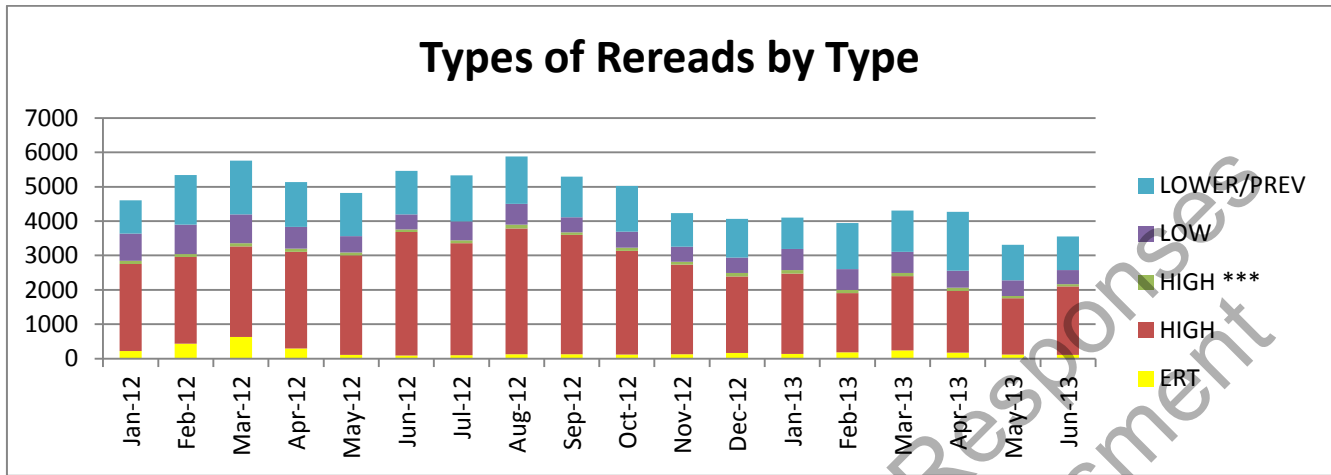
Our understanding is that this finding considered any account manually read more than 2 times (**not consecutively**, but any 3 or more times) in a 19 month period as an unnecessary work order. There are many instances in which an account would be read 3 times in a 19 month period in which no inefficiency and certainly no waste occurred. As an example, consider the following scenario:

An account does not generate an automated read in January due to inclement weather, and then reads fine for 4 months. In June a truck was parked over that customer’s meter box, preventing a read. Then we have another 3 month period of automated reads without incident. Finally, an automated read outside our accepted parameters generates a work order to manually check the read in March.

Nothing in the overall scenario above indicates a fundamental issue with the metering equipment. However, it does point out that it is absolutely imperative that the **consecutive** aspect of this analysis be part of the parameter used to determine trends involving any potential inefficiencies related to manual reads and re-reads.

PWE/UCS Management Responses
Exhibit 1
and Audit Division's Assessment
of Management Responses

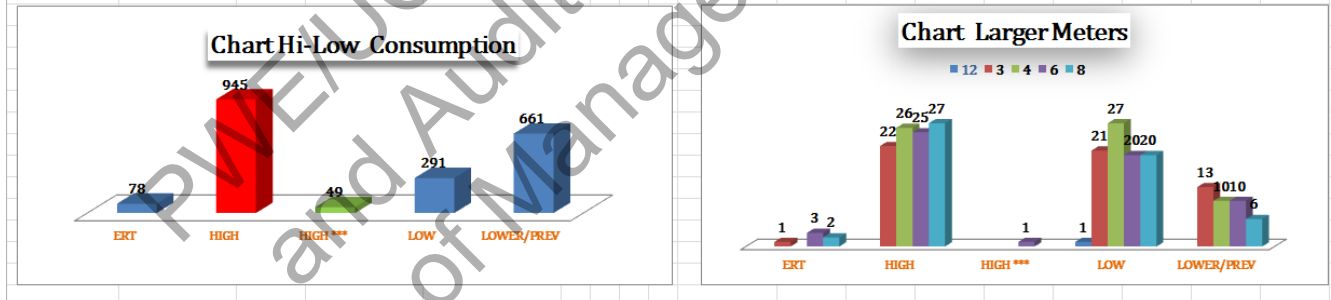
APPENDIX 2-A



Note that season over season, the total number of re-reads trends down with "High" consistently representing the majority of the re-reads. "High" reads do not necessarily indicate a problem with the automated read rather a due diligence to provide verification in an effort to provide world-class customer service. In most cases the high read was accurate. This is evidenced by the significant increase in "High" reads in the summer months and during the drought in early 2012.

This report does not include re-reads for Active no Usage
 High*** represents extremely high usage accounts (usually large meter)

| MONTH | April | MONTH | April |
|--------------------|--------------|--------------------|------------|
| ERT | 78 | ERT | 12 |
| HIGH | 945 | HIGH | 3 |
| HIGH *** | 49 | HIGH *** | 4 |
| LOW | 291 | LOW | 6 |
| LOWER/PREV | 661 | LOWER/PREV | 8 |
| Grand Total | 2,024 | Grand Total | 235 |



This information is updated daily from system-generated information (WCS153). Field management utilizes the information from this report to monitor re-read activity and understand causes and trends and prioritize work appropriately. For example, due to the amount of water passing through the meter, large meters are extremely sensitive to the timing of a read. The consumption variation between a 28-day read and a 30-day read will likely cause the latter reading to appear on an exception report, requiring a re-read. Thus careful consideration is made to ensure that large meters are read on the same period each month.

The report is a pivot table in Excel, so management can see the detail behind any number simply by double clicking on the number. The report has become more sophisticated since its creation 2.5 years ago, and the re-reads are trending down season over season.

APPENDIX 2-B

```

LEELAND - RUMBA Mainframe Display
File Edit View Connection Transfer Options Tools Help
WACA 1926 8435 1112 BC 08 TU 21 DT 3/04/13 MS 2 MM BA FL 00 BAL 5.28+
10550 WESTPARK DR 5290 MAIL HU MSC 6 ST ON
10550 WESTPARK INTERESTS LLC NAP OWN BILL NORM AVG
APT CUTS RTN CHK DT 0/00/00 RTN CKS DEP 200.00
METER# 06557430 MAKE BA INST 06/19/2007 SP LOC SIDE
Fastpath
TYPE READ ID RD DATE DAYS READ CONS WATER AMT

START RD. ORDER ISSUED W091460 03042013
START RD. COMPLETED 094629 03062013 8
MRO LOWER THAN PREV WCS410 03112013 5
MRO LOWER THAN PREV WCS410 04092013 34 1
    
```

Vacant

```

LEELAND - RUMBA Mainframe Display
File Edit View Connection Transfer Options Tools Help
WATR 2027 1290 1166 BC 08 TU 21 DT 9/23/70 MS 15 MM BA FL 00 BAL 0.00+
5016 SAN FELIPE 491P MAIL HU WSC 6 ST ON
RICE FOOD MARKETS INC 2 NAP OWN BILL NORM AVG 143
APT A CUTS RTN CHK DT 0/00/00 RTN CKS DEP 0.00
METER# 10251529 MAKE BA INST 08/17/2011 SP LOC SIDE 361N SAN FELIPE
Fastpath
DATE ID TYPE TRANS REASON
041013 CS418 RADIO READ
041113 990076 RECHK AUD ISSUED WTR $0.00
041513 15574 WORKORDER DISPATCHED TO TECH AT 00
041513 106179 TECH ON EN-ROUTE TO CUST ADDRESS AT 11
041513 106179 TECH ON ON-SITE AT 11
041513 106179 GPS UNAVAILABLE
041513 106179 BEF FLOW TST RDG: MTR = 00002761.00 ERT = 00027
041513 106179 (1) VACANT HOUSE (2) CT NO OUTSIDE
041513 106179 INSPECTION NOTICE
041513 106179 (1) FORCE READ (2) NO LEAK INDICATED
041513 106179 RECHECK PREAUDIT COMPLETED
    
```

Tech indicates vacant house

System now shows house is vacant

```

LEELAND - RUMBA Mainframe Display
File Edit View Connection Transfer Options Tools Help
WACA 2027 1290 1166 BC 08 TU 21 DT 9/23/70 MS 15 MM BA FL 00 BAL 0.00+
5016 SAN FELIPE 491P MAIL HU WSC 6 ST ON
RICE FOOD MARKETS INC 2 NAP OWN BILL NORM AVG 143
APT A CUTS RTN CHK DT 0/00/00 RTN CKS DEP 0.00
METER# 10251529 MAKE BA INST 08/17/2011 SP LOC SIDE 361N SAN FELIPE
Fastpath
TYPE READ ID RD DATE DAYS READ CONS WATER AMT
MRO RETURNED BILLED WCS410 09102012 32 2011 166 629.74
MRO RETURNED BILLED WCS410 10092012 29 2149 138 525.02
MRO RETURNED BILLED WCS410 11072012 29 2274 125 476.40
    
```

Badger vs. Itron

Note: This audit finding includes a chart titled “Six Month Comparison of Technician Re-Read Count by ERT Vendor as a percentage of installed units” and the auditors noted that the re-read on Itron endpoints was 2x that of the Orion endpoints. When looking at the population of endpoints over the six month period, the effect of legacy Itron endpoints must be accounted for. The current versions of Itron’s endpoints and the Badger Orion endpoints have similar specs, lifespan and warranty. However, previous Itron models, which were put in service much earlier than the Orion endpoints, had considerably shorter life expectancies, as the technology in these endpoints was not as advanced as the technology in the more recent versions. The Itron population considered in the comparison included legacy endpoints at or past their expected life span. So, the comparison is not an apples to apples comparison. As discussed in Finding #1, UCS continues to monitor and replace legacy models of Itron endpoints.

**OFFICE OF THE CITY CONTROLLER AUDIT DIVISION –
ASSESSMENT OF PWE/UCS MANAGEMENT RESPONSE:**

Management Responses provided do not sufficiently address the issues identified, nor were they grounded in data as provided to the Office of the City Controller’s Audit Division. The audit evidence gathered and analyzed throughout the course of the audit was done so in accordance with professional standards issued by the Government Accountability Office and the Institute of Internal Auditors. Detailed assessment comments and supporting data are available upon request.

FINDING # 2 – INCONSISTENT PERFORMANCE OF FIELD TECH SITE VISIT PROCEDURES
RISK RATING (IMPACT AND MAGNITUDE) = MEDIUM

UCS RESPONSE:

The primary objective of UCS is to obtain accurate meter reads from approximately 470,000 active meters across 600 square miles from which to bill each month. We currently obtain approximately 93%¹ of these billing reads from our automated systems, leaving 7% to be obtained manually prior to billing. Additionally, UCS is responsible for and dedicated to maintaining a reliable metering infrastructure which includes both routine and corrective maintenance of the 470,000 meters and endpoints. UCS continually strives to balance its primary objective of obtaining accurate reads and a secondary goal of (ultimately) resolving all field-related issues before the fourth billing cycle (as opposed to two business cycles to which the auditors refer).

We understand that our field technicians are the front-line of our organization. Because we operate in a dynamic environment subject to metropolitan growth and changes in technology, we maintain an organic staffing model reflective of the current priorities and requirements. This staffing model has afforded UCS the ability to simultaneously meet the stringent billing responsibilities and significantly reduce the number of damaged meters (as evidenced by accounts estimated due to damaged meters²).

Our current field staffing model consists of six distinct types of work groups, each having specific standard operating procedures appropriate for the group. As such, not every field technician is required to perform the same tests at a site. For example, the First-Time Read Group obtains all necessary manual reads for billing (see Finding #1 for more details on this group). Because time is of the essence for this group, it is not standard operating procedure to perform the detailed tests that a maintenance group would perform. In contrast, a technician working in a Mobile Data Terminal (MDT) Group may be performing any of the 154 work order types and would be required to perform the standard tests for meters smaller than 3". Further, a technician working in the Commercial Group would have an entirely different set of requirements depending on the reason for the visit (repair, calibration, read, etc.) and the size of the meter.

Related specifically to the instances noted by the auditors, On/Off tests and Before and After Flow Tests are only required in very specific instances. An on/off test is performed to ensure that the meter is serving the appropriate property. This test is not necessary on an account in which a tech has recently verified the meter is serving the appropriate property. As stated above, the 77 work orders considered were for 20 customers. It is, in fact, both reasonable and appropriate that the on/off test not be repeated on the same meter and same account in short proximity. In our review of these site visits, there was no instance when an on/off test should have been performed and was not. Similarly, except in the case where the tech is reprogramming an ERT, an "After Test" is not required. Further, in our review of these site visits, an After reading was only appropriate in one instance (and it was performed).

Finally, preaudit site visits are required in only very specific circumstances. UCS did not find any preaudit site visits requested in the sample reviewed.

We also appreciate that a private-side leak can be damaging and costly. It has long been the practice of UCS to refrain from turning a customer's water off in the event of a leak without first making contact with the customer in order to mitigate any possible health and safety risk (e.g. dialysis machine) or serious damage to property or equipment (e.g. swimming pools, ponds, aquariums, etc.). Procedures around private-side leaks were revisited in 2010, establishing specific protocols to be followed by all stakeholders. Additionally, in 2013 the Director of PWE established the following department-wide standard:

"Whenever a PWE employee determines that a water leak exists on the private side of the system/water meter, the employee will notify Utility Customer Service or by approved process cause Utility Customer Service to be notified of the leak. Notification will include report of the service request (SR)# and will be made prior to closing the SR or closing any resultant work order. This additional requirement does not relieve investigators or repair crews from currently required actions to

¹ See Billing Sources Graph

² See Accounts Estimated due to Damaged Meters Graph in Finding #3

notify or reasonably attempt to notify the apparent customer on site in the field based on the observed circumstance.

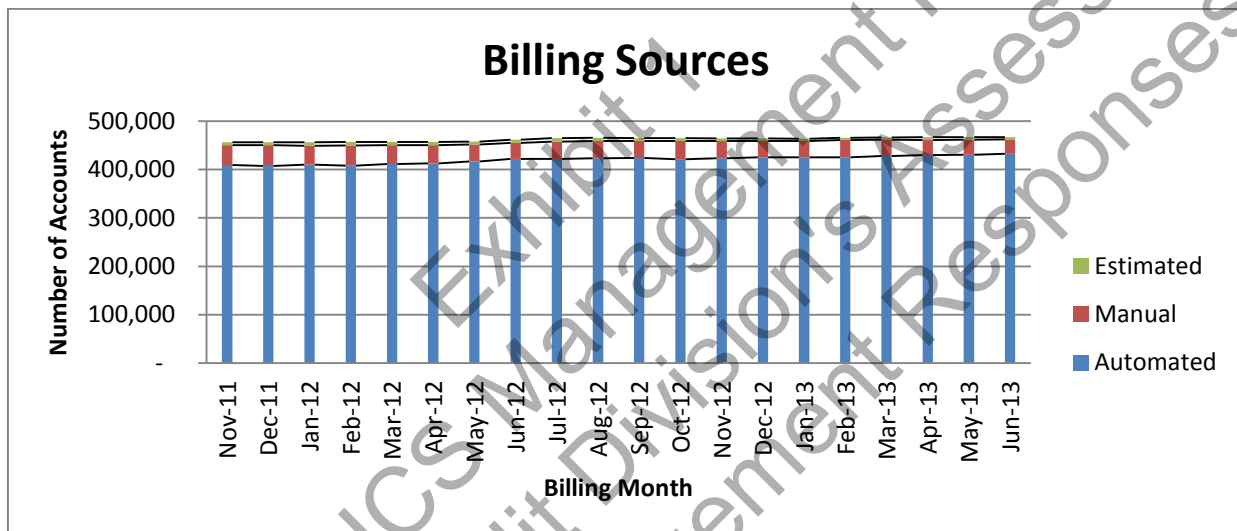
UCS will:

Establish reporting standards for receiving of notifications per above.

Take action per customer records to notify the account customer by most timely means available of the determination of private leak.”

With the move to the Fixed Network, UCS enables customers to proactively monitor consumption through the Consumption Awareness Program (CAP). Customers can monitor monthly, daily and hourly consumption, activate high usage alerts, and compare their consumption to neighbors with similar homes and families (See Finding #5 for more detail on CAP). The Leak Alert Setting will notify the customer upon detection of continuous flow of water through the meter for a 1 to 7 day period. This scenario is often indicative of a leak for single-family residential accounts.

Upon clear observation of a private-side leak, UCS will provide notice to the customer and assist the customer in turning off their water whenever requested.



**OFFICE OF THE CITY CONTROLLER AUDIT DIVISION –
ASSESSMENT OF PWE/UCS MANAGEMENT RESPONSE:**

Management Responses provided do not sufficiently address the issues identified, nor were they grounded in data as provided to the Office of the City Controller’s Audit Division. The audit evidence gathered and analyzed throughout the course of the audit was done so in accordance with professional standards issued by the Government Accountability Office and the Institute of Internal Auditors. Detailed assessment comments are available upon request.

CUSTOMER SERVICE PROCESSES

FINDING # 3 – IMPACT OF IMPROPER OR INACCURATE ESTIMATES RISK RATING (IMPACT AND MAGNITUDE) = MEDIUM

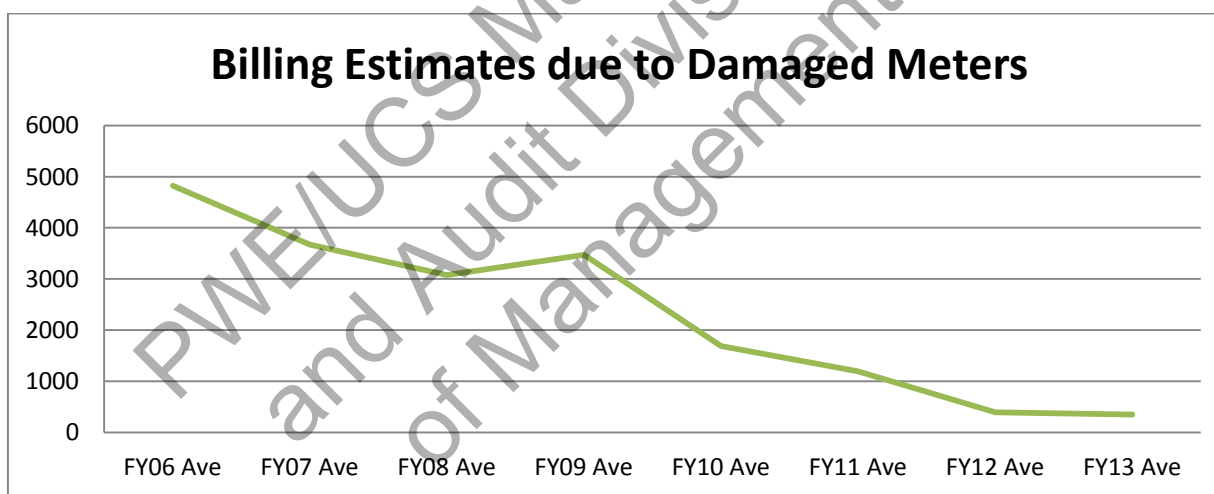
UCS

RESPONSE:

UCS recognizes the impact that estimation of accounts can have on customers. Standing priority is to bill off of actual consumption, and all billing processes are designed to assure an accurate billing read is attained, if at all possible. Yet, when scenarios do surface that dictate that we bill off of estimated consumption, we understand the importance of the bill being as close to actual as is possible. UCS staff is working to ensure that in the spring of 2014, when the new billing system moves to full production, the estimation logic used will be more robust and provide a bill more consistently close to expected actual consumption.

Additionally, in May 2012, UCS initiated the Estimated Read Project (ERP) in an effort to identify and remediate accounts with long-term estimates. The project targets accounts estimated for more than seven consecutive months and involves a dedicated team of employees locating, repairing, retrofitting, replacing or pulling meters. At its inception, approximately 3,400 accounts were identified as estimated more than 7 times and included in the ERP. Note that many of these meters have been buried under concrete or landscaping and take concerted effort to locate and replace. As of May 2013, approximately 84% of these accounts were billing from metered consumption (as opposed to estimates). Billing estimates due to damaged meters have decreased significantly over the past 7 years and UCS fully expects this trend to continue as the Consecutive Estimated Read Project comes to a close¹.

In regard to the number of months that can be retroactively adjusted, this activity is governed by ordinance. UCS will continue to evaluate each scenario to ensure fair adjudication of billing to include consideration of the provisions of ordinance that dictate the responsibility of the Department to bill accurately, to “charge for all water that passes through the meter,” to charge for the “total quantity of water actually delivered” and for all services a customer receives “including the total gross quantity” of water attributed to a customer’s meter.



OFFICE OF THE CITY CONTROLLER AUDIT DIVISION – ASSESSMENT OF PWE/UCS MANAGEMENT RESPONSE:

Management Responses provided do not sufficiently address the issues identified, nor were they grounded in data as provided to the Office of the City Controller’s Audit Division. The audit evidence gathered and analyzed throughout the course of the audit was done so in accordance with professional standards issued by the Government Accountability Office and the Institute of Internal Auditors. Detailed assessment comments are available upon request.

¹ See Billing Estimates due to Damaged Meters Graph

**FINDING # 4 –INCONSISTENT APPLICATION OF CUSTOMER SERVICE HIGH WATER BILL QUICK REFERENCE GUIDE
RISK RATING (IMPACT AND MAGNITUDE) = LOW/MEDIUM**

UCS RESPONSE:

UCS listened to the 19 calls and observed that in many of the calls noted by the auditors it was not required, or even appropriate, for the customer service representative to discuss all options in the High Bill adjustment guide. In one of the 19 calls reviewed, the customer called to complain about sewer rates and told the customer service representative that she was blind and could not check for leaks. During 4 of the 19 calls, the customers informed the representatives that there was no leak on the property so the representative did not discuss leak adjustments or how to check for leaks. One of the calls reviewed was initiated by the daughter of the account holder and therefore the representative was not authorized to discuss the account with that individual. One customer, who admitted to having a leak (and therefore was not advised on how to check for leaks), was made aware of the leak adjustment process and told to call back when she had attained the relevant information. In three of the calls the customers were not calling to question the high bill, but were calling to inquire on how much to pay as to not interrupt service. The customer service representatives also assisted the customers in determining possible causes of the high bill during four of the calls. In summary, our review showed that in many of the calls the customer service representative, where appropriate, did in fact either ask the customer if they had a leak, instruct the customer on how to check for leaks, discuss the causes of high bills, or inform them of the relevant adjustment options available to them. The auditors assertion that all of these items should be discussed the first time any customer calls with a high bill is not appropriate nor is it part of the standard operating procedures within the UCS Call Center.

The High Bill adjustment guide is intended to be a source of information for the customer service representative (CSR) and not a set of operating procedures. It contains all major adjustments available to customers and is a tool used to both train new customer service employees on the options available for customers to remedy high bills as well as assist CSRs with their calls. The guide's tenets assist CSRs as they use probing questions to uncover customer needs. Direction to the customer is given based on the types of answers given to the questions.

In addition, we do not believe that sending a form letter when a customer consumes over 2x their monthly average is necessary or effective. Customers often consume more than 2x their average in the summer months when they are watering their lawn for the first time, filling swimming pools, and generally using much more water than the preceding 12 months. Our data indicates that as many 200K letters would have been sent from May-August of 2012 as a result of this methodology, the vast majority of which would not have resulted in any adjustment being applicable to the customer.

| Type User | Number of notices that would have been sent during hotter months (May-August 2012) |
|--------------|--|
| Residential | 143,012 |
| Sr. Citizen | 6,360 |
| Multi-Family | 7,098 |
| Commercial | 36,966 |
| Lawn | 15,191 |
| TOTAL | 208,627 |

UCS does recognize that the customer bill is a powerful communication tool and is committed to making our customers aware of consumption issues, impacts, and opportunities. Thus the recommendation of enhancing the bill messaging with information on high bill options is an idea we will consider. UCS has already undertaken several initiatives that will empower customers with their account. Those self-services include LiveChat, email blasts, MobileApps, and the Consumption Awareness Program.

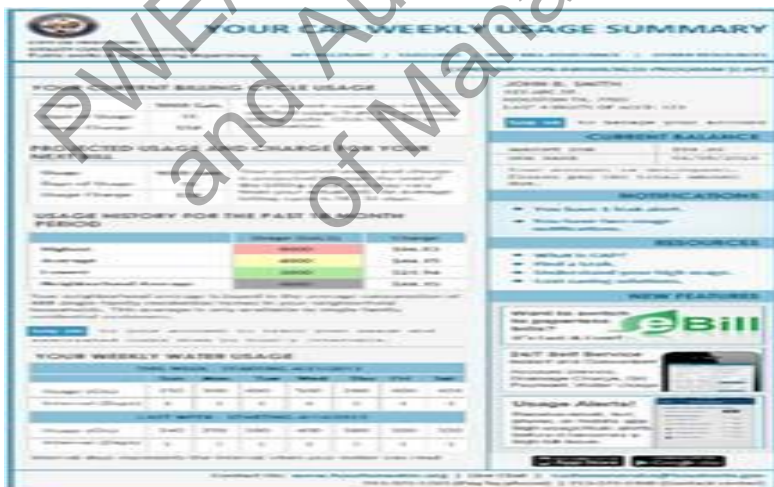
Customers can now contact a representative online regarding their bills through LiveChat which allows a customer to speak with representative through a Chat device rather than telephone contact.

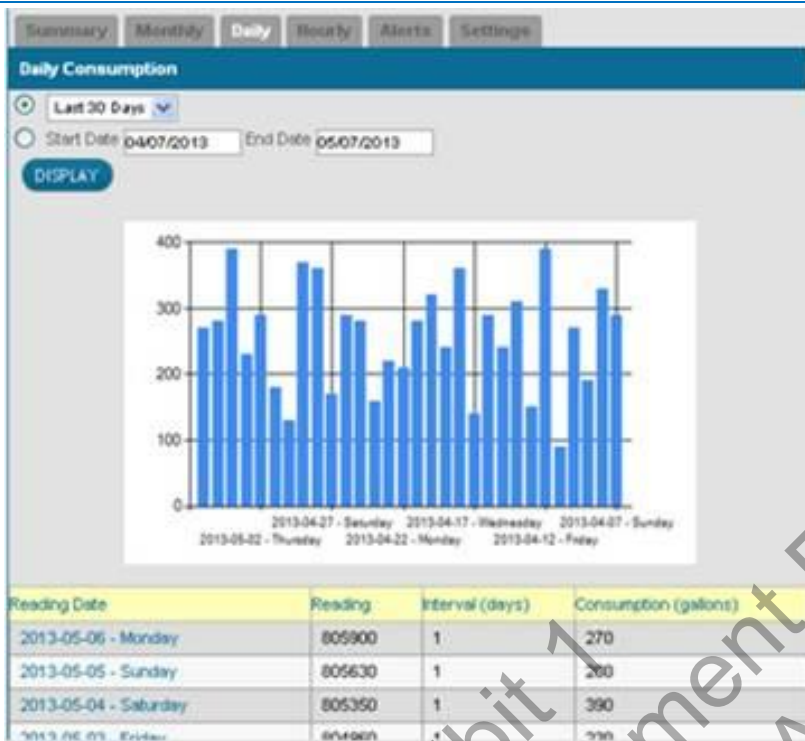
In addition, UCS sends out email blasts to customers (who have given us e-mail addresses) which inform them of the various causes for high bills.

UCS also has a free mobile app for iOS and Android operating systems that allow customers to pay their bills online, monitor their billing, receive consumption and leak alerts, participate in LiveChat, and start/stop their service all with the touch of a few buttons.



Another one of the projects that UCS has recently undertaken is the Consumption Awareness Program (CAP). This program allows customers to receive real time alerts on their water consumption and the estimated amount of their next monthly bill. Customer will also receive alerts when they may be experiencing leaks and what they can do to check for the leak. The CAP also compares usage to similar homes in the area, shows updated consumption patterns, and allows customers to manage their own alerts. These alerts can be sent through mobile phone or e-mail, and there are options for customers to receive recorded alerts on their home phone.





All of these innovations allow for more points of contact with customers affording more proactive communications, thereby addressing the predominant point of customer communication in this finding.

In regard to replacing improperly functioning ERTs within two site visits, UCS agrees that ideally before the fourth billing cycle an endpoint should be corrected when it is not properly working. Yet, operational practices ensure the customer is billed off of actual consumption more than 98% of the time regardless of whether an individual ERT is functioning or not. It must be made clear that an improperly functioning ERT does not necessarily have a billing impact on a customer. For more information, please see finding #1.

**OFFICE OF THE CITY CONTROLLER AUDIT DIVISION –
ASSESSMENT OF PWE/UCS MANAGEMENT RESPONSE:**

Management Responses provided do not sufficiently address the issues identified, nor were they grounded in data as provided to the Office of the City Controller’s Audit Division. The audit evidence gathered and analyzed throughout the course of the audit was done so in accordance with professional standards issued by the Government Accountability Office and the Institute of Internal Auditors. Detailed assessment comments are available upon request.

FINDING # 5 – INCORRECTLY CALCULATED LATE CHARGES ON PARTIAL PAYMENTS
RISK RATING (IMPACT AND MAGNITUDE) = LOW

UCS

RESPONSE:

We agree with this finding. The legacy billing system had been calculating late charges in the manner described since 1986. A change of methodology for applying late fee assessments to better align with the wording in the ordinance was in place effective July 1, 2013. As of the time of this writing, the change in late fee calculation has been implemented, vetted and is routine.

OFFICE OF THE CITY CONTROLLER AUDIT DIVISION –
ASSESSMENT OF PWE/UCS MANAGEMENT RESPONSE:

Management Responses, as presented, sufficiently address the issues identified. Future follow-up procedures as performed by the Audit Division, will test to validate and verify.

Exhibit 1
PWE/UCS Management Responses
and Audit Division's Assessment
of Management Responses

FINDING # 6 – LACK OF PROGRAM/SYSTEM DOCUMENTATION SUPPORTING SDLC CHANGES

RISK RATING (IMPACT AND MAGNITUDE) = MED/HIGH

UCS

RESPONSE:

UCS recognizes the need for system documentation that is consistently updated and corrected. The new Hansen system being installed and customized was specifically chosen for many reasons including its ease of use and configurability. As part of the customization and transition process, internal programmers, end-users, and Hansen representatives are meeting regularly to ensure widespread and layered understanding of the new system configuration and needs of the enterprise. Documentation of installation procedures, additional modules, and any applicable changes are being created and maintained for future reference.

Of note is the fact that UCS would have completed the installation of the new Hansen system by now, but implementation was delayed in order to implement the billing process for the drainage charge within the City of Houston. This effort required the full attention of UCS staff to assist in collecting \$100M+ for the City of Houston in both FY12 and FY13. The billing and collection of the drainage charge was completed using our legacy system (RUMBA).

Specific to the findings, though our IT manager is a vital part of our organization, we have approximately 8 Programmer Analysts and 2 System Consultants who help support and program our current customer information system. In addition, we currently employ an outside consultant who has become an expert on RUMBA and is helping us complete our transition to Hansen. All of these individuals possess the institutional knowledge to assist personnel with their information requirements in the current system.

**OFFICE OF THE CITY CONTROLLER AUDIT DIVISION –
ASSESSMENT OF PWE/UCS MANAGEMENT RESPONSE:**

Management Responses as presented, agree with the issue, but does not provide milestones and metrics, and final result/deliverable for which to benchmark or monitor for successful remediation.

The audit evidence gathered and analyzed throughout the course of the audit was done so in accordance with professional standards issued by the Government Accountability Office and the Institute of Internal Auditors. Detailed assessment comments are available upon request.

UCS MANAGEMENT SUMMARY

UCS has reviewed the report and provided our responses to the six findings. In order to place the findings and our responses in the proper context, we believe it appropriate to specifically open by summarizing efforts that were well underway prior to the beginning of the City Controller's audit which have improved many of the points brought up in the findings. Also, we summarily take exception to generalized language or characterizations in the Executive Summary that are not reflective of UCS standards, practices or fact.

First, UCS undertook a modernization effort to advance people, process, and technology throughout the organization beginning in the summer of 2010. As specifically addressed by the auditors in the note to Graph 1, we fully understand and embrace the opportunities to improve efficiency and improve processes. In fact, the main goal of the modernization effort is to improve our core business functions and includes such measures as improving our website, implementing a new billing system to replace our 30 year old legacy system and refreshing all business processes. The website update is complete, and the billing system migration and process updates are forecast to be complete in April 2014. Additionally, specific efforts such as the Consumption Awareness Program (CAP) and mobile applications (see UCS Response to Finding #4 for more information) have improved (and will continue to improve) our ability to proactively contact customers, identify possible leaks, and provide online and easily-accessible services through the web.

All of the modernization developments are creating a better distribution of customer servicing options and allowing the entire UCS team to enhance our customer service level. In effect, a number of the issues identified by the auditors regarding customer communications, exception reporting, and over-reliance had already been addressed or included in the modernization. It is also noteworthy that part of the modernization effort is to build in a continuous improvement environment that will assist with managing change on an ongoing basis.

UCS would also like to note that there is pervasive use of generic and unspecific language throughout the report that may give the illusion that the issues identified are broader in scope than is truly the case. In addition, there are instances of inaccurate, incomplete or generalized statements made regarding UCS business processes and the reasons for those processes that result in unclear or ambiguous points.

Consider the following statements made in the Executive Summary:

"In December 2005 the City of Houston (COH) formally requested remedy from Leroy Nosbaum, Itron's Chairman and Chief Executive Officer, regarding 188,918 non-performing and under-performing ERTs representing 48% of the 393,000 ERTs that had been installed by that date. Of those ERTs, 133,918 had been removed, packaged and returned to Itron for adjudication of non-performance and 55,000 additional ERTs were not performing. Itron ERTs were represented to COH as having a 97% reliability rate."

Neither this statement nor the following paragraph makes mention of the fact that UCS was made whole by Itron as a result of our formal request for remedy. Itron installed 183,000 new model endpoints to replace the older malfunctioning models, all of which had expired warranties. These services were all provided at a cost per unit which was significantly less than the market price at that time with no additional charge for labor or materials used in installation.

"The following are areas that represent unmitigated risk and have an economic impact, which provide the opportunity for UCS to improve business processes and internal controls:"

First, the risk that the auditors are describing here is the risk that UCS management will send staff into the field to check equipment more often than they should. However, the first and primary risk that UCS must always work to minimize is the risk that an incorrect bill will go to a customer. So, we admit that we do err on the side of caution by sending staff into the field to check accounts that have been recently checked and we also agree that there are ways to be more efficient in this process.

However, the auditors' use of the term "unmitigated risk" implies that UCS is doing nothing to correct or lessen the economic impact of this risk. This is simply not correct. UCS supervisors and managers review system reports daily, weekly and monthly monitoring trends, outliers and anomalies in every aspect of our business from accounts estimated for multiple months to the reasons for customer calls. This information is then used to identify risks and implement mitigation techniques, including the risk referenced above by the auditors.

"Field notes entered into the system are not being reviewed timely or efficiently via management reporting"

This note demonstrates a lack of understanding or appreciation for the volume of service for which UCS is responsible. As discussed in detail in the UCS Response to Finding #1, UCS management has a broad array of reports geared to monitor efficiency and efficacy of field personnel. However, as standard operating procedure requires field technicians to provide notes and comments for each site visit and more than 1,500 work orders are completed daily, management review of all individual field notes is neither feasible nor the appropriate tool to assist UCS in reaching its ultimate goal of resolving all field-related issues within three business cycles. Rather, management uses summary reports to benchmark, goal-set and identify trends and outliers. When an outlier or unfavorable trend emerges, then management "drills down" into the detail (including, but not limited to, field notes).

"Field technicians not consistently performing the required 20 point task checklist"

Again, this statement illustrates a lack of understanding or appreciation of the complexity of the field staffing model. As discussed in detail in the UCS Response to Finding #2, we currently utilize six distinct types of work groups, each having specific standard operating procedures appropriate for the group. As such, not every field technician is required to perform the same tests at a site.

"Lack of confidence in the ERTs due to historical problems and recalls (this has caused UCS to visit all sites where "0 consumption" is reported, even when accurate..."

This assertion misconstrues due diligence as waste. We have a very high level of confidence in the ERTs. However, we know that they are electronic devices that we are placing outside, in the ground, and that they must be monitored and replaced when necessary to ensure the integrity of the system. Note that the most recent recall was the direct result of UCS monitoring that led to the discovery of an issue that we raised to the vendor, which, in turn, led to the recall.

"Additionally, 10% of the accounts with faulty meters that had been estimated were adjusted, while the rest were not. This creates an inconsistency in customer service and revenue adjustments..."

It is unclear whether "faulty meters" refers to damaged registers, damaged housing, damaged endpoints or actual material failure.

Further, this statement implies that 90% of the accounts with faulty meters *should* have been adjusted and were not. UCS has a review process in place that reviews the individual circumstances around all consumption irregularities. If the facts of a specific situation warrant an adjustment, and it is appropriate under City ordinances, an adjustment is made.

“Ten of the 12 of the examples found within the sample population were compliant with ... ordinance with only two examples not compliant...”

Regarding the two examples stated to be not in compliance with ordinance, UCS maintains that the handling of these issues were in compliance with Ordinance; it was the auditors’ interpretation that UCS was out of compliance.

“The business processes were not consistent with policies and require improved internal controls to better manage fieldwork activity...”

UCS disagrees with this statement. Largely the business processes are consistent with the policies. However, as stated above and detailed in many of the responses to these findings, the scope of responsibility for UCS is broad and varied. As such, policies are appropriately broad and defined processes specifically detailed and differentiated for the appropriate work groups.

UCS business processes are designed to encompass the myriad of complexities with which we are faced on a daily basis. This necessitates an “if/then” approach such that not every possible step is required for every situation. Our field personnel are required to exercise a certain level of judgment when completing any work order, and field supervision and management are, in turn, charged with monitoring their employees through aggregate reporting and regular work reviews. We, of course, acknowledge and accept that any and every process can be improved and internal controls more finely tuned. However, while the auditors continually refer to a lack of management reporting and inconsistent adherence to policy and procedure, these themes are simply not supported by the fact that we consistently bill accurately and timely within a very small margin of error.

**OFFICE OF THE CITY CONTROLLER AUDIT DIVISION –
ASSESSMENT OF PWE/UCS MANAGEMENT RESPONSE:**

Management Responses provided do not sufficiently address the issues identified, nor were they grounded in data as provided to the Office of the City Controller’s Audit Division. The audit evidence gathered and analyzed throughout the course of the audit was done so in accordance with professional standards issued by the Government Accountability Office and the Institute of Internal Auditors. Detailed assessment comments are available upon request.