



Operations Monitoring Report

Second Quarter FY14

Prepared by:

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I. Executive Summary

A review of the fiscal year 2014 (FY14) Second Quarter performance and contract obligations between Constellation New Energy (CNE) and the Metropolitan Government of Nashville and Davidson County (Metro) is presented in this report by Thermal Engineering Group, Inc (TEG). The status of the available funds for all active capital construction and repair and improvement projects are also presented. For the fiscal year 2014 to date, CNE has satisfactorily met all of the contract obligations to Metro and has had no contract violations.

For the Second Quarter FY14, the chilled water sales increased approximately 4% over the previous Second Quarter (FY13) due primarily to an increase in the sales to the Music City Center and the Nashville Hyatt Place. The Second Quarter FY14 saw a significant increase in cooling degree days from the previous Second Quarter. The peak chilled water demand for the current quarter was 15,353 tons, which is 36% higher than the previous Second Quarter.

Steam sendout for the current quarter increased by approximately 8% over the previous Second Quarter, marked by an increase in the number of heating degree days by 15%. Likewise, steam sales also increased by approximately 10.5% over the previous Second Quarter. The increase in steam sales is also attributable to the Music City Center and, to a lesser extent, the Nashville Hyatt Place. Steam system losses, as a percentage of sendout, decreased, and the total losses decreased by approximately 15% over the previous Second Quarter. The peak steam demand for the current quarter was 134,500 pounds per hour, which represents an increase in historic Second Quarter demand by approximately 20%.

The Energy Generating Facility (EGF) performance continues to surpass the System Performance Guarantee (Guaranteed Maximum Quantity or GMQ) levels. The chilled water plant electric consumption continues to perform considerably lower than the guaranteed levels but increased from the previous Second Quarter. The steam plant electric consumption increased approximately 9.7% over the previous Second Quarter, but the amount of steam per unit of sales decreased marginally. The steam plant fuel efficiency has increased approximately 1.8% from the previous Second Quarter due in part to an increase in the amount of condensate return. The total water consumption for the steam and chilled water plants increased approximately 5.3% from the previous Second Quarter marked by a 50% increase in the EDS make-up for the chilled water system and a 3% decrease in the steam plant usage.

Work continued on DES Capital and Repair & Improvement Projects during the Second Quarter of FY14. The Expanded Chilled Water Service to the Sheraton Hotel project (DES-103) was designed, bid and awarded during the quarter. Repair and Improvements to the EDS continue as scheduled.

The current fiscal year system operating costs to date are \$9,075,500. This value represents approximately 42% of the total budgeted operating cost for FY14. The customer revenues from the sales of steam and chilled water for FY14 (to date) are \$9,307,119 which is approximately 47% of the budgeted amount. The difference between the operating costs and customer revenue is the Metro funding amount (MFA), which represents the shortfall in cash flow for the system.

The MFA transferred to date for FY14 is \$979,150 (50% of budget). However, the actual MFA required cannot be accurately calculated due to outstanding invoices.

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II. Energy Distribution Sales and Performance

A. Chilled Water

This section of the report discusses and presents performance information regarding the operation of the EGF for the periods described. Charts and tabular data are also presented to provide a more detailed description of the actual EGF performance.

1. Sales and Sendout

A comparison for the Second Quarter chilled water sales is shown in Figure 1. This data reflects a 3.9% increase in sales for the current quarter over the same quarter of the previous fiscal year. The quarter also experienced a significant increase in the number of cooling degree days.

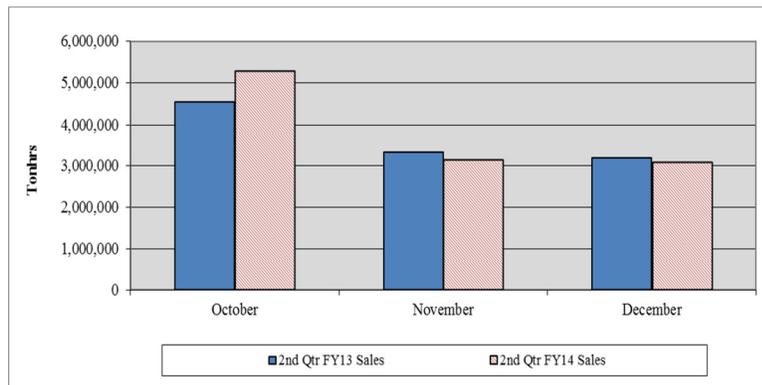


Figure 1. Second Quarter FY14 Sales Comparison

The peak chilled water demand for the current quarter was 15,353 tons, which represents a significant increase from previous years. This peak demand is approximately 36% higher than in the previous Second Quarter.

Figure 2 shows the chilled water sales, sendout and losses for the previous twelve months. The losses on this figure are defined as the difference in tonhrs per month between the recorded sendout and sales values and represent the total energy loss for chilled water in the EDS. The number of cooling degree days per month are also tracked for comparison.

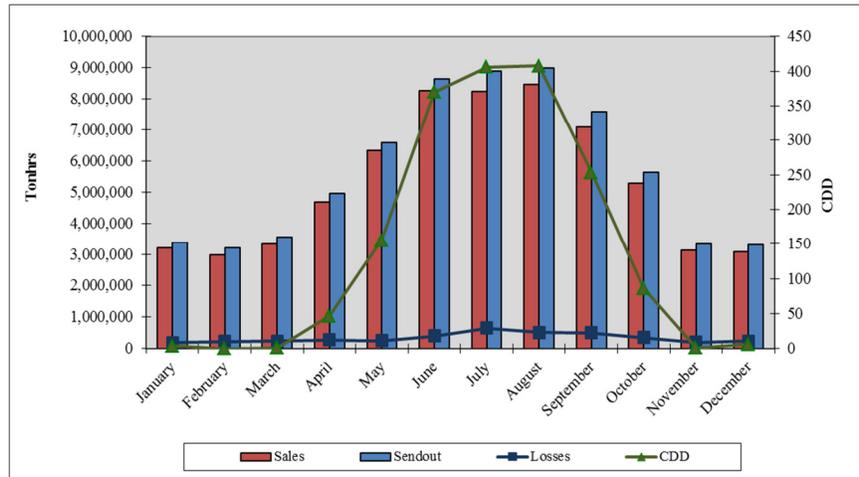


Figure 2. Chilled Water Sales, Sendout, Losses and CDD for the Previous Twelve Months

2. Losses

A comparison of the total, chilled water energy losses in the EDS for the Second Quarter is shown in Figure 3. These losses are the difference in chilled water sendout and sales.

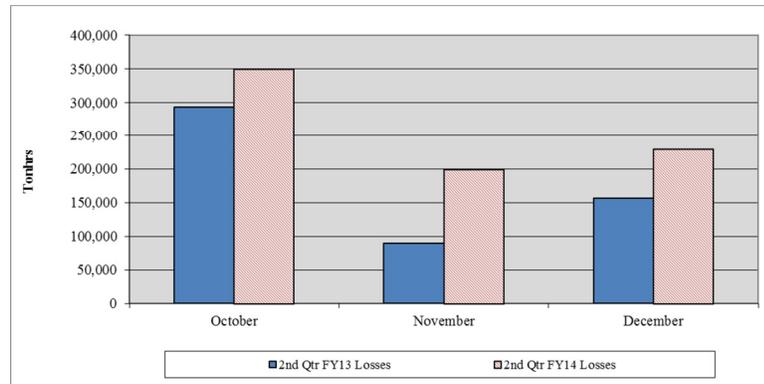


Figure 3. Chilled Water System Loss Comparison for the Second Quarter FY14

The EDS make-up increased by approximately 50% over the previous Second Quarter. However, the total EDS water usage represents only a small part of the total EGF water usage for the quarter. The total energy losses have increased by approximately 44% over the previous Second Quarter, and the percent of losses as a function of sales has increased by approximately 39%. The make-up to the cooling towers increased marginally. The number of cycles of concentration in the condensing water circuit experienced a 38% increase during the current Second Quarter due to improved water chemistry in the cooling towers. The

overall city water make-up comparison for the chilled water system is shown in Figure 4.

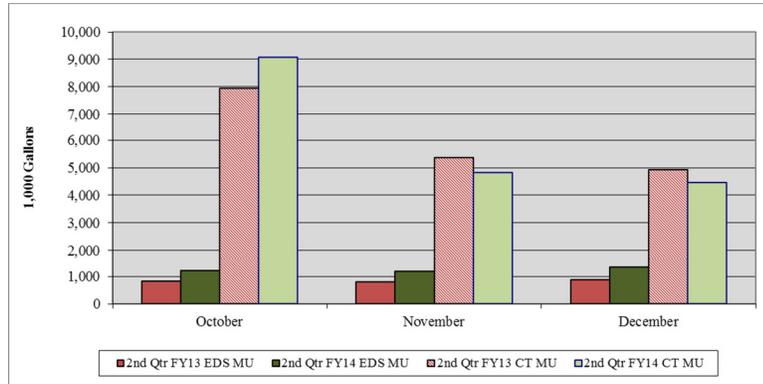


Figure 4. Chilled Water System City Water Usage Comparison

3. Performance

The performance of the chilled water aspect of the EGF is presented by the following two charts, Figures 5 and 6, for the previous twelve months. Under the management of CNE, the System Performance Guarantee levels as described in the ARMA are being achieved quite satisfactorily.

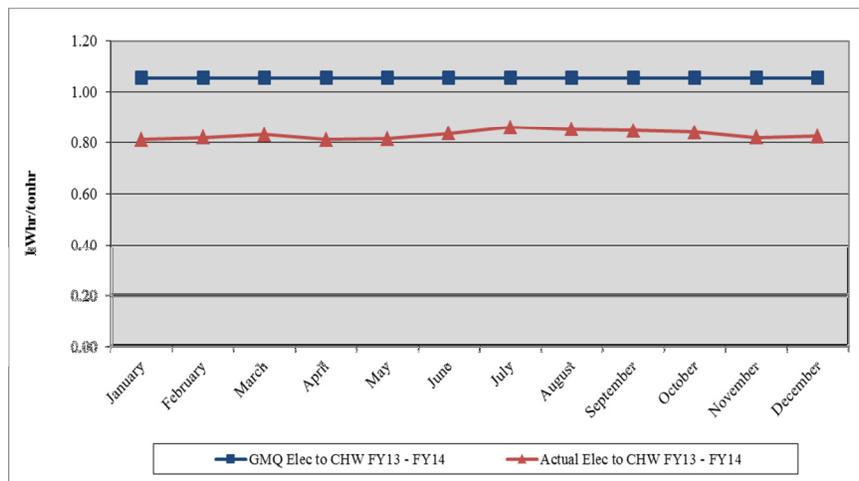


Figure 5. Chiller Plant Electric Performance Guarantee Comparison for the Previous Twelve Months

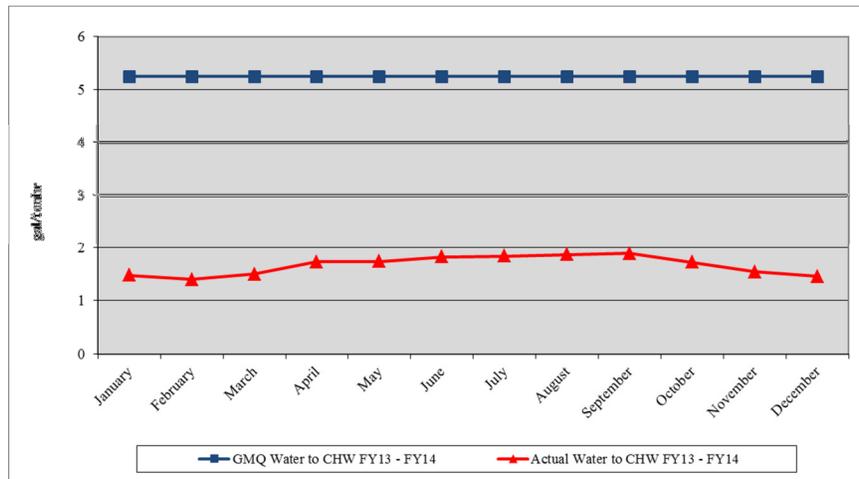


Figure 6. Chiller Plant Water Consumption Performance Guarantee Comparison for the Previous Twelve Months

The chilled water allocation of the electric consumption falls under the GMQ limit of 1.055 kWhr per tonhr for the current quarter, and no excursion is reported for the current fiscal year. The chiller plant electric usage for the current quarter increased approximately 5.5% over the Second Quarter for FY13. The actual electric conversion factor increased 1.6% in the quarter to 0.830 kWhr per tonhr.

The actual chilled water plant water conversion factor increased approximately 2.7% over the previous Second Quarter. The total consumption of city water for the chiller plant for the current quarter increased approximately 6.7% due to an increase in sales and EDS make-up.

B. Steam

1. Sales and Sendout

The steam sendout increased by approximately 7.8% over the previous Second Quarter (FY13), and the sales increased by approximately 10.5% due largely to the Music City Center, the Nashville Hyatt Place and an increase in the number of heating degree days. The number of heating degree days increased by approximately 14.8% over the previous Second Quarter. The steam system losses decreased approximately 15% relative to sendout. A comparison for the Second Quarter steam sales is shown in Figure 7.

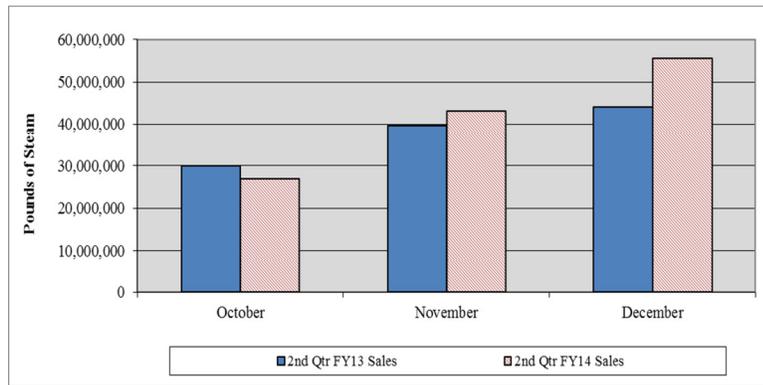


Figure 7. Steam Sales Comparison for the Second Quarter FY14

The peak steam demand for the current quarter is 134,500 pph, which reflects an approximate 20% increase in the peak steam production over the previous Second Quarter.

Figure 8 shows the steam sales, sendout and losses for the previous twelve months. The losses on this figure are defined as the difference in pounds per month between the recorded sendout and sales values and represent the total mass loss in the EDS between the EGF and the customer meters.

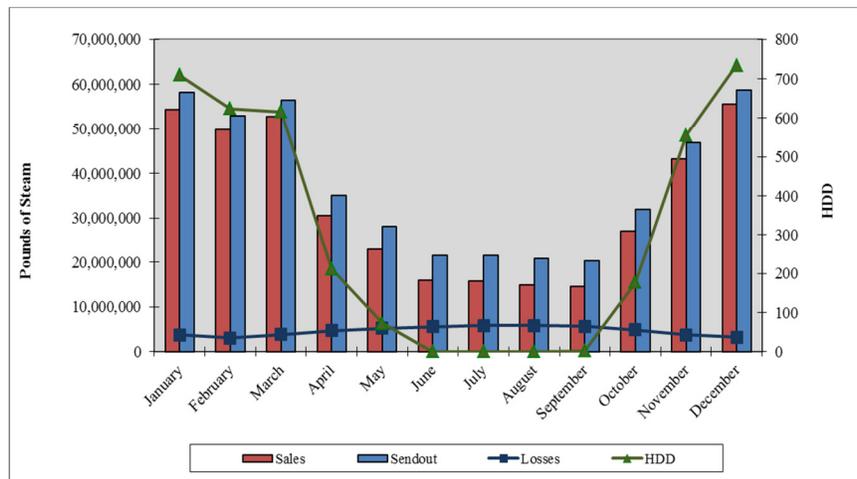


Figure 8. Steam Sales, Sendout, Losses and HDD for the Previous Twelve Months

2. Losses

A comparison of the total steam mass losses in the EDS for the Second Quarter is shown in Figure 9. The mass loss is caused by the heat loss in the EDS between the EGF and the customer meters, resulting in a mass loss at steam traps. Faulty traps, steam leaks or meter error could also be a contributing cause of these losses.

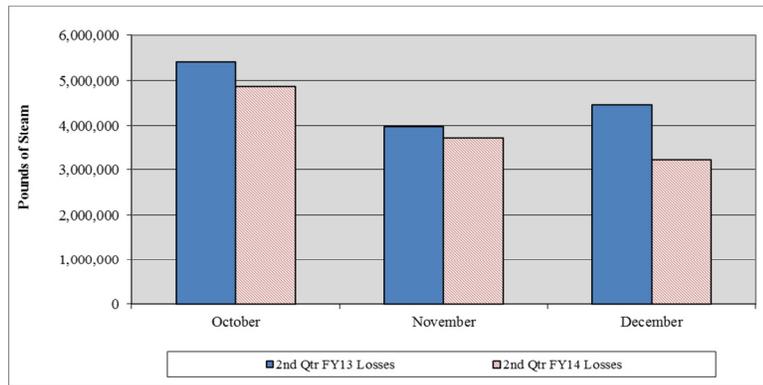


Figure 9. Second Quarter FY14 Steam System Losses

The amount of city water make-up (MU) to the steam system consists of the loss in mass between the EGF and the customers, in the condensate return from the customers to the EGF and losses at the EGF. This data is shown in the comparison of First Quarter data in Figure 10.

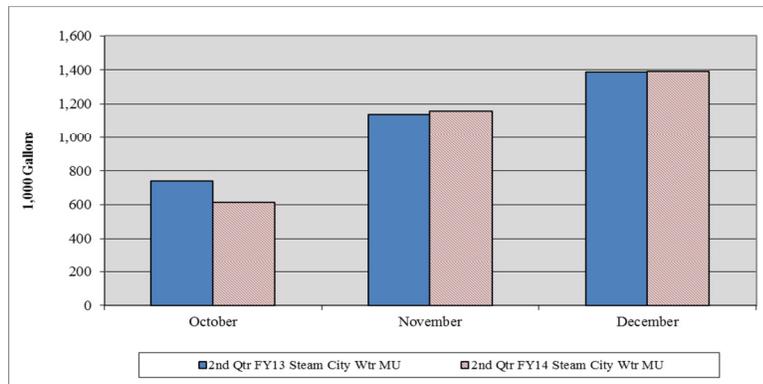


Figure 10. Second Quarter FY14 Steam System City Water Make-up Comparison

3. Performance

The performance of the steam system aspect of the EGF is presented by the following three charts, Figures 11, 12 and 13. Under the management of CNE, the System Performance Guarantee levels as described in the ARMA are being achieved satisfactorily.

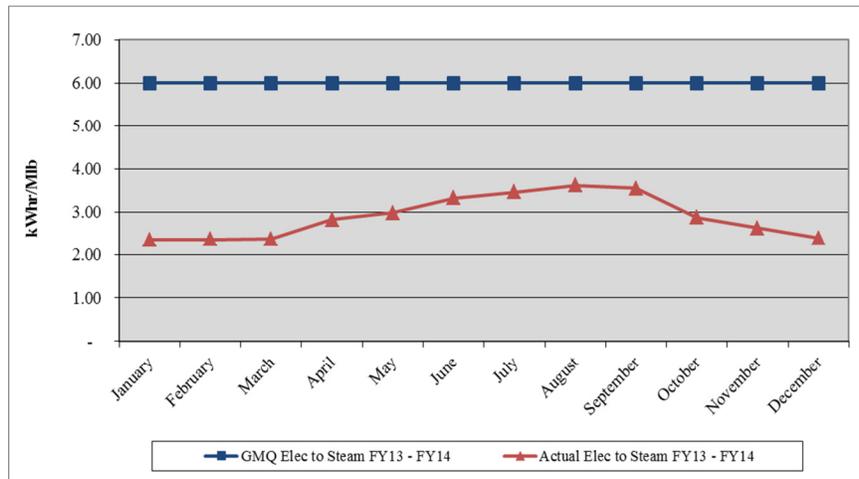


Figure 11. Steam Plant Electric Performance Guarantee for the Previous Twelve Months

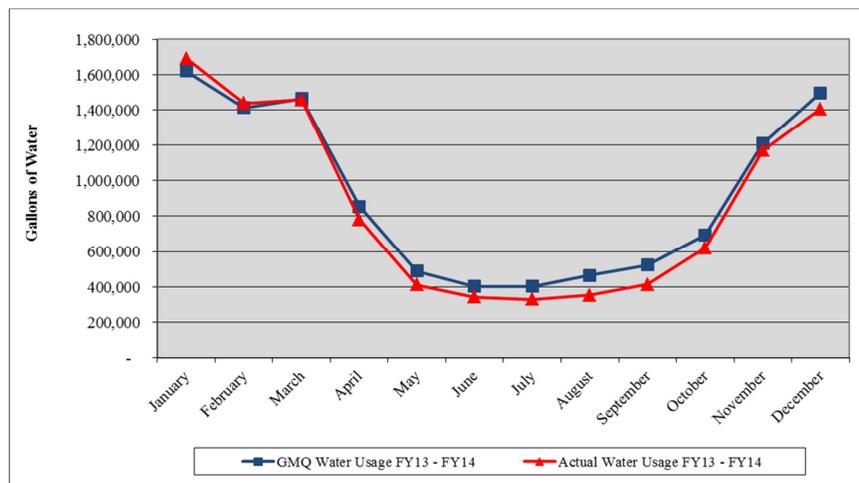


Figure 12. Steam Plant Water Performance Guarantee for the Previous Twelve Months

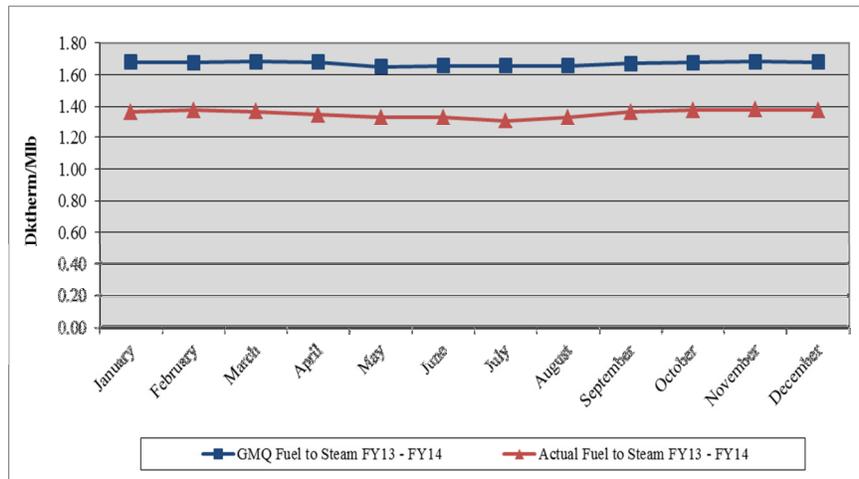


Figure 13. Steam Plant Fuel Performance Guarantee for the Previous Twelve Months

The current quarter experienced a 9.7% increase in the steam plant electric consumption while experiencing a marginal decrease in the electric conversion factor (due to an increase in steam sales). The water consumption for the steam plant decreased 3.2% this quarter as compared to the previous Second Quarter. The fuel consumption per unit of steam sales is relatively constant throughout the year and when compared to the historic data. The boiler plant fuel efficiency decreased 1.79% for the current quarter.

C. Contract Guarantee Performance

The production and sales performance for the EGF and EDS are summarized in Table 1 for the current quarter and the complete fiscal year. Additional parameters, such as cooling tower blow-down and peak demands are listed in this table, as well. Table 2 presents the Second Quarter comparisons of the Guaranteed Maximum Quantities (GMQ) of the criteria commodities (fuel, water and electricity).

Table 1. Second Quarter FY14 Production, Sales and Consumption Summary

Item	Unit	Second Quarter FY14	Second Quarter FY13	*Percent Difference
	days	92	92	0.00%
Total Electric Use	kWhrs	9,855,235	9,331,185	5.62%
Chilled Water	kWhrs	9,531,774	9,036,298	5.48%
Steam	kWhrs	323,461	294,887	9.69%
Total Water Use	kgal	25,278	23,999	5.33%
Total Chilled Water	kgal	22,114	20,731	6.67%
EDS Make-up	kgal	3,753	2,505	49.82%
Cooling Towers	kgal	18,365	18,226	0.76%
Calc CT Evaporation	kgal	16,075	15,222	5.60%
CT Blowdown	kgal	2,290	3,004	-23.77%
Calc # Cycles		7.02	5.07	38.53%
Steam	kgal	3,164	3,268	-3.18%
Total Fuel Use	mmBTU	189,710	172,958	9.69%
Natural Gas	mmBTU	189,652	172,875	9.70%
Propane	mmBTU	58	83	n.a.
Condensate Return	kgal	13,916	12,734	9.28%
	lbs	113,493,546	103,857,409	9.28%
Avg Temp	°F	166.0	165.7	0.20%
Sendout				
Chilled Water	tonhrs	12,264,000	11,596,088	5.76%
Steam	lbs	137,611,000	127,702,000	7.76%
Peak CHW Demand	tons	15,353	11,322	35.60%
Peak Steam Demand	lb/hr	134,500	111,906	20.19%
CHW LF		36.18%	46.39%	-22.01%
Steam LF		46.34%	51.68%	-10.34%
Sales				
Chilled Water	tonhrs	11,484,062	11,056,195	3.87%
Steam	lbs	125,838,784	113,846,633	10.53%
Losses				
Chilled Water	tonhrs	779,938	539,893	44.46%
Steam	lbs	11,772,216	13,855,367	-15.03%
		8.55%	10.85%	-21.15%
Degree Days				
CDD		93	23	304.35%
HDD		1,466	1,277	14.80%

*positive percent difference values imply an increase from FY13 to FY14

Table 2. Second Quarter FY14 Performance Guarantee Comparison for Steam and Chilled Water

GMQ Calculations	Unit	Second Quarter FY14	Second Quarter FY13	*Percent Difference
Steam				
GMQ Elec Conversion	kWhr/Mlb	6.00	6.00	
Electric Conversion	kWhr/Mlb	2.57	2.59	-0.76%
GMQ Plant Efficiency	Dth/Mlb	1.680	1.683	
Plant Efficiency	Dth/Mlb	1.379	1.354	1.79%
Actual %CR		82.47%	81.33%	1.41%
Avg CR Temp	°F	166	166	0.20%
GMQ Water Conversion	gal	3,400,635	3,362,161	
Water Conversion	gal	3,195,640	3,300,680	-3.18%
Chilled Water				
GMQ Elec Conversion	kWhr/tonhr	1.055	1.055	
Electric Conversion	kWhr/tonhr	0.830	0.817	1.55%
GMQ Water Conversion	gal/tonhr	5.25	5.25	
Water Conversion	gal/tonhr	1.93	1.88	2.70%

*positive percent difference values imply an increase from FY13 to FY14

D. Operating Costs

The operating costs for the DES include the management fee to CNE, debt service payments on the bonds and engineering and administration costs. The variable costs are dependent on the amounts of steam and chilled water produced and sold to the customers. These latter costs include the utility and chemical treatment costs. The vast majority of the costs incurred for the operation of the DES are passed onto the customers in the form of the demand charges (fixed costs) and energy charges (variable costs). A summary of the total operating costs for the fiscal year to date are shown in Table 3.

The revenues shown reflect the charges to the customers for their respective steam and chilled water service. The difference between the total costs and revenues from the customers is the shortfall that must be paid by Metro. The shortfall exists, in part, due to the remaining capacity at the EGF that was included in the original construction and remains unsold. This capacity is available for potential future customers.

The system operating costs for FY14 to date are \$9,075,500. This value represents approximately 42% of the total budgeted operating cost for FY14 and includes expenses to date that have been invoiced but were not paid at the time of this report. Additional invoices that would be charged to the Second Quarter have not been issued or paid at the time of this report. The customer revenues from the sales of steam and chilled water for FY14 are \$9,307,119 which is approximately 47% of the budgeted amount. The MFA

transferred to date is \$979,150 (50% of budget). However, the actual MFA required cannot be accurately calculated due to the outstanding invoices.

Table 3. DES Expenses and Revenues to Date

Item	FY14 Budget	First Quarter Expenses	Second Quarter Expenses	Third Quarter Expenses	Fourth Quarter Expenses	Total Spending to Date	% of Budget
Operating Management Fee							
FOC: Basic	\$ 4,364,800	\$ 1,061,719	\$ 1,061,719	\$ -	\$ -	\$ 2,123,438	48.65%
9th Chiller	\$ 40,500	\$ 9,949	\$ 9,949	\$ -	\$ -	\$ 19,897	49.13%
C/O 6A	\$ 80,000	\$ 19,641	\$ 19,641	\$ -	\$ -	\$ 39,282	49.10%
C/O 6B	\$ 70,100	\$ 17,195	\$ 17,195	\$ -	\$ -	\$ 34,390	49.06%
C/O 7	\$ 28,100	\$ 6,478	\$ 6,478	\$ -	\$ -	\$ 12,956	46.11%
C/O 8	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Pass-thru Charges: Chemical Treatment	\$ 224,100	\$ 34,745	\$ 33,000	\$ -	\$ -	\$ 67,745	30.23%
Insurance	\$ 30,300	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Marketing: CES Sales Activity	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Incentive Payments	\$ -	\$ -	\$ 1,034	\$ -	\$ -	\$ 1,034	n.a.
FEA: Steam	\$ -	\$ 21,479	\$ 41,455	\$ -	\$ -	\$ 62,934	n.a.
Chilled Water	\$ -	\$ 177,131	\$ 76,916	\$ -	\$ -	\$ 254,047	n.a.
Misc: Metro Credit	\$ -	\$ (206,198)	\$ (116,755)	\$ -	\$ -	\$ (322,954)	n.a.
ARFA	\$ -	\$ 15,420	\$ 15,420	\$ -	\$ -	\$ 30,840	n.a.
Deferral	\$ -	\$ -	\$ (81,651)	\$ -	\$ -	\$ (81,651)	n.a.
Subtotal - Man Fee =	\$ 4,837,900	\$ 1,157,558	\$ 1,084,400	\$ -	\$ -	\$ 2,241,958	46.34%
Reimbursed Management Fee + Chem Treatment		\$ 1,333,815	\$ 1,276,397	\$ -	\$ -	\$ 2,610,212	0.00%
Metro Costs							
Pass-thru Charges: Engineering	\$ 10,100	\$ 112	\$ -	\$ -	\$ -	\$ 112	1.10%
EDS R&I Transfers	\$ 268,800	\$ 67,200	\$ 67,200	\$ 22,400	\$ -	\$ 156,800	58.33%
Metro Marketing	\$ 10,000	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Project Administration	\$ 17,500	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Metro Incremental Cost	\$ 530,200	\$ 153,812	\$ 60,565	\$ -	\$ -	\$ 214,377	40.43%
Utility Costs: Water/Sewer	\$ 714,300	\$ 187,860	\$ 101,788	\$ -	\$ -	\$ 289,648	40.55%
EDS Water/Sewer	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
EDS Electricity	\$ -	\$ 18,294	\$ 14,967	\$ -	\$ -	\$ 33,261	n.a.
Electricity	\$ 6,585,000	\$ 2,176,926	\$ 782,620	\$ -	\$ -	\$ 2,959,546	44.94%
Natural Gas Consultant	\$ 98,300	\$ 4,753	\$ 6,560	\$ -	\$ -	\$ 11,313	11.51%
Natural Gas Transport	\$ -	\$ 41,347	\$ 72,875	\$ -	\$ -	\$ 114,222	n.a.
Natural Gas Fuel	\$ 3,057,800	\$ 327,008	\$ 741,853	\$ -	\$ -	\$ 1,068,861	34.96%
Propane	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Subtotal - Metro Costs =	\$ 11,292,000	\$ 2,977,310	\$ 1,848,429	\$ 22,400	\$ -	\$ 4,848,139	42.93%
Subtotal - Operations =	\$ 16,129,900	\$ 4,134,868	\$ 2,932,829	\$ 22,400	\$ -	\$ 7,090,097	43.96%
Debt Service							
2012 Bonds	\$ 3,476,000	\$ 867,688	\$ 868,988	\$ -	\$ -	\$ 1,736,675	49.96%
2005 Bonds	\$ 752,300	\$ 173,291	\$ -	\$ -	\$ -	\$ 173,291	23.03%
2007 Bonds	\$ 215,700	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
2008 Bonds	\$ 214,400	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
2010 Bonds	\$ 212,100	\$ 89,050	\$ -	\$ -	\$ -	\$ 89,050	41.99%
MCCC Fund	\$ 748,000	\$ -	\$ -	\$ -	\$ -	\$ -	
Interest Revenue	\$ (193,400)	\$ (6,747)	\$ (6,868)	\$ -	\$ -	\$ (13,614)	7.04%
MIP	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Oper. Reserve Fund	\$ 93,600	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Subtotal - Capital =	\$ 5,518,700	\$ 1,123,283	\$ 862,120	\$ -	\$ -	\$ 1,985,403	35.98%
Total =	\$ 21,648,600	\$ 5,258,150	\$ 3,794,949	\$ 22,400	\$ -	\$ 9,075,500	41.92%
Customer Revenues							
Taxes Collected		\$ 90,505	\$ 72,704	\$ -	\$ -	\$ 163,209	n.a.
Taxes Paid		\$ 89,445	\$ 53,573	\$ -	\$ -	\$ 143,018	n.a.
Penalty Revenues/Credits		\$ (39,129)	\$ (13,454)	\$ -	\$ -	\$ (52,583)	n.a.
Energy Revenues Collected		\$ 5,255,091	\$ 4,084,421	\$ -	\$ -	\$ 9,339,512	n.a.
Revenues =	\$ 19,690,300	\$ 5,217,021	\$ 4,090,998	\$ -	\$ -	\$ 9,307,119	47.27%
Metro Funding Amount =	\$ 1,958,300	\$ 41,129	\$ (295,149)	\$ 22,400	\$ -	\$ (231,619)	-11.83%

The DES serves 28 customers and 41 buildings in downtown Nashville, including the new Music City Convention Center (MCCC) and Nashville Hyatt Place. These customers are divided into three categories: 1) Private customers who privately own their buildings, 2) State of TN owned buildings and 3) Metro owned buildings. For FY13, the MCCC is considered a Metro owned building even though the general contractor is paying for temporary services. A summary of the annual costs for each of these three

categories is presented in Table 4. These values include late fees and penalties and any unpaid balances.

Table 4. Customer Revenue Summary to Date

Building	Chilled Water			Steam		
	Total Cost	Consumption (tonhrs/yr)	Unit Cost (\$/tonhr)	Total Cost	Consumption (Mlb/yr)	Unit Cost (\$/Mlb)
Private Customers	\$ 1,822,411	9,912,058	\$ 0.1839	\$ 659,519	40,074	\$ 16.4574
State Government	\$ 1,773,598	8,632,649	\$ 0.2055	\$ 923,674	50,040	\$ 18.4585
Metro Government	\$ 2,933,599	16,731,320	\$ 0.1753	\$ 1,193,535	80,973	\$ 14.7399
New Customers	\$ 1,663,104	8,910,945	\$ 0.1866	\$ 579,085	47,518	\$ 12.1868
Total	\$ 6,529,608	35,276,027	\$ 0.1851	\$ 2,776,729	171,088	\$ 16.2299

Total Revenue	\$	9,306,336
True-up and Adjustments (Net)	\$	783
Net Revenue	\$	9,307,119

III. EGF Operations

Items relating to the facility operations presented herein are derived from the monthly reports issued by CNE for FY14. Communication between TEG and CNE continues to be excellent, and CNE has reported and managed all EGF operations satisfactorily and according to the ARMA with no contract violations.

A. Reliability

The principle issues surrounding the reliable operation of the EGF relates to the ability to operate without significant interruption, exclusive of planned outages, and disruption of service to the customers. The following disruptions in service occurred during the quarter.

- On November 6 and again on December 24, the sendout steam pressure dropped below 150 psig for approximately 45 minutes while an additional boiler was being started. The decrease in sendout pressure was reported by CNE as being caused by the steam demand at the time.
- Excursions and disruptions in operations that have occurred throughout the year are included in the individual Monthly Operational Reports from CNE.

B. Efficiency

The operation of the EGF satisfied the guaranteed levels for all commodity usage during the quarter. There were no significant excursions above the guaranteed levels for the current quarter. A more detailed discussion of the contract guarantee performance was presented previously in this report.

C. Environment, Health and Safety

No environmental violations were reported during the quarter.

Monthly safety meetings were held on Storm Water Pollution Prevent and Spill Prevention Controls and Counter-measures, Safe Work Practices, Steam System Safety and Refrigeration Safety.

CNE has begun cross-training maintenance employees to fill in as relief operators.

D. Personnel

The EGF currently has twenty-five full time employees. Of the current number of employees, seventeen were previously employed by Nashville Thermal Transfer Corporation.

E. Training

Staff training for this quarter consisted of the Health and Safety training discussed previously. CNE began cross training maintenance personnel to perform the tasks of the operators at the EGF in case of emergency or need.

F. Water Treatment

The water treatment program consists of regular testing and monitoring of the water chemistry in the steam, chilled water and condensing water systems. Chemicals are added to control the water hardness, chlorine levels and biologicals. Remote testing of the condensate at the AA Birch, Tennessee Tower and the Andrew Jackson also occurs regularly to monitor the concentration and distribution of the steam system chemicals.

- Steam System
 - The condensate return averaged approximately 82.5% of the steam sendout during the quarter which represents a 1.4% increase over the previous Second Quarter. This high percentage of condensate return is an excellent indicator of the quality of steam and condensate throughout the system.
 - The steam system make-up has continued to decrease from previous years due to the repair and maintenance improvements of the EDS.
- Condensing Water System
 - The conductivity of the condensing water continues normal with only a few excursions resulting in high cycles of concentration and low blowdown rates.
- Chilled Water System
 - The control of the system chemistry continues to be excellent.

G. Maintenance and EGF Repairs

CNE continues to report on the numerous routine maintenance and preventive maintenance activities performed on the EGF primary and ancillary equipment. The principle items are discussed herein as they relate to the repair, maintenance or replacement of equipment or devices at the facility and are not considered extraordinary. The cost for these items is included as part of the FOCs.

- Work was completed on the bladder replacement for expansion tank #2.
- The automated gas valves on boilers #1, #2 and #4 were repaired.
- A safety and security gate was installed at the mezzanine roll door.
- Leaks were repaired on the chemical feed systems.
- The 2" city water meter was replaced by the MWS.
- Other minor repairs and maintenance were made during the quarter and are listed in the monthly reports issued by CNE.

H. EGF Walk-through

A quarterly Walk-through of the EGF was performed on January 14, 2014, by Kevin Jacobs, P.E. with TEG. This review involved a tour of the facility with the primary points of interest and concern noted herein.

- Many of the housekeeping items noted in the previous walk-through have been repaired or resolved.
- Some of the riser pipes in the cooling towers have been painted, but some repairs remain.
- The leak in expansion tank #2 has been repaired, and the temporary scaffolding and platform have been removed.
- The minor graffiti noted last quarter on the outer west wall of the EGF has been removed.
- A small water leak in a structural joint on cooling tower #17 was repaired.
- An unusual vibration was noted from cooling tower #10 and a leaky level controller was also noted. CNE was informed about each of these issues and were investigating.
- Other minor items remaining include:
 - Cobwebs have reformed in various places throughout the plant and on motor control center #4 located near the boilers; these should be removed. However, progress has been made in removing these cobwebs.

IV. Capital Projects

The Capital Projects discussed in this section are those projects funded through the issuance of bonds by Metro. Costs for these projects will be paid from funds already appropriated. The

statuses of the projects are discussed, and the project cost-to-date and bond balances are also presented.

A. Second Quarter FY14 Open Projects

The following projects remained open at the end of the Second Quarter FY14.

1. DES033 – Manhole Lid and Ring Replacement/Restoration

This project relates to the repair and replacement of manhole lids and rings whenever Metro Public Works performs Street re-paving. This project will remain open.

2. DES077 – Music City Center Service Connection

This project will most likely be closed-out during the Third Quarter FY14.

3. DES090 – Manhole & Tunnel Insulation Repair (Revised from DES060)

Work associated with this project will be ongoing as required.

4. DES091 – Thermal Storage and NES Time of Use Rates

Although the thermal storage aspect of this project is completed, additional investigation is currently being performed by TEG for the conversion of the current billing practices to a time of use basis matching that of the electric invoice from NES.

5. DES 098 – Nashville Hyatt Place Customer Connection

The building opened to the public during the Second Quarter FY14. Water from an unknown source had damaged some of the insulation on the new condensate service to the building. An investigation was performed by CNE and TEG, but the source of the water could not be determined. Since the initial incident in November, additional water or damaged was not observed. The repair of this insulation is expected to occur during the Third Quarter FY14 at which time this project is expected to be closed-out.

6. DES 100 – MH-10 Roof Replacement

This project is expected to be closed-out in the Third Quarter FY14 upon final invoicing from CNE and an outstanding invoice from Piedmont is delivered.

7. DES 101 – MH-1 Abandonment

This project is complete and will be closed-out during the Third Quarter FY14.

8. DES 102 – Customer Delta T Modifications

As a result of recently adopted modifications to the customer service agreements, all customers that agreed to the modifications currently have their chilled water Delta T's calculated based on the actual, monthly average supply temperature to their building and their actual, monthly average return temperature to their building. In order to more fairly implement this change, some modifications to the customer control valves and/or chilled water pump controls required adjustment. This project involves the implementation of the control changes necessary.

Those customers that did not agree to the customer service agreement modifications will continue to have their chilled water supply temperature set at 42°F.

This project was completed during the quarter, but final invoices from CNE have not been issued. Close-out is anticipated during the Third Quarter FY14.

9. DES 103 – Sheraton Hotel Expanded CHW Service

In order to meet the contractual chilled water demand, additional chilled water services lines are being installed into the Sheraton Hotel from the main in Union Street. This project was designed, bid and awarded during the Second Quarter FY14. Construction will begin during the Third Quarter FY14 with a two-week construction window designated for the exterior work associated with this project (January 24 – February 6).

B. Second Quarter FY14 Closed Projects

No projects were closed during the Second Quarter FY14.

C. Capital Projects Budget

The following table summarizes the costs and remaining balance of the DES capital projects based on reported expenditures to date. Open projects or completed projects that require some additional management are shown. Total costs for projects that are closed are shown with a gray highlight. Only the funds currently available are shown.

Table 5. Capital Projects Expense Summary

DES Project #	Description	Total Budget	FY14 Spending to Date	Total Spent to Date	Remaining Balance
2010 Bond Projects					
DES070	MH 6 to 23 Cond Line	\$ 20,000	\$ -	\$ 527	\$ 19,473
DES071	Hermitage Hotel Ser Modifications	\$ 20,000	\$ -	\$ 1,119	\$ 18,881
DES072	Sheraton Strm & Cond Line	\$ 11,000	\$ -	\$ 10,462	\$ 538
DES091	NES Time of Use Electric Rate	\$ 100,000	\$ 2,857	\$ 64,616	\$ 35,384
Total Closed Projects		\$ 1,814,533	\$ -	\$ 1,814,533	\$ -
Metro Project Admin		\$ -	\$ -	\$ -	\$ -
Project Man, Development, etc		\$ 444,467	\$ -	\$ -	\$ 444,467
Total 2010 Bond		\$ 2,410,000	\$ 2,857	\$ 1,891,257	\$ 518,743
MCCC Construction Fund					
DES077	Music City Convention Center Design/Const	\$ 545,900	\$ -	\$ 453,281	\$ 92,619
DES077	MCCC Metering	\$ 121,870	\$ 10	\$ 141,711	\$ (19,841)
DES077	Bell/Clark Construction Fund	\$ 4,697,860	\$ -	\$ 4,267,623	\$ 430,237
DES098	Nashville Hyatt Service Connection	\$ 300,000	\$ 737	\$ 250,294	\$ 49,706
DES100	MH-10 Roof Repair	\$ 450,000	\$ 383,953	\$ 387,490	\$ 62,510
DES101	MH-1 Abandonment	\$ 55,000	\$ 24,788	\$ 34,197	\$ 20,803
DES102	Customer Delta T Control Modifications	\$ 30,000	\$ -	\$ -	\$ 30,000
DES103	Sheraton Metering Modifications	\$ 60,000	\$ 32,634	\$ 32,634	\$ 27,366
Sub-Total Closed Projects		\$ 686,197	\$ -	\$ 679,111	\$ 7,086
Metro Project Admin		\$ 50,000	\$ -	\$ 21,515	\$ 28,485
Project Man, Development, etc		\$ 1,503,173	\$ -	\$ -	\$ 1,503,173
Total MCCC Construction Fund		\$ 8,500,000	\$ 442,122	\$ 6,267,855	\$ 2,232,145

V. Energy Distribution System Repairs, Improvements, PM and Emergencies

Several EDS repairs and improvements were made during the Second Quarter. The principle items for discussion are presented in the following sections.

A. Repairs and Improvements

Several repairs were made to the EDS and at customer buildings during the quarter. The remaining value of the R&I budget at the end of the current quarter is \$90,636. Table 6 provides a summary of the FY14 expenditures and revenues to date associated with the R&I budget.

Table 6. Repair and Improvement Expenditure and Revenue Summary

Description	Date	Tracking #	Vendor	Expenditure	Transfers/Market Adjustment	Market Value	Balance
Value at end of FY13					\$ -	\$ 51,892.81	\$ 51,892.81
May 2013 CNE R&I Services	8/14/2013	DES-1700	CNE	\$ 11,540.17			
DES-095 Manhole B2-Vault leak repairs	8/14/2013	DES-1705	CNE	\$ 8,825.00			
June 2013 CNE R&I Services	9/3/2013	N/A	CNE	\$ 2,700.72			
July 2013 CNE R&I Services	9/23/2013	N/A	CNE	\$ 5,974.59			
Sub-Total First Quarter				\$ 29,040.48	\$ 67,200.00	\$ -	\$ 38,159.52
DES-101 Manhole 1	10/29/2013	N/A	CNE	\$ 43,300.00			
DES-101 MH1 CNB R&I	10/29/2013	N/A	CNE	\$ 3,326.66			
35965 - DES R&I 9/1	11/26/2013	DES-1762	CNE	\$ 10,984.48			
August 2013 CNE R&I Services	11/4/2013	DES-1744	CNE	\$ 6,379.18			
Sept 2013 CNE R&I Services	12/31/13	N/A	CNE	\$ 2,626.39			
Sub-Total Second Quarter				\$ 66,616.71	\$ 67,200.00	\$ -	\$ 583.29
Sub-Total Third Quarter				\$ -	\$ -	\$ -	\$ -
Sub-Total Fourth Quarter				\$ -	\$ -	\$ -	\$ -
FY14 Year to Date				\$ 95,657.19	\$ 134,400.00	\$ -	\$ 90,635.62

B. Preventive Maintenance

Preventive maintenance, tunnel and manhole inspections and reviews of customers' mechanical rooms were performed during the quarter. The principle items for discussion are presented. A more detailed review of the condition of the EDS is presented in sub-section D of this report, "EDS Walk-through."

1. EDS Tunnel and Manhole Inspections
 - a. Manhole S5 (State system) required pumping numerous times during the quarter.
 - b. Water accumulation in Manhole B2 has reduced, however it required pumping several times during the quarter.
 - c. Several traps were found not to be functioning properly; CNE needs to repair or replace these traps as soon as possible.
 - d. Structural metal in the vaults and tunnels need to be cleaned and painted.
2. Other EDS Inspections
 - a. The monthly thermographic analyses revealed no changes.
 - b. Other minor items are included in the CNE monthly reports.

C. Emergencies

No emergencies were reported during the quarter.

D. EDS Walk-through

The First Quarter 2014 EDS walkthrough was conducted on January 21, 22 and 24, 2014, by Jon B. Belcher, PE. The manholes and tunnels that were visited included Manholes B2, B3, B4, B6, B7, B8, B9, B10, 12, 16A, 22B, S4A, U, Viridian and C. The following comments and observations are a result of these visits:

1. Manhole B2
 - a. There was water present and the vault had to be pumped out, however it was not an extreme amount of water. It was reported that CNE personnel are pumping this manhole out every 1 to 2 days and there is about 1 foot of water present when this occurs.
 - b. There is some corrosion on the piping supports. These supports should be cleaned and painted to prevent additional corrosion. This vault should be included in the capital project to repair and prevent structural corrosion with a "moderate" to "extreme" rating.
 - c. There is some minor insulation repair needed in this vault; this vault should be included in the capital project to repair insulation with a "moderate" rating.

- d. There is some ground water seepage around the west wall penetration of the northern chilled water piping. This should be monitored.
 - e. There are some hairline cracks in the walls and ceiling. This should be monitored.
2. Manhole B3
- a. There was water present in this vault and it required pumping prior to entry.
 - b. There is some corrosion on the piping supports. These supports should be cleaned and painted to prevent additional corrosion. This vault should be included in the capital project to repair and prevent structural corrosion with a “moderate” rating.
 - c. There is a nut missing from an anchor bolt on a pipe support; a nut needs to be installed on this bolt.
 - d. There is some minor spalling of a concrete wall where it appears that rebar chairs were placed. These spalls should be patched. TEG will coordinate with Constellation to have this done.
 - e. There are several hairline cracks in the ceiling of this vault; these cracks should be monitored.
 - f. Initially, the trap was not working in this manhole; CNE personnel were able to get it functioning prior to exiting the manhole.
 - g. There was an intermittent “popping” sound in the manhole, ranging from “soft” to extremely loud. The source of the sound was not determined. This should be closely monitored.
3. Manhole B4
- a. There was water present in this manhole and it required pumping before entry.
 - b. There is some corrosion of the structural components in this manhole. This vault should be included in the capital project to repair and prevent structural corrosion with a “moderate” rating.
 - c. There is some minor insulation repair needed in this vault; this vault should be included in the capital project to repair insulation with a “moderate” rating.
 - d. There are several hairline cracks in the ceiling of this vault; these cracks should be monitored.
 - e. The casing of the condensate piping penetrating the manhole’s west wall includes vent and drain valves. The pre-insulated piping is not a drainable/dryable system, thus vents and drains should be opened and checked during the monthly review to verify that there are no issues with regard to water intrusion into the pre-insulated piping. Otherwise, these valves should remain closed.
4. Manhole B6
- a. There was water present in this manhole and it required pumping before entry.

- b. The pre-insulated piping end cans include drain and vent piping. The pre-insulated piping is not a drainable/dryable system, thus vents and drains should be opened and checked during the monthly review to verify that there are no issues with regard to water intrusion into the pre-insulated piping. Otherwise, these valves should remain closed.
5. Manhole B7
- a. There was a minor amount of water present in this manhole.
 - b. The pre-insulated piping end cans include drain and vent piping. The pre-insulated piping is not a drainable/dryable system, thus vents and drains should be opened and checked during the monthly review to verify that there are no issues with regard to water intrusion into the pre-insulated piping. Otherwise, these valves should remain closed.
 - c. The trap line strainer was clogged; CNE personnel were able to get it unclogged.
 - d. There is a small amount of debris in the manhole floor which should be removed.
6. Manhole B8
- a. There was a minor amount of water present in this manhole.
 - b. There is hardened grout in the floor of this manhole; CNE should hire a contractor to remove this grout.
 - c. The pre-insulated piping end cans include drain and vent piping. The pre-insulated piping is not a drainable/dryable system, thus vents and drains should be opened and checked during the monthly review to verify that there are no issues with regard to water intrusion into the pre-insulated piping. Otherwise, these valves should remain closed.
 - d. Some of the paint on the anchor support is flaking. This should be cleaned and re-painted to prevent the formation of corrosion.
 - e. There is a small amount of debris in the manhole floor which should be removed.
7. Manhole B9
- a. There was water present in this manhole and it required pumping.
 - b. There is hardened grout in the floor of this manhole; CNE should hire a contractor to remove this grout.
 - c. The pre-insulated piping end cans include drain and vent piping. The pre-insulated piping is not a drainable/dryable system, thus vents and drains should be opened and checked during the monthly review to verify that there are no issues with regard to water intrusion into the pre-insulated piping. Otherwise, these valves should remain closed.
 - d. There is hardened grout in the floor of this manhole; CNE should hire a contractor to remove this grout.

- e. There is a hairline crack in the ceiling of this vault. This crack should be monitored.
 - f. Initially, the trap was not working in this manhole; CNE personnel were able to get it functioning prior to exiting the manhole.
8. Manhole B10
- a. There was water in this manhole which required pumping before entry.
 - b. There is hardened grout in the floor of this manhole; CNE should hire a contractor to remove this grout.
 - c. The pre-insulated piping end cans include drain and vent piping. The pre-insulated piping is not a drainable/dryable system, thus vents and drains should be opened and checked during the monthly review to verify that there are no issues with regard to water intrusion into the pre-insulated piping. Otherwise, these valves should remain closed.
 - d. Initially, the trap was not working in this manhole; CNE personnel were able to get it functioning prior to exiting the manhole.
 - e. The Teflon pad on the kicker has shifted; at the first opportunity, this pad should be re-centered on the kicker and glued in place to prevent it from shifting.
 - f. The link seal retaining plate on the east steam line penetration is bowed; this should be monitored.
9. Viridian Manhole
- a. There was water in this manhole which required pumping before entry.
 - b. No deficiencies to report.
 - c. The Teflon pads on the kicker slide plates have fallen out of place.
10. Manhole 16A
- a. No deficiencies to report.
11. Manhole 22B
- a. There was groundwater seeping into the manhole at the manway frame.
 - b. The link seal on the steam piping to the library is leaking and requires tightening.
 - c. The link seal on the southern CHW to the library is leaking and requires tightening.
 - d. The steam piping casing end can for the library service is corroded and split and small wisps of steam can be seen exiting the casing. It appears that the casing between the manhole and the library might be breached and allowing groundwater inside the casing. CNE personnel should go inside the library and open the steam casing drain to see if groundwater will drain from the casing and report to TEG.
 - e. The vent pipe nipple and valve on the steam piping casing to the library is absent. Prior reports cited that a new pipe nipple with a

- valve and check valve needed to be re-installed on this casing. However, repairs to this vent should await findings of the possible casing breach.
- f. The CHW vent valves are sweating due to poor insulation. This vault should be included in the capital project to repair insulation with a “minor” rating.
12. Manhole S4A
- a. There was no water present in this manhole.
- b. There are several cracks in the concrete sidewalk above this manhole; these cracks are probably due to traffic cutting the corner short when making turns.
- c. There are hairline cracks in the western wall of this manhole. These cracks should be monitored.
- d. The trap is not working in this manhole; CNE personnel should replace this trap as soon as possible.
13. Manhole U
- a. Groundwater was present in this manhole and due to the ambient conditions, secondary steam was present.
- b. There is some corrosion on the bottom portion of the ladder in this manhole. The ladder should be cleaned and painted or replaced.
14. Manhole 12
- a. There was no water present in this manhole.
- b. There is a hairline crack in the ceiling of this manhole; this crack should be monitored.
- c. The trap is not working in this manhole; CNE personnel should replace this trap as soon as possible.
15. Manhole C
- a. There was water present in this manhole and it required pumping before entry.
- b. A portion of southern condensate slip joint blanket is missing; this insulation blanket portion should be replaced.
- c. The link seals on the water line which passes through the vault are leaking. These link seals should be tightened.
- d. The link seal on both the northern and southern steam line penetrations are starting to “back out”. These link seals should be loosened, re-positioned in the wall sleeve and re-tightened.

VI. Customer Relations

This section contains descriptions of the marketing efforts made by the DES Team during the quarter. The topics of interactions, meetings and training seminars with the customers are also discussed. There are currently 28 customers, comprised of 41 different buildings, connected to the EDS, including the Music City Center and Nashville Hyatt Place. Service to each of these buildings continues to prove satisfactory, and the responsiveness to customer issues is handled by CNE in an excellent and professional manner.

A. Marketing

The DES has placed a temporary hold on additional marketing at this time due to the uncertainty of the actual steam and chilled water loads on the MCC.

B. Customer Interaction

The CNE customer service representative (CSR) continues to respond to customer issues as they arise. Much of the communication involves minor problems with the customers' heating and cooling systems that are unrelated to DES service. Other more significant issues are summarized herein.

- The CSR coordinated several meetings between the customers, CNE, TEG and the contractors for particular projects that affected the steam, condensate and/or chilled water service to the customer.
- Chilled water issues with the operation of the chilled water pump at Wells Fargo remain. The resolution and temporary changes implemented by CNE are still in place. The building owner has not yet made the permanent changes to the building controls.
- A sewer leak at the John Sevier building prompted CNE to sanitize the metering and instrumentation equipment at this building.
- The State began making building repairs and upgrades to the Andrew Jackson building during the quarter which required assistance of CNE and several shut-downs of the steam and chilled water systems.
- Other minor issues and customer interactions are noted in the monthly CNE reports.

VII. Recommendations

Based on the review of the Second Quarter EGF and EDS operations, the following recommendations are made.

- Corroded structural steel within the vaults and tunnels should be cleaned and painted or replaced; TEG will coordinate this effort with CNE.
- Insulation which is absent, or in disrepair, in the vaults should be addressed through either additional capital projects, which include work within these vaults, or through DES090.
- Steam traps which need repair or replacement should be addressed as soon as possible.
- Possible groundwater infiltration into the Library's steam piping casing should be investigated.