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City of Glendale
Management Services
Internal Audit

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September 26, 2014 REPORT #: 2015-04

Steve Zurn, General Manager
Glendale Water & Power

Dear Steve,

Enclosed is the final report of the Glendale Water and Power (GWP) Meter Shop Inventory and Controls Audit. Internal Audit would like to thank you and your staff for the support and assistance provided to us during the course of the audit.

Should you have any questions, please feel free to contact Jessie Zhang or myself.

Thank you,

Michele Flynn

Michele Flynn,
City Auditor

Enclosure

cc: Ramon Abueg, Chief Assistant General Manager
Yasmin Beers, Assistant City Manager
Robert Elliot, Director of Finance
April Fitzpatrick, Deputy General Manager
Scott Ochoa, City Manager
City Council
Audit Committee

REPORT #: 2015-04

GWP Meter Shop Inventory and Controls Audit

September 26, 2014

Background

In accordance with the Internal Audit Fiscal Year 2013-14 annual work plan, GWP's meter shop inventory and controls audit was completed.

There are two meter shops located at the GWP yard. One meter shop is for water meters and the other is for electric meters.

The majority of the water meters and equipment are part of the warehouse inventory stock. The meters have been separately managed from the rest of the warehouse supplies due to their unique features. The items currently stored at the meter shop are either the items previously checked out from the warehouse or the items not purchased by the warehouse. There are two main devices for each water meter to operate in the SmartGrid network, one is the meter itself, and the other is called an endpoint which is the device that transmits the meter reads back to the AMI (Advanced Metering Infrastructure) system.

The electric meter shop contains electric meters, cell relays, instrument transformers, test switches, and safety items. These items have never been received into the warehouse. There are many different types of meters and instrument transformers. Depending on the meter types and transformer ratios, the multipliers for meter reading and ultimately for billing can be different. Therefore, in addition to keep track of the quantity of the meters and devices, the detailed meter data are also tracked in the NorthStar (NS) customer information system.

However, in order to streamline the meter inventory management, GWP management decided to include meters and associated devices as part of the warehouse inventory operations. During the audit, GWP meter shops were in the process of moving meter inventory to the warehouse.

Objective and Scope

The objectives of this audit were to obtain an understanding of the controls in place for purchasing, receiving, issuing and managing inventory at the GWP meter shops and warehouse; and to evaluate the controls that are currently in place to ensure meter inventory is consistently and appropriately recorded in the inventory and financial systems. In addition, meter data critical for billing was evaluated for accuracy and completeness.

The scope of this audit covered both electric (include transformers) and water (include endpoints and leak devices) meter shop inventory operations. The audit covered electric and water meter inventory activities between fiscal year 2012 and 2014. In addition to inventory operations, the controls over meter data integrity were also examined to ensure that records were consistently and accurately maintained for both in-stock and active meters.

In order to accomplish the audit objectives, the following audit procedures were performed:

- Conducted inquiries about the meter shop and the warehouse inventory management policy/procedures and processes;

- Conducted physical inventory count of water meter inventory (including endpoints and leak sensors) along with the warehouse staff and compared the result to the inventory record in GFS (Glendale Financial System) and NS;

- Conducted physical inventory count of electric meters with the electric meter shop staff at the meter shop and compared the result to NS;

- Conducted walkthroughs with meter shop administrative support staff and GWP customer services representative for meter data entries activities;

- Conducted data analysis of both in-stock and active water and electric meter data in NS to ensure meter data consistency and accuracy, especially critical data fields that impact billing;

- Conducted on-site inspection to verify and match the meter type and transformer information in NS.

Summary of Results

As a result, Internal Audit confirmed GWP management's decision to move the meter inventory function to the warehouse will not only streamline meter inventory operations, but will also enhance controls over 1) physical and data access, 2) safeguarding of the assets, and 3) provide greater consistency of inventory purchasing, receiving, issuing, and recording.

The audit identified ten observations related to control weaknesses and improvement opportunities for inventory operations and meter data integrity. Audit observations and recommendations include:

- Establish and document meter shop operations policies and procedures;

- Move the entire inventory function from both meter shops to the GWP warehouse, and implement standard procedures for checking out meters and appurtenance restocking requirement, and purchasing procedures;

- Develop procedures to ensure that the meter inventory is appropriately recorded in the financial accounting system, especially when the meters and equipment were not purchased by the warehouse;

- Clarify and document the assignment of meter data entry responsibility and enhance system controls to ensure data accuracy and consistency;

- Clean up critical meter data in NS, such as current transformer(CT), potential transformer(PT), meter multipliers, and meter status;

- Develop effective quality control reporting over meter data and timely detection and correction of errors as necessary.

The audit also identified inaccurate meter multipliers for 23 accounts in the NorthStar billing system that could potentially result in an estimated revenue loss of $140k per year. The inaccurate meter multipliers occurred during the

time between July 2010 and April 2014. However, due to the six month statute of limitation in the City's ordinance, only approximately $72k is potentially recoverable. At the time this report was issued, these accounts were being reviewed by GWP Customer Service in order to determine the actual amounts and the appropriate corrective action. The detailed Observation, Risks, Recommendations and Management Responses for all audit observations are summarized on the following pages.

Item	Observation/Risk	Recommendation	Management Response
1.	GWP meter shop inventory policies and procedures were not developed or formally documented. Although GWP is moving inventory operations from meter shops to the warehouse, due to the unique features of meter inventory, additional meter shop inventory policies and procedures need to be developed and/or documented to ensure the meter inventory is appropriately and consistently handled. * * * Policies and procedures not being documented or periodically reviewed and updated may cause inconsistency in the operations, especially in the event of employee turnover.	It is recommended that GWP meter shop staff document the procedures for meter shop inventory operations to ensure consistency and appropriateness. These procedures should be consistent with the City's and GWP's warehouse inventory policies and procedures and meet the unique requirement for meter inventory. For example, inventory check-in/check-out procedures; non-warehouse purchased inventory transfer; meter data quality control procedures; and meter scrapping procedures, etc.	GWP management agrees with the recommendation. The GWP meter shops have started documenting the operations policies and procedures related to meter inventory operations. The anticipated completion of developing and documenting these policies and procedures date is March 31, 2015.
2.	Upon reviewing the meter shop inventory operations and processes, the following control risks were noted: ▪ Access to the meter shops was not limited to only authorized personnel; The security measures at the meter shops are not adequate, for example, no security cameras are installed; ▪ Meters were not consistently received into	It is recommended that GWP continue to move all items from the meter shops to the warehouse in order to enhance physical security and improve segregation of duties. This will also ensures that meters and associated devices are received into and issued from the warehouse via the financial system's inventory module consistently and appropriately.	GWP management agrees with the recommendations. Most of the water meters and supplies have been moved to the warehouse and electric meter shop has started moving equipment to the warehouse. The anticipated completion is March 31, 2015 when the meter shops will complete moving the inventory function to the warehouse.

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	the warehouse via the financial system's inventory module, built-in three-way matching control was bypassed and a receiving report was not consistently prepared when meters were not ordered through the warehouse; ▪ Meters were issued from the meter shops without appropriate written authorization or documentation, i.e. inventory requisition form used by the warehouse. These control risks could be mitigated by moving the inventory function from the meter shops to the warehouse, which was in process at the time of the audit. * * * Not managing inventory at the warehouse increases the risk of inconsistency in receiving and issuing of inventory and increases the risk of unauthorized access, meters being lost or stolen, and recording errors.	It is also recommended that water meter shop staff check out meters and other equipment when they are ready to be used or installed and stop using the meter shop as a "secondary" or "temporary" warehouse. (A small quantity on the truck for emergency or after hour situations is acceptable).	Water meter shop has already implemented the policy on not using the meter shop as a "secondary" storage area. This was also documented in the draft WSOP005. The anticipated completion date is March 31, 2015.
3	Not all meters and equipment were purchased following the terms established by the existing purchase order. In some cases, purchases were made without a valid purchase order (PO).	It is recommended that all inventory items be ordered consistently through warehouse to ensure the three-way matching is appropriately executed in GFS and the unit price is appropriately updated.	GWP management agrees with the recommendations and will work with Purchasing Section to ensure that the purchase orders are appropriately established and maintained for all meters and associated devices and equipment.

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	▪ A 0.5% annual discount for electric meter purchases was not implemented, which resulted in an estimated $3,000 extra cost paid for the past three fiscal years; ▪ The updated pricing was not negotiated through the City's Purchasing Division and an updated electric meter pricing list was not provided to Purchasing to be included in the PO file; ▪ Meter parts were not included in the pricing list within the PO for water meters. The PO stated that the pricing would be fixed for three years. Without the pricing for the meter parts, it is not known whether the pricing has been fixed or not. * * * Purchasing meters and equipment without a valid purchase order increases the risk of procuring at the amounts higher than that secured and potentially violates the City's procurement policies.	It is also recommended that the vendor be contacted to ensure that the annual discount be implemented. In addition, management should make a decision on whether to pursue a refund from the vendor for the overpayment.	The anticipated completion date is March 31, 2015 when the meter shops completed moving the inventory function to the warehouse. GWP electric meter shop has already contacted the vendor and started to pay the discounted pricing starting fiscal year 2013-14. The discount starting fiscal year 2013-14 was retroactively computed to include 0.5% for the past three years from FY2011. GWP is currently in the process of extending the current PO to another year at the fiscal year 2013-14 pricing. GWP decided not to pursue refund for the overpayment due to low dollar amount.
4	Inconsistencies were noted in recording inventories when the meters were not purchased by the warehouse. ▪ electric meters stored at the electric meter shop were expensed or capitalized within the fiscal year when the invoices were paid, rather than when they are put into service;	It is recommended that all meters and equipment are purchased by the GWP warehouse, appropriately received as inventory and only checked out from the warehouse when they are ready to be installed or put into service.	GWP management agrees with the recommendations. GWP management is in the process of moving all meters to the warehouse. Water meter shop has already drafted procedures to state that the meter shop will only check out items from the warehouse when they are

Item	Observation/Risk	Recommendation	Management Response
	▪ water meter shop stored meters that were either checked out from the warehouse in advance, or purchased by the water meter shop. These on-hand items were not recorded as inventory. ▪ non-warehouse purchased meters were processed as returned items rather than additional stock; ▪ the system average price was used for the new inventory additions rather than the prices paid; ▪ adequate accounting information was not requested and not provided to Finance to create any necessary journal entries to credit the fund/project previously charged. * * * Not appropriately adding or checking out inventory increases the risk of inventory balance being misstated. It can also increase the risk of misappropriation of inventory.	It is also recommended that warehouse develop written procedures to ensure that non-warehouse purchased item be appropriately processed in GFS following the step-by-step instruction and ensure that Finance is provided with adequate accounting information for making adjustment journal entries as necessary.	ready to be installed. The anticipated completion is March 31, 2015 when the meter shops completed moving the inventory function to the warehouse. GWP warehouse will develop written procedures and include the step-by-step instruction in the warehouse operation manual to ensure that non-warehouse items are added to the warehouse inventory appropriately and provide adequate information for Finance to create appropriate journal entries. The anticipated completion date is December 31, 2014.
5	The numbers of “in-stock” meters in the NorthStar billing system did not match with the physical counts for both electric and water meters. The significant differences were caused by ▪ meter status was not updated during the data conversion; ▪ meter status was not updated consistently	It is recommended that GWP management consider implementing the following controls to ensure meter status accuracy in NorthStar: 1) restrict access rights to change meter status from in-stock to scrapped to only authorized personnel;	GWP Management agrees with the recommendations and will clean up the meter status in NS. A formal meter scrapping procedure will be developed and access will be restricted to only authorized personnel for changing meter status to “scrapped”. QC reports will be

Item	Observation/Risk	Recommendation	Management Response
	by authorized personnel; ▪ meters sent to the vendor for repair were not differentiated in NS; ▪ there is no formal procedure on scrapping meters from inventory. In addition, it was noted through a physical inventory that although an electric meter count was conducted periodically, the physical count was not verified against any inventory records because they were not part of the warehouse inventory and the in-stock meters in NorthStar was not updated. Furthermore, it was noted that there was no reconciliation between the number of in stock meters in GFS and NorthStar. * * * Not clearly defining responsibility over meter status change and no formal procedures in place on scrapping meters increases the risk of inaccurate meter status in NS. Additionally, inadequate physical inventory procedures increase the risk of misappropriation of inventory.	2) develop formal procedures on scrapping meters; 3) create quality control (QC) reports to monitor meter status change. It is also recommended that GWP management conduct a one-time clean-up of meter status in NS. Further, it is recommended that a reconciliation between GFS and NS in-stock inventory be conducted periodically by the meter shops to ensure the accuracy of in-stock meters in both systems.	created to monitor the meter status changes. Once the meter status is cleaned up in NS, a periodic reconciliation between GFS and NS on in-stock meters will be conducted by meter shops. The anticipated implementation date is June 30, 2015.

Item	Observation/Risk	Recommendation	Management Response
6	The re-order point was not formally established for the water meters that are not part of the warehouse inventory. There is currently no formal procedure in place for reviewing slow moving items. The re-order point for electric meters was not established. The electric meter shop keeps one year need on hand as a general rule. However, upon physical inspection of all in-stock meters, it was noted that 1,364 meters are still on hand and are "left over" from the initial deployment of the meters. Surplus meters and other materials from prior capital improvement projects have been stored at the meter shops and may require further assessment and disposition action. * * * Not establishing re-order points increases the risk that inventory items will not be available when the need arises or over-stocking items that might cause waste. Not reviewing slow-moving items increases the risk of becoming obsolete. Further, warranties may no longer be valid.	It is recommended that the electric meter shop evaluate the 1,364 over-stocked meters and determine whether they can be used for any new projects or service orders before they become obsolete. It was also recommended that the remaining materials from previous capital projects be added to the warehouse inventory for better safeguarding and record keeping. It was further recommended that items identified as obsolete with no operational value be accumulated and disposed.	GWP management agrees with the recommendations. Both meter shops are in the process of moving all meters, associated devices and supplies to the warehouse. The re-order points will be formally established as part of the inventory process. The anticipated completion is March 31, 2015 when the meter shops completed moving the inventory function to the warehouse. The electric meter shop will evaluate the 1,364 over-stocked meters to determine how to appropriately reduce them to a reasonable level in a timely manner. The anticipated completion date is December 31, 2014.

Item	Observation/Risk	Recommendation	Management Response
7	The current transformer (CT) and potential transformer (PT) data in NS are not consistent and/or accurate. The CT/PT ratios directly impact the meter multipliers, the usage and, as a result, billing. ▪ removed CTs were showing active in NS; ▪ when there are multiple meters for one account and especially when each meter has multiple CT/PTs, all CT/PTs are assigned to all meters or all CT/PTs are assigned to one meter but not the other. Upon further review and inquiries, the reasons for the data inconsistencies noted included: ▪ CT/PT data was not carried-forward from the old meter data to NS appropriately due to technical difficulties; ▪ the CT/PT status was not updated and removed CT/PT could be brought to NS as active; ▪ the CT/PT assignment procedure was not followed, so that the newly installed CT/PTs were not appropriately "assigned" to the right meters, or the CT/PT was not "unlinked" from the meter in NS when the meter is removed, and reinstalled somewhere else; ▪ people who have access for editing meter	It is recommended that GWP management ensure that the responsibilities over meter data entry and CT/PT assignment in NS be clear for all parties involved. It is also recommended that GWP management consider implementing one or all of the following controls over meter data consistency and accuracy in NS: 1) when uploading the purchased meter file from vendor to NS, make sure that all meter data fields match to the meter profile; 2) review and restrict meter data edit capability only to authorized personnel; 3) explore the options of automating the meter multiplier calculation to be based on meter type and/or CT/PT ratios, and specify the set point for CTs with different ratios; 4) create QC reports, review CT/PTs with questionable multipliers based on CT/PT ratios and correct CT/PT data in NS, which includes updating CT/PT status, and assigning CT/PT to the right meter following CT/PT adjustment procedures established by GWP IS; 5) assign and provide training to responsible personnel on updating CT/PT data following CT/PT adjustment procedures established by GWP IS.	GWP management agrees with the recommendations. Responsibilities over meter data entry and CT/PT assignment will be clarified in statement of procedures. The anticipated completion date is March 31, 2015. GWP's meter shops will work with GWP IS to evaluate the recommended control options and take corrective actions. The anticipated completion date is June 30, 2015.

Item	Observation/Risk	Recommendation	Management Response
	data do not have a job function or knowledge to update or validate meter data; ▪ responsibility of verifying/changing meter data in NS and assigning CT (current transformer)/PT (potential transformer) to meters was not clarified. * * * Inaccurate meter data may create confusion and/or potential billing error.		
8	Upon reviewing all active meter data as of July 28, 2014, a total of 37 meters were identified as meters with questionable multipliers. Upon further review and site inspection, it was noted that: ▪ 13 of the 37 should not have a multiplier of 1. 11 of the 13 meters were determined to have either the wrong meter type or wrong CT/PT data and only 2 of the 13 meters were determined to have the incorrect multipliers, which resulted in over billing to the customers. The estimated over billed amount was minimal. ▪ 23 of the 24 meters were determined to have incorrect multipliers that could potentially result in an estimated revenue loss of $140k per year. The inaccurate meter multipliers occurred during the time between July 2010 and April 2014.	It is recommended that GWP management review the over/under billed accounts and proceed with refunds to the customers with over billings and contact customers with under billing to work out a payment plan. It is also recommended that when cleaning up CT/PT data in NS, multipliers be reviewed to determine whether the customers are being billed correctly. It was further recommended that once the CT/PT data is cleaned up in NS, a QC report be created to compute the multipliers based on the CT/PT ratios and investigate those with different multipliers.	GWP Management agrees with the recommendations and will make a decision on the appropriate corrective action by December 31, 2014. Multipliers will be reviewed through a CT/PT clean-up effort and a QC report will be created to identify questionable multipliers. The anticipated completion date is June 30, 2015.

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	However, due to the statute of limitation of six months for erroneous billing errors (GMC13.44.490), the estimated recoverable amount is approximately $72k. * * * Inaccurate meter data create billing errors. Poor quality of records may increase the risk of not detecting errors through data analysis and a quality control process.	Lastly, it is recommended that when setting up a QC report to identify errors, a weekly QC report should be short enough for someone to review within one week.	
9	Upon reviewing meter records in NS, inconsistencies were noted in meter data fields, such as *phase*, *wire number*, and *multiplier*. Although not all data fields affect billing, and the number of exceptions was minimal relative to the total number of accounts, it is important to maintain accurate and consistent meter data in NS. The reasons for the inconsistencies could be the result of staff changing the data fields, meter data file provided by vendor contents errors, and/or system upgrades resulting null values.	It is recommended that a system control be implemented to remove the ability to edit these data fields once meter data files from the vendor are validated and uploaded to NS so that this data can only be changed by authorized personnel. It is also recommended that when the meters are uninstalled, the in-stock meter should be reviewed to ensure all connected devices, such as CT/PTs are appropriately removed. It is further recommended that a periodic consistency QC report be reviewed to ensure meter data integrity and timely correction as necessary.	GWP management agrees with the recommendations. GWP IS will evaluate the feasibility of the recommended system controls. GWP IS will create QC report on all active meters to ensure that the meter data fields are consistent. The anticipated completion date is June 30, 2015.

Item	Observation/Risk	Recommendation	Management Response
	The details of these exceptions were provided to GWP IS for further review and correction. * * * Inaccurate meter data may create confusion and/or potential billing error.		
10	The project, activity, and class code used in warehouse inventory transactions were not always accurate or consistent. ▪ The class code used for the meters was 5451, which is for "Pot-Svcs" according to the description in GFS. The "Pot-Meters" should be 5461. ▪ The project/activity codes used in inventory transactions are different from the codes designated for different sizes of meters. It appears that the wrong coding was as the result of field staff not providing the correct project/activity code on the hand-written inventory request form. ▪ All paper inventory requisition forms could not be located for the selected samples. * * * Not appropriately recording inventory increases the risk of recording / reporting errors.	It is recommended that GWP management consider utilizing the more accurate FERC code for tracking water meters. It is also recommended that GWP management consider using the online WIR (Warehouse Inventory Request) to replace the paper inventory requisition form. It is further recommended that GWP management consider pre-populating the inventory requisition forms with project/activity codes designed for certain meter types and the item numbers to reduce human error.	GWP management agrees with the recommendation and will start using the correct class code for tracking water meters. The warehouse will work with the meter shops to explore the options in order to improve the accuracy of the inventory transaction recording. The anticipated implementation date is December 31, 2014.