GARLAND

INTERNAL AUDIT

Customer Service Meter Reading and Billing Audit

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Report 201706

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Overall Conclusion

Overall the processes and procedures Customer Service has in place does a lot to mitigate the risks of inaccurate and untimely customer billing. The implementation of a Technical Quality Assurance (TQA) team to proactively research, identify, remedy, and prevent various account issues is a significant contributing factor to ensure accurate and timely billing.

Through Internal Audit's (IA) testing, we have found a few issues that resulted in inaccurate billing; however, the impact from these issues is minimal and are in the customer's favor (i.e. under-billing). The following are areas for improvement related to:

- Periodic tracking and testing of water and electric meters.
- The calibrating and documentation of meter testing equipment.
- Approval of special utility contracts with large commercial/industrial customers.
- Customer adjustment review and approval processes.
- System calculation of water charges for special circumstances.

Management was also provided with additional opportunities for improvement to enhance internal controls. These were not considered significant to the objectives of the audit, but warrant the attention of Management. Consequently, they do not appear in this report.

Authorization

We have conducted an audit of Customer Services. This audit was conducted under the authority of Article VII, Section 5 of the Garland City Charter and in accordance with the Annual Audit Plan approved by the Garland City Council. This audit was requested by the Managing Director of Customer Services.

Objective(s)

The objectives of this audit are to:

A. Analyze the Customer Service meter reading and billing processes for accuracy, effectiveness and compliance with City Ordinance, regulations and policies.
B. Ensure appropriate internal controls are in place and working effectively.

Scope and Methodology

IA conducted this performance audit in accordance with Generally Accepted Government Auditing Standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

To adequately address the audit objectives and to describe the scope of our work on internal controls, IA performed the following:

The scope of the audit is October 1, 2015 to March 31, 2017. The main focus of our audit is the billing accuracy of electric, water, and sewer services. To adequately address the audit objectives and to describe the scope of our work on internal controls, IA performed the following:

- Performed a surprise cash count (Obj. B)
- Obtained copies of City Ordinances and Directives and determine if Customer Service is in compliance (Obj A)
- Interviewed appropriate personnel to verify various policies and procedures (Obj. A and B)
- Conducted billing and meter reading walkthroughs to determine efficiency, accuracy, and effectiveness (Obj. A and B)
- Reviewed internal reports used by Customer Services to determine accuracy and reliability (Obj. A and B)
- Reviewed existing contracts of customers who are manually billed to verify they are billed according to contracted terms and rates (Obj. A)
- Reviewed a sample of accounts opened between 10/1/15 – 5/31/17 and perform the following:
    - Compared rates and fees with City Ordinance (Obj. A)
    - Reviewed account classification to determine if properly classified (Obj. A and B)
    - Determined if a deposit was required based on the City Ordinance and if required, verify deposit was collected (Obj. A and B)
    - Reviewed bill adjustments to verify proper approval (if required), and determine reasonableness (Obj. A and B)
- Reviewed documents relating to the tracking of meter (water and electric) tests to determine if meters are tested in accordance with applicable standards (Obj. A and B)
- For a sample of water meters, performed water flow tests to ensure water meters are accurate.
- For a sample of electric meters, performed meter accuracy testing.
- Reviewed a sample of bills with estimates to determine reasonableness (Obj. A and B)
- Ran a data query to determine if employees are making adjustments to their own account (Obj. B)
- Compared all active accounts within a cycle with what was billed for that cycle to verify all active accounts are properly billed (Obj. A and B)
- Traced meter reading inputs from handheld devices to the customer's bill to verify meter reading information is properly transferred through various devices and applications. (Obj. A and B)
- Compared all active meters with meters read for the respective cycle to verify all meters are appropriately read. (Obj. A and B)

- Inquired with management on how meter tampering are monitored and determine efficiency and effectiveness of such monitoring. (Obj. B)

To assess the reliability of information provided by Customer Service, IA interviewed multiple individuals at Customer services, reviewed source documents, and compared information with multiple places within the Customer Information System (CIS).

During the course of the audit, IA attempted to identify all users with adjustment capabilities within the CIS. However, the existing user access report does not clearly identify this capability. As such, IA had to rely on IT to update the existing report to clearly show this information. IT was unable to complete the report update within the audit window, therefore IA performed alternative sampling testing methods instead of testing an entire population.

Background

"The mission of the Customer Service Department is to provide utility account maintenance, billing, collection, and customer care for the City's Electric, Water, Wastewater, Environmental Waste and Stormwater Management Departments." (1) This includes but is not limited to monthly meter reading, answering customers' calls, investigating possible meter tampering, establishing pay arrangements for qualified customers, cutting/setting up utility services, collections, billing, and account adjustments. (2) The table below depicts the revenues generated, meters read, bills process, and service related work orders completed for FY16 (actuals) and FY17 (projected) (1):

	FY16 Actuals	FY17 Projected
Annual Revenue Collected	$ 289,709,564	$ 288,000,000
Meters Read	1,684,632	1,686,700
Bills Processed	951,783	955,000
Completed Service Orders	74,177	74,400

Rates and fees are established and approved by the City Council within the City Ordinance (Chapter 50 - Utility Rates and Fees). Electricity utility rates are based on the account type (residential, commercial small, and commercial large), time of year (summer or winter), and consumption levels (kWh and KW). Water and sewer rates are based on the account category (residential and commercial/industrial), meter size (5/8 inch through 8 inch), volume consumed (gallons), and special rates for customer cities and specific large industrial customers. Also established in the City Ordinance are other miscellaneous fees such as, tax rate, late fees, deposits, guard light, cutoff fee, reinstallation fees, and etc. (3)

The billing process begins with the daily reading of meters by the Meter Readers. Each meter is typically read once a month. The majority of the reading are automated (drive-by method); however, some require manual input (visual reading method). Various system controls are

in place to flag unusual or no readings. Once all the readings are gathered they are then uploaded to the customer information system (CIS). A notification is then sent out to various Customer Service employees notifying them the readings for the cycle (day) have been uploaded. The Technical Quality Assurance (TQA) team in Customer Service reviews the information for accuracy and completeness and sends the data to a third party vendor for billing distributions. This process is repeated on a daily basis until all 20 billing cycles are completed for the month. [2]

Customer Service utilizes the CIS to support their daily operations. It provides automated capabilities to calculate utility charges including delinquent penalties. The CIS also maintains accounts receivable and retains histories such as service, credit, billing, account summaries, and audit trails. It also allows Customer Service employees to analyze information about customers, locations (premises), accounts, meter inventory, and the provision of services. In the 17/18 fiscal year budget Customer Service requested funding to replace the existing CIS. If approved a new and enhanced system should be fully operational by the end of 2019. [2]

Proper meter maintenance is critical to the accuracy of customer billing. The Water Department (Water) and Garland Power and Light (GP&L) are responsible for the general maintenance of all active water and electric meters, respectively. Meter maintenance includes but is not limited to: periodic testing of meter accuracy, repairing damaged meters, replacing obsolete meters (i.e. changeouts), and installing new meters. Guidance and standards for electric meter maintenance are Electric Reliability Council of Texas (ERCOT) and American National Standards Institute (ANSI). The American Water Works Association (AWWA) sets standards and guidelines for the maintenance and testing of water meters. [4]

The energy and water requirement may vary significantly from customer to customer. As such, different type of meters are used depending on the customer's energy and water needs. The different types of electric meters vary in multiplier. A multiplier is used in conjunction with the base reading to arrive at actual energy consumption. The base meter reading are multiplied by the meter multiplier to arrive at actual energy consumption (kWh). A meter multiplier of one is typically used for residential properties. Larger commercial and industrial customers require exponentially more energy and, therefore would require multipliers greater than 1 (can go up to 2,400).

As of July 25, 2017 there are approximately 130,000 active meters. This consists of, approximately 64,000 electric meters and 66,000 water meters. The majority of the active meters have been in service for approximately 10 years. See exhibit B for age distribution of active meter inventories. [5]

(1) 2017-18 Proposed Annual Budget
(2) Customer Service Management Team
(3) Garland's City Charter and Code of Ordinances
(4) GP&L and Water Management Team
(5) Report ran from CIS.

Management Accomplishments*

Customer Service

The Customer Service Department provides utility account maintenance, billing, collection, and customer care for the City's Electric, Water, Wastewater, Environmental Waste, and Stormwater Management Departments. The Department directly and indirectly interacts with thousands of citizens each day. The Department provides these services in a professional manner that ensures a positive experience by providing convenience, consistency, and accuracy through the use of industry-leading technology and processes. We constantly strive to exceed customer expectations by providing customers with innovative options and personal attention and by displaying a sincere understanding of customer needs. Customer Service is committed to pursuing "Best in Class" electric and water industry initiatives, programs, and service options that meet customer expectations.

The Department also serves as a centralized information hub for citizens who are requesting a variety of City services by coordinating the City's eAssist web-based service and maintaining the City's general information phone number.

Water

Every year the City of Garland Water Department tests water meter where the Customers used over 1,000,000 gallons that year. There are approximately 200 of these meters each year. Last year 3% of these meters did not meet AWWA standards and were replaced.

Both The Texas Water Development Board (TWDB) and the Texas Commission on Environmental Quality (TCEQ) recommend a water system's non-revenue water be less than 15% of its purchased water, the City of Garland Water Department non-revenue water is currently around 8%.

*Please note that "Management Accomplishments" are written by the audited entity and that IA did not audit or verify its accuracy.

Opportunities for Improvement

During our audit we identified certain areas for improvement. Our audit was not designed or intended to be a detailed study of every relevant system, procedure, and transaction. Accordingly, the Opportunities for Improvement section presented in this report may not be all-inclusive of areas where improvement might be needed.

Also, due to the sensitive and competitive nature, a finding relates to Garland Power and Light's utility customer rates has been omitted from this report. The information will be disseminated on a need to know basis in a confidential manner (Texas Government Code § 552.133 and Generally Accepted Government Auditing Standards 7.41 & 7.44).

FINDING # 1 – Electric Meter Testing Program (Obj. A & B) – GP&L

CONDITION (THE WAY IT IS)

Residential Electric Meters:
These meters are currently only tested by GP&L upon request from Customer Service, which mainly arise from customer complaints. These requests for tests typically amount to 5-10 meters per year. A tracking and testing program to test these meters periodically currently does not exist.

Commercial/Industrial Meters:
The table below indicates GP&L management's goals for testing commercial/Industrial meters:

Meter Multiplier	Testing Frequency
300+	Annually
2-299	Every 5 Years
1	No Plan

Based on IA's review, 8 out of 10 meters sampled (exhibit A) did not meet the desired testing frequency indicated above. Out of these 8 meters, 7 were meters with multiplier greater than 300 were not tested on an annual basis, and 1 out of 3 meters with multiplier 2-299 sampled were not tested every 5 years. Management indicated there are no current plans for testing meter multiplier base of one. In addition, the current tracking method makes it difficult to effectively identify meters that have not been tested during a specific period.

CRITERIA (THE WAY IT SHOULD BE)	According to management, they refer to the American National Standards Institute (ANSI) guidelines when it comes to meter testing. Per the latest edition of ANSI (section 5.0.3.3), the performance of metering devices should be verified by a test program. The generally accepted plans for testing established by ANSI are 1) periodic interval plan, 2) variable-interval plan, or 3) statistical sampling plan. In addition to implementing and maintaining a meter testing program, ANSI section 5.0.3.5 also recommends test records be maintained. Records should include 1) type of test program being used and statistical basis, 2) the number of metering devices in each group at the beginning of the test year, 3) AQL level or test rate used, 4) the number of meters tested, 5) the analyzed test results, and 6) any necessary corrective action taken. The amount of consumption (kWh) is typically correlated with the meter's multiplier. Customers with higher consumption normally have a higher meter multiplier. As such, these meters have a higher risk of impact on revenue and therefore should be tested more frequently.
CAUSE (DIFFERENCE BETWEEN CONDITION & CRITERIA)	According to management, they lack the sufficient system and personnel to fully implement and complete management's current testing goals. Test programs as recommended by ANSI standards were not evaluated prior to the audit.
EFFECT (SO WHAT?)	No plan to periodically test and the tracking of such tests may result in undetected inaccurate electric meters and to inaccurate customer billing.
RECOMMENDATION	GP&L management should reevaluate its established goals and design a realistic but effective meter testing or replacement (whichever is cost effective) program that includes residential meters as well as meters with multiplier of 1. The major focus of this program should be on testing meters with high consumption as frequently as possible. The design of this program should also include processes for tracking and documenting testing results.

MANAGEMENT RESPONSE

Concur

Management does concur with the recommendation of developing and implementing a formal testing plan for all electrical meters. This will also include the implementation to meet the data retention requirements associated with meter test results.

Although Management's goals regarding meter testing were extremely aggressive and sometimes were not being completely achieved, the testing of meters were still exceeding all requirements and recommendations from the Public Utility Commission of Texas (PUC) and the ANSI C12 Standard. As a municipally-owned electric utility, GP&L does not fall under the meter testing and data recording requirements of the PUC; however, GP&L believes that the PUC requirement of the ANSI Standard is a good practice to follow. The ANSI Standard states "based on best business practices in the industry the following table contains a recommended periodic program:"

Periodic Testing Schedule

Meter Type	Years Between Testing
AMI Meters	8
All Other Meter Types designated as a Periodic Meter	16

As indicated in Internal Audit's report, all the meters sampled were well within the 16-year recommended timeframe for the ANSI C12 Standard. In addition, as shown on the Exhibit B of the Internal Audit report, the vast majority of GP&L's meters were installed less than 16 years ago. Also, GP&L does not have any AMI meters that are greater than 8 years old.

Internal Audit reported two meters not having a test report associated with them in the sample of 10 meters selected during their inquiry. Meter #73831355 has only been in service for 2 years and 2 months, which GP&L relies on the test report from the meter manufacturer at that point. The meter manufacturer for that particular meter did send the meter test results when the meter was shipped on May 15, 2015, and the results were 100% Full Load, 100% Light

	Load, and 100% Power Factor, which meets the requirements from the PUC and the ANSI C12 Standard. Meter #11207738 was changed out and removed from service on October 11, 2016. This meter was only in service for a period of two years and 5 months. The meter manufacturer also provided test results for this meter as well when the meter was shipped to GP&L new. This information was provided to Internal Audit during the inquiry for the meter test results. All the meters that were sampled and all the test reports provided to Internal Audit during the inquiry of the test results show that the meters currently in service are within the PUC and the ANSI C12 Standard tolerance range of accuracy of ± 2%. The ANSI C12 Standard states in section 5.1.1.4 "The in-service performance of all watt hour meters is considered to be acceptable when the average percent registration is not less than 98.0% or more than 102.0% as determined by one of the average percent registration methods in section 5.1.4." Currently, GP&L uses the average percent registration Method 2 in section 5.1.4.2 of the ANSI C12 Standard which states "Average percentage registration is the average of the percentage registrations determined at light load (LL) and at full load (FL)". Concluding, Management will work towards establishing a formal testing and data retention program in conjunction with PUC and ANSI C12 Standard regulations and recommendations. In addition, GP&L will continue to test watt hour meters to ensure their accuracy range is within the required ±2% tolerance range.
ACTION PLAN	Management will work with GP&L IT to acquire the necessary information to establish a statistical sampling meter testing plan, which will follow the recommended ANSI C12 Standard (Section 5.0.3.3) meter testing plan. In addition, the plan will be developed so the higher consuming meters will be tested more frequently to ensure meter accuracy is maintained.
IMPLEMENTATION DATE	The meter testing plan will be developed and implemented by January 1, 2018 (if no major impediments are encountered).

FINDING #2 – Water Meter Testing Program (Obj. A & B) - Water

CONDITION (THE WAY IT IS)

Residential water meters are currently only tested by the Water Department upon request from Customer Service, which mainly arise from customer complaints. During the period of October 2015 through May 2017 there were only 5 residential water meters tested. In late 2016 and early 2017 Rowlett tested approximately 50 Garland residential meters based on an agreement made between the two cities, however, there are no current plans for future collaboration. The Water Department has no current plans for testing residential meters periodically.

CRITERIA (THE WAY IT SHOULD BE)

The American Water Works Association (AWWA), provides guidance and standards for installing, testing, and maintaining water meters. It is intended to provide best recommended practices and is not intended as a regulatory compliance requirement.

According to the AWWA (B.6) section *"the intervals between tests and the methods for conducting them should be governed largely by local conditions and the amount of consumption."* With that said, below is the most frequently used intervals between tests provided by AWWA.

Meter Size (in.)	(mm)	Years Between Tests
1/2	(13)	10
5/8	15	10
3/4	20	8
1	25	6
1 1/2	40	4
2	50	4

At a minimum it is highly recommended that there is a plan in place for periodic tracking and testing of water meters.

CAUSE (DIFFERENCE BETWEEN CONDITION & CRITERIA)

According to management, they lack the resources to fully implement and complete recommended AWWA testing guidance.

EFFECT (SO WHAT?)

No plan to periodically test water meters may result in undetected inaccurate water meters and inaccurate customer billing.

RECOMMENDATION	Water management should design and implement a reasonable and effective periodic test plan to test the accuracy of active water meters. Testing records should also be documented and maintained.
MANAGEMENT RESPONSE	Concur
ACTION PLAN	A Standard Operating Procedure (SOP) will be written to address the process of testing and replacing a percentage of water meters on a yearly basis.
IMPLEMENTATION DATE	The SOP can be developed within a two month timeframe, however, implementation will take time due to cost and reorganization of staff.

FINDING #3 – Under-Registered Meter Consumption (Obj. A & B) - Water	
CONDITION (THE WAY IT IS)	13 out of 17 of the water meters tested by IA did not fall within the AWWA limits of an accurate water meter. Refer to Exhibit A for sampling methodology and Exhibit C for detail of the standards. All 13 of the inaccurate water meters tested "slow", meaning the meters registered less water usage than actual consumption. The impact of the slow meter had a minimal impact on customers' bill, ranging from $0.20 to $18.14 under-billing for a 3 month period. Impact on the customer's bill depends on the customer's consumption habits (usage at high, medium, and low flow rate) and actual water usage. See Exhibit D for detail of testing results.
CRITERIA (THE WAY IT SHOULD BE)	The primary reason for meter tests is to ensure that the cost of water service accurately measured based on customer's actual consumption. The AWWA establishes the recommended accuracy standards for water meters tested by the use of volumetric tanks. The method and standards for testing water meter accuracy depends on the meter type and size. The typical meter use by Garland is a "cold-water meter - displacement type, metal allow main case" and the meter size for a typical residential property is 5/8 inch. Meter's accuracy should be within the AWWA standards based on meter size. See exhibit C for AWWA water meter accuracy standards.
CAUSE (DIFFERENCE BETWEEN CONDITION & CRITERIA)	Various factors may lead to meter inaccuracies. These factors may include, but are not limited to, wear and tear of meters after prolonged use (Exhibit B), external conditions, quality of water flowing through, testing methods used, and/or factory defects. The key is to be proactive in identifying these meters to repair and/or replace to limit revenue loss or customer overcharge.
EFFECT (SO WHAT?)	Undetected under-registered meter for a prolong period of time would result in a loss of revenue.
RECOMMENDATION	Water management should: 1. Design and implement an effective plan to periodically test the accuracy of active water meters.

	2. Establish policies and procedures that are both specific and measurable for when water meters should be replaced based on test results.
MANAGEMENT RESPONSE	Concur
ACTION PLAN	A Standard Operating Procedure (SOP) will be developed to ensure a plan is established to periodically test the accuracy of active water meters, and include language for replacing the meters based on test results.
IMPLEMENTATION DATE	The expected implementation date is by the first quarter of 2018.

FINDING # 4 – Water Meter Testing Equipment Calibration (Obj. A & B) - Water	
CONDITION (THE WAY IT IS)	The testing equipment "test bench" used for testing water meters is currently not calibrated on an annual basis. In addition, the test bench is over 35 years old, and requires a very manual method of testing, which has inherent risk for human error. It also does not generate any testing report. According to management, they performed alternative calibration methods by testing new meters and measuring results against factory testing results. *Note: To determine the accuracy of the test bench prior to testing meter accuracy, IA conducted the alternative calibration method mentioned above.*
CRITERIA (THE WAY IT SHOULD BE)	The AWWA recommends that the measuring device used to determine the amount of water discharged when testing should be designed to provide measuring accuracy to within .25 percent of the actual quantity. Tanks and scales should be tested and calibrated at least once a year and records kept of such tests and calibrations.
CAUSE (DIFFERENCE BETWEEN CONDITION & CRITERIA)	Management utilized alternative calibration methods for the test bench; however, these alternative calibration methods are not performed annually and are not documented as recommended by AWWA.
EFFECT (SO WHAT?)	Non-calibrated testing equipment may result in unreliable testing results.
RECOMMENDATION	Water management should: 1. Calibrate test bench and maintain records of such calibration on an annual basis. 2. Consider option to invest in a new test bench.
MANAGEMENT RESPONSE	Concur
ACTION PLAN	The Water Dept. will contact a third-party vendor to perform a yearly calibration on the current test bench. We will research and purchase a new test bench by the 2nd quarter of 2018.

IMPLEMENTATION DATE	The expected implementation date for the current test bench calibration is by December of 2017, and consider purchase of a new test bench by the 2nd quarter of 2018.

FINDING # 5 – Electric Billing Error (Obj. A & B) – GP&L	
CONDITION (THE WAY IT IS)	There are 6 customers for which GP&L has a separate utility contracts. Three of these customers are manually billed (also known as hand bills), which means they do not go through the CIS. During IA's review of commercial hand bills, IA noted a customer was under billed by $5,876.75 on their June 2017utility bill.
CRITERIA (THE WAY IT SHOULD BE)	Departmental policies and procedures require hand bills calculations and support to be reviewed prior to issuance of the bill.
CAUSE (DIFFERENCE BETWEEN CONDITION & CRITERIA)	Billing error was due to the use of incorrect meter information in calculating customer's June electric bill. The error was identified and a revised bill was generated; however, the original (incorrect) bill was submitted instead of the revised bill.
EFFECT (SO WHAT?)	Under billing customers would result in loss of revenue.
RECOMMENDATION	GP&L management should: 1. Notify the customer of the inaccuracy and bill them for the difference in their next electric utility bill 2. Ensure a review process is properly performed for each bill.
MANAGEMENT RESPONSE	Concur
ACTION PLAN	The $242,018.39 was a revised bill for June; unfortunately, the original bill ($236,141.64) was submitted to the customer. The customer has been notified of the issue and will be billed the difference on their September 2017 electric utility bill. All retail contract customer bills will be created by GPL Settlements personnel and reviewed by GPL's Commercial Accounts Administrator. GPL Settlements will provide the bill to City Finance who will create and provide the final invoice to the retail contract customer.

IMPLEMENTATION DATE	October 1, 2017

FINDING #6 – Water Charge Calculations (Obj. A & B) – Customer Service	
CONDITION (THE WAY IT IS)	City is currently undercharging customers that have multiple water meter readings within the same billing cycle. 2 out of the 30 sampled bills (Exhibit A) reviewed by IA had these special instances. The customers were undercharged $22.83 and $1.25, respectively.
CRITERIA (THE WAY IT SHOULD BE)	Water rates and fees are established within section 50.34 of the City Ordinance and are approved by the City Council. Water rates are charged at a progressive rates, meaning rates are increased as consumption level increases. Residential rates are split into three tiers: the first 3,000 gallons are charged at $4.35 per thousand gallons, next 12,000 gallons at $5.49, and all consumption over 15,000 gallons are charged at $8.78 per thousand gallons.
CAUSE (DIFFERENCE BETWEEN CONDITION & CRITERIA)	On a typical customer's bill there is normally one water meter reading to determine the total consumption for the billing cycle. CIS is set up to automatically calculate the water fee based on the progressive rates established by the City Ordinance. However, circumstances exists where there are multiple water readings on a customer's bill within the same billing cycle. For example, a customer may have their service cut off and reconnected again within the same month. For these circumstances, CIS calculates each reading separately, which results in 2 smaller readings which, if combined, would have reached the threshold for the month.
EFFECT (SO WHAT?)	Splitting readings results in lost revenue for the City. However, amounts will vary based on customer consumption.
RECOMMENDATION	Customer Service should: 1. Configure the new system to prevent inaccurate billing during the new CIS implementation. 2. Monitor water accounts with multiple readings during the same billing cycle prior to the new CIS implementation.
MANAGEMENT RESPONSE	Concur

ACTION PLAN	1. We expect a new system to provide further enhancements related to the delegation of authority concerning adjustments. A new process has been implemented requiring a department supervisor to spot check various accounts on the monthly adjustment report. The report has been revised to provide additional column clarity. 2. The payment center supervisor is no longer making adjustments to a small number of unique accounts.
IMPLEMENTATION DATE	Complete 9/5/17 Further enhancements to the adjustment process will be made once a new cis system is implemented.

FINDING #7 – Bill Adjustments (Obj. A & B) – Customer Service	
CONDITION (THE WAY IT IS)	1. Customer Service has made significant strides throughout the years in looking for ways to improve their internal controls surrounding customer billing adjustments. Internal controls include: a. Informing relevant supervisors and managers on all adjustment requests sent to TQA. b. Retaining supporting documents to justify each adjustments made. c. Holding informal discussions with supervisor for large dollar adjustments. d. Reviewing accounts with a high net total in adjustments monthly. The controls above are effective in ensuring adjustments request are properly authorized and appropriate, however, it would not prevent/detect inappropriate adjustments. There are no system control in place within the CIS to prevent improper adjustments and reporting limitation prevent management from performing efficient detail review of individual adjustments. Also, IA noted some clarity issues with the monthly net total adjustment report, which may lead to misinterpretation of the report. 2. IA reviewed a sample of 20 adjustments (Exhibit A). IA noticed 1 of the adjustments was made by an employee with cash handling responsibility.
CRITERIA (THE WAY IT SHOULD BE)	1. Industry leading practice recommends having a defined delegation of authority and a review process in place with regards to adjusting customer accounts. 2. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) provides guidance and frameworks on enterprise risk management, internal control, and fraud deterrence. COSO guidance with respect to proper segregation of duties recommends when possible separating duties involving 1) custody 2) authorization, and 3) recordkeeping.
CAUSE	1. Current system limitations does not allow for Customer Service to effectively and efficiently implement a delegation of authority and a formal review process with regards to adjusting customer's accounts.

(DIFFERENCE BETWEEN CONDITION & CRITERIA)	2. This was a holdover function from the previous CIS system. Management considered moving the adjusting duties over to the Technical Quality Assurance (TQA) team; however, this implementation was not completed.
EFFECT (SO WHAT?)	1. Not establishing a delegation of authority or an effective review of adjustments may increase the risk for inappropriate and/or inaccurate customer adjustments. 2. Without proper segregation of duties with regards to custody of cash and recordkeeping, it is possible for employees to hide transactions by making adjustments to the customer's account.
RECOMMENDATION	Customer Service Management should: 1. Consider integrating a delegation of authority policies for adjustments into the new CIS system, implementing a formal adjustment review process, and revising the Adjustment Report to provide more details for clarity. 2. Move adjusting responsibility from Payment Center Services to TQA.
MANAGEMENT RESPONSE	Concur
ACTION PLAN	1. We expect a new system to provide further enhancements related to the delegation of authority concerning adjustments. A new process has been implemented requiring a department supervisor to spot check various accounts on the monthly adjustment report. The report has been revised to provide additional column clarity. 2. The payment center supervisor is no longer making adjustments to a small number of unique accounts.
IMPLEMENTATION DATE	Complete 9/5/17 Further enhancements to the adjustment process will be made once a new cis system is implemented.

Exhibit A – Sampling Methodology

Finding 1 – Electric Meter Testing Program

A sample of 10 meters was selected (out of 1,596) from GP&L meter testing schedule used to track electric meter tests. Samples were judgmentally selected to include a majority of high meter multipliers and a few meters with multiplier below 300. The results can be projected to the entire population.

Finding 3 – Under-Registered Meter Consumption

A Crystal report was run from the CIS of all cycle 7 and 14 customers for all consumption amounts during the scope of the audit. IA then calculated the lifetime average consumption of each meter and compared the consumption of each bill to average to identify meters with large consumption spikes. This resulted in 94 meters in which IA determined to have significant consumption spike in comparison to the meter's average usage. IA judgmentally selected a sample of 17 water meters out of the 94 for testing. The results can be projected to the entire population.

Finding 6 – Water Charged Calculations

A Crystal report was run from the CIS system for all cycle 7 and 14 customers billing information for the scope of the audit. IA then stratified the information by the account type (i.e. apartments, commercial, public institution, and residential) to determine the percentage of each. IA then judgmentally selected a sample of 30 proportional to the account type percentage. The results can be projected to the entire population.

Finding 7 – Adjustments

Five Crystal reports, one for each randomly selected dates, was run from the CIS for all adjustments made for that specific date. IA selected a sample of 4 accounts with adjustments for each of the 5 dates for a total sample size of 20. The total results can be projected to the entire population.

Exhibit B – Meter Inventory: Age of Active Meters

Year Installed	Electric Meters	Water Meters
1990 and Prior	11	-
1991-1995	71	1
1996-2000	13	2
2001-2005	3,402	739
2006-2010	50,370	32,972
2011-2017	10,064	31,809
Total	**63,931**	**65,523**

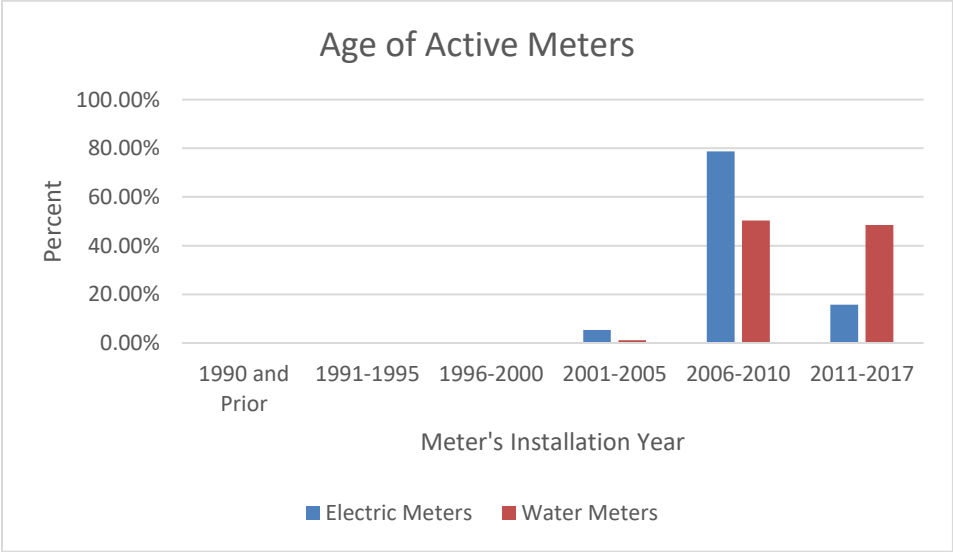

Exhibit C – AWWA Water Meter Accuracy Standards

Meter Size	**Flow Rate**	**Test Quantity**		**Accuracy Limits**	**Flow Rate**	**Test Quantity**		**Accuracy Limits**	**Flow Rate**	**Test Quantity**		**Accuracy Limits**
in.	*gpm*	*gal*	*ft³*	*Percent*	*gpm*	*gal*	*ft³*	*Percent*	*gpm*	*gal*	*ft³*	*Percent*
5/8	15	100	10	98.5-101.5	2	10	1	98.5-101.5	1/4	10	1	95-101
5/8 x 3/4	15	100	10	98.5-101.5	2	10	1	98.5-101.5	1/4	10	1	95-101
3/4	25	100	10	98.5-101.5	3	10	1	98.5-101.5	1/2	10	1	95-101
1	40	100	10	98.5-101.5	4	10	1	98.5-101.5	3/4	10	1	95-101
1 1/2	50	100	10	98.5-101.5	8	100	10	98.5-101.5	1 1/2	100	10	95-101
2	100	100	10	98.5-101.5	15	100	10	98.5-101.5	2	100	10	95-101
3	150	500	50	98.5-101.5	20	100	10	98.5-101.5	4	100	10	95-101
4	200	500	50	98.5-101.5	40	100	10	98.5-101.5	7	100	10	95-101
6	500	1000	100	98.5-101.5	60	100	10	98.5-101.5	12	100	10	95-101

Exhibit D – Water Meter Inaccuracy Impact on Revenue

#	ACCOUNT_TYPE	Meter Size	High Flow	Medium Flow	Low Flow	Pass/Fail	3 Month Estimate (Underbilled)	
1	Residential	5/8'	99.10%	100.00%	90.00%	Fail	-$0.78	
2	Residential	5/8'	96.00%	90.00%	0.00%	Fail	-$0.43	
3	Commercial	5/8'	97.90%	97.50%	80.00%	Fail	-$0.11	
4	Residential	5/8'	98.50%	91.50%	95.50%	Fail	-$1.71	
5	Commercial	5/8'	99.10%	99.00%	0.00%	Fail	-$1.10	
6	Public Institution	5/8'	99.50%	100.50%	90.00%	Fail	-$0.03	
7	Residential	5/8'	98.40%	98.50%	92.50%	Fail	$0.00	*
8	Residential	5/8'	99.20%	99.50%	80.00%	Fail	-$1.93	
9	Residential	5/8'	99.30%	100.50%	90.00%	Fail	-$1.02	
10	Residential	5/8'	99.05%	98.00%	80.00%	Fail	-$0.94	
11	Residential	5/8'	99.20%	98.10%	90.00%	Fail	-$0.20	
12	Residential	5/8'	98.60%	99.50%	83.00%	Fail	-$3.76	
13	Residential	5/8'	89.15%	100.10%	50.00%	Fail	-$18.14	

* Account had zero consumption during 3 previous months.

Note – Billing Impact calculations are based on prior 3 months actual consumption and under the following typical household water usage:

- 40% usage at high flow (15g/min)
- 50% usage at medium flow (2g/min)
- 10% usage at low flow (.25g/min)