



## **Operations Monitoring Report**

**Fourth Quarter FY13**

**Prepared by:**

**Thermal Engineering Group, Inc.  
105 Hazel Path Court, Ste 2  
Hendersonville, TN 37075**

**August 5, 2013**

## I. Executive Summary

A review of the fiscal year 2013 (FY13) Fourth 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 2013, CNE has satisfactorily met all of the contract obligations to Metro and has had no contract violations.

For the Fourth Quarter FY13, the chilled water sales increased 18% over the previous Fourth Quarter (FY12) due primarily to an increase in the sales to the Music City Center. The Fourth Quarter FY13 saw an 18.5% decrease in cooling degree days from the previous Fourth Quarter. The peak chilled water demand for the current quarter was 18,008 tons, which is 26% higher than the previous Fourth Quarter, and the highest recorded demand at the EGF.

For the fiscal year (FY13), the chilled water sales increase 9.3% over the previous fiscal year (FY12). This increase is also primarily due to the presence of the Music City Center which became a DES customer in April 2012 (FY12). The number of cooling degree days in FY13 was 10% lower than in FY12.

Steam sendout for the current quarter increased by approximately 56% over the previous Fourth Quarter, and the number of heating degree days increased by 71%. Likewise, steam sales also increased by approximately 84% over the previous Fourth Quarter. The increase in steam sales is also attributable to the Music City Center. Steam system losses, as a percentage of sendout, decreased, and the total losses decreased by approximately 8% over the previous Fourth Quarter. The peak steam demand for the current quarter was 104,563 pounds per hour, which represents an approximate 67% increase from the previous Fourth Quarter, also attributable to the Music City Center.

Steam sendout for the fiscal year increased by approximately 40% over the previous fiscal year. Steam sales also increased by 49.5%, but the amount of condensate return to the EGF increased 63% over FY12. Overall, the steam system losses were approximately the same as the previous fiscal. The increase in sales and sendout are largely due to the Music City Center, and the increase in condensate return is due to an improved condensate distribution system and water chemistry by CNE.

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 was slightly lower than the value from the previous Fourth Quarter. The steam plant electric consumption increased approximately 36% over the previous Fourth Quarter. The steam plant fuel efficiency has increased approximately 5.6% from the previous Fourth 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 1.1% from the previous Fourth Quarter marked by a

32% increase in the EDS make-up for the chilled water system and a 52% decrease in the steam plant usage.

Work continued on DES Capital and Repair & Improvement Projects during the Fourth Quarter of FY13. DES 094 Molloy Street Exploratory Excavation was closed during the Fourth Quarter FY13. The MH-1 Abandonment project (DES-101) was 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 \$17,525,391. This value represents approximately 89.5% of the total budgeted operating cost for FY13. The customer revenues from the sales of steam and chilled water for FY13 (to date) are \$16,731,236 which is approximately 96.9% 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 FY13 is \$2,315,655 (100% of budget). However, the actual MFA required cannot be accurately calculated due to the outstanding invoices.

---

## Table of Contents

Section	Description	Page
I.	Executive Summary .....	i
II.	Energy Distribution System Sales and Performance .....	1
	A. Chilled Water .....	1
	1. Sales and Sendout .....	1
	2. Losses.....	2
	3. Performance .....	3
	B. Steam.....	4
	1. Sales and Sendout .....	4
	2. Losses.....	5
	3. Performance .....	6
	C. Contract Guarantee Performance .....	8
	D. Operating Costs.....	10
III.	EGF Operations .....	12
	A. Reliability.....	12
	B. Efficiency.....	12
	C. Environment, Health and Safety .....	12
	D. Personnel.....	13
	E. Training.....	13
	F. Water Treatment .....	13
	G. Maintenance and EGF Repairs .....	13
	H. EGF Walk-through.....	14
IV.	Capital Projects .....	14
	A. Fourth Quarter FY13 Open Projects .....	14
	B. Fourth Quarter FY13 Closed Projects.....	16
	C. Capital Projects Budget.....	16
V.	Energy Distribution System Repair, Improvements, PM and Emergencies....	17
	A. Repairs and Improvements .....	17
	B. Preventive Maintenance.....	18
	C. Emergencies.....	19
	D. EDS Walk-through.....	19
VI.	Customer Relations .....	22
	A. Marketing.....	22
	B. Customer Interaction.....	22
VII.	Recommendations.....	23

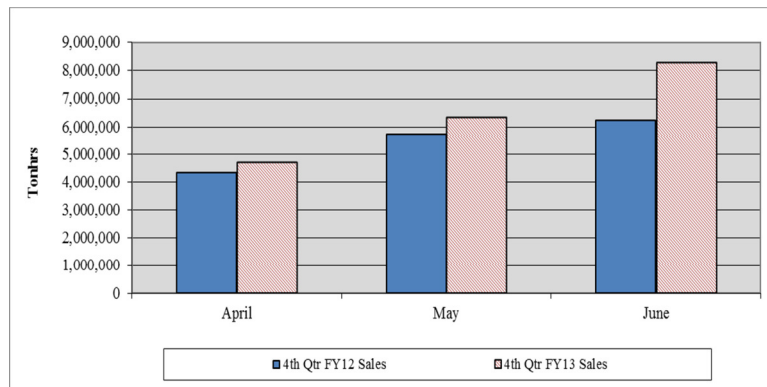
## II. Energy Distribution Sales and Performance

### 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

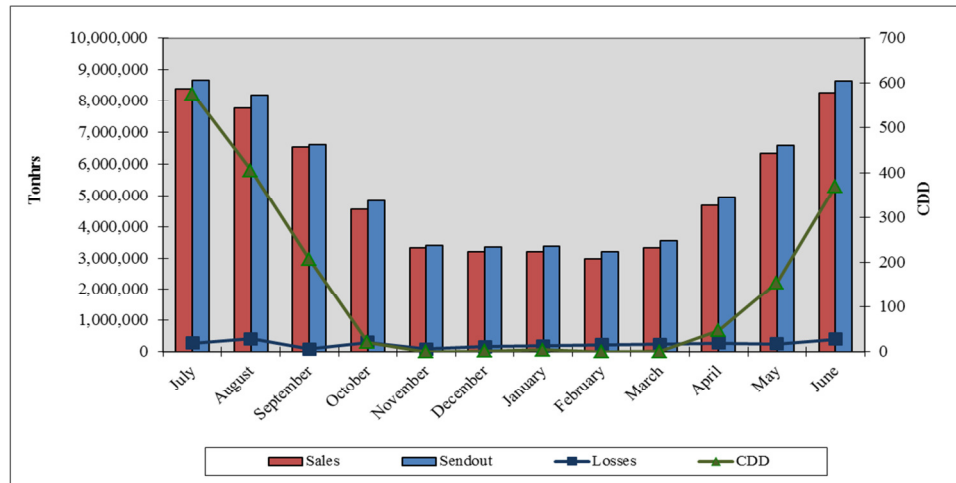
A comparison for the Fourth Quarter chilled water sales is shown in Figure 1. This data reflects an 18.1% increase in sales for the current quarter over the same quarter of the previous fiscal year. The quarter also experienced an 18.5% decrease in the number of cooling degree days.



**Figure 1. Fourth Quarter FY13 Sales Comparison**

The peak chilled water demand for the current quarter was 18,008 tons, which represents the historic peak demand at the EGF. This peak demand is approximately 26% higher than in the previous Fourth Quarter.

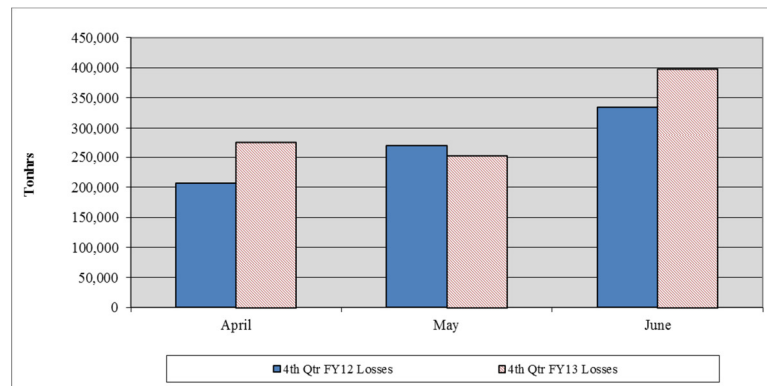
Figure 2 shows the chilled water sales, sendout and losses for the previous twelve months. The losses on this figure are defined as the difference in tonhrs per month between the recorded sendout and sales values and represent the total energy loss for chilled water in the EDS. The number of cooling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



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

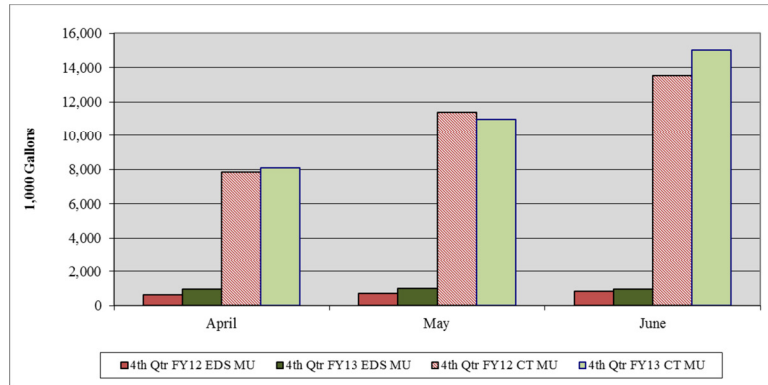
## 2. Losses

A comparison of the total, chilled water energy losses in the EDS for the Fourth 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 Fourth Quarter FY13**

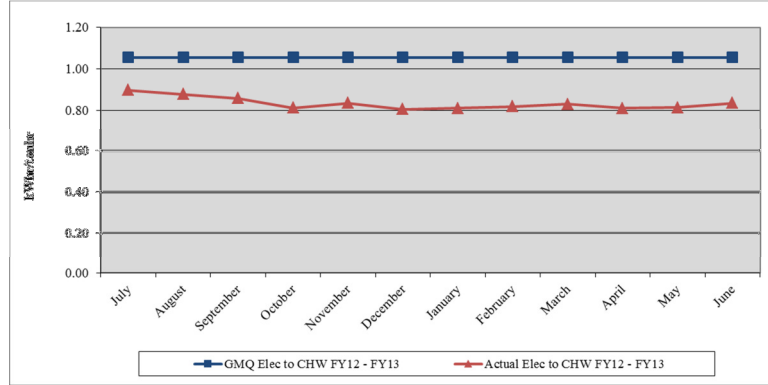
The EDS make-up increased by approximately 32.9% over the previous Fourth Quarter. However, the total EDS water usage represents only a small part of the total EGF water usage for the quarter. The total energy losses have increased by approximately 14.2% over the previous Fourth. The make-up to the cooling towers increased by approximately 4% due to an increase in chilled water sales. The number of cycles of concentration in the condensing water circuit experienced a 24% increase during the current Fourth 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.



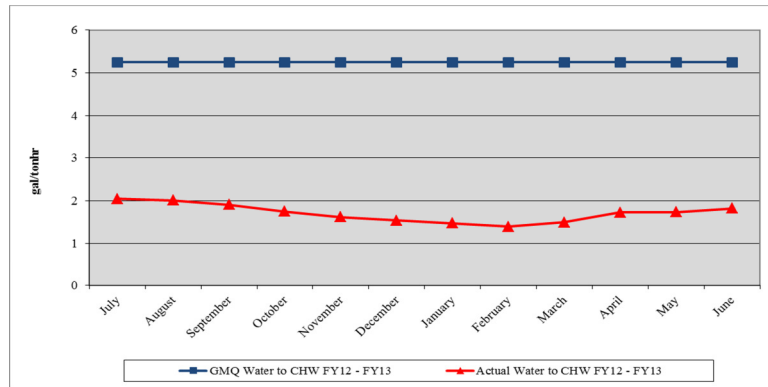
**Figure 4. Chilled Water System City Water Usage Comparison**

### 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 decreased approximately 14.1% over the Fourth Quarter for FY12, largely due to an increase in chilled water sales. The actual electric conversion factor decreased 3.4% in the quarter to 0.823 kWhr per tonhr.

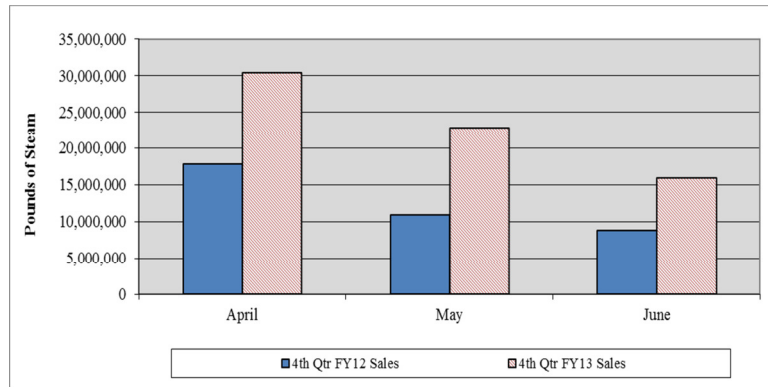
The actual chilled water plant water conversion factor decreased approximately 10.3% over the previous Fourth Quarter. The total consumption of city water for the chiller plant for the current quarter is approximately 5.9% higher than that for the previous Fourth Quarter.

**B. Steam**

**1. Sales and Sendout**

The steam sendout increased by approximately 55.9% over the previous Fourth Quarter (FY12), and the sales increased by approximately 84.3% due largely to the connection of the Music City Center. The steam system losses decreased approximately 7.9% relative to sendout. The number of heating degree days have increased by 71.1% over the previous Fourth Quarter. A comparison for the Fourth Quarter steam sales is shown in Figure 7.

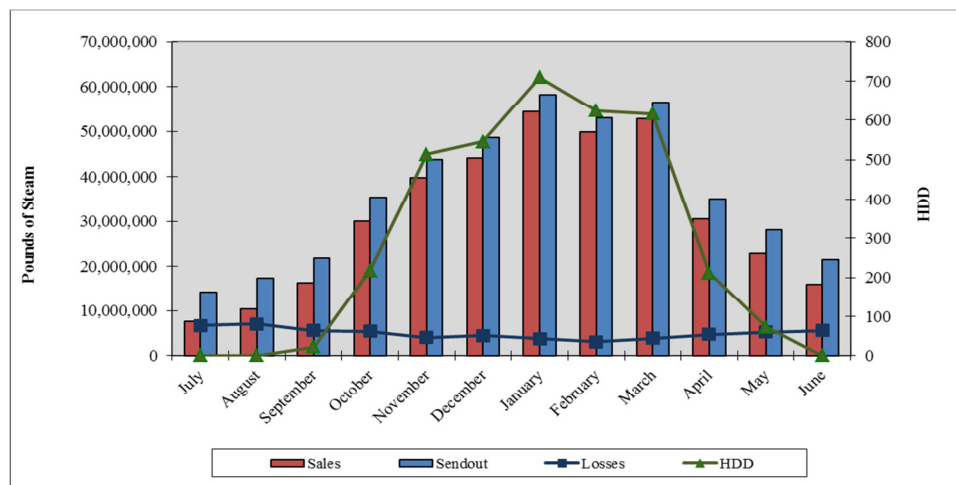




**Figure 7. Steam Sales Comparison for the Fourth Quarter FY13**

The peak steam demand for the current quarter is 104,563 pph, which reflects an approximate 67% increase in the peak steam production over the previous Fourth Quarter. This high peak demand is due, in part, to the increase in steam demand at the new Music City Center.

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.

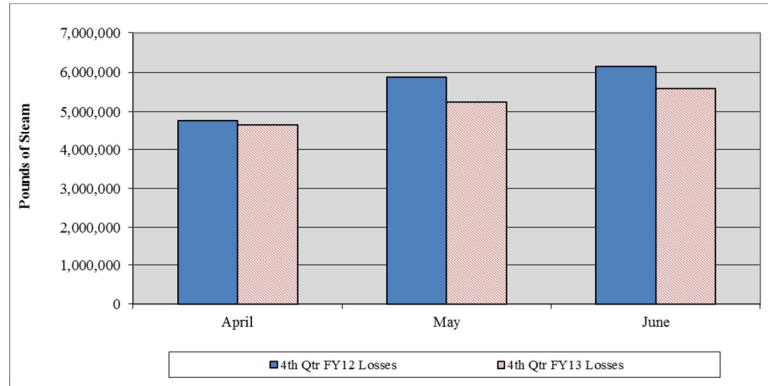


**Figure 8. Steam Sales, Sendout, Losses and HDD for the Previous Twelve Months**

## 2. Losses

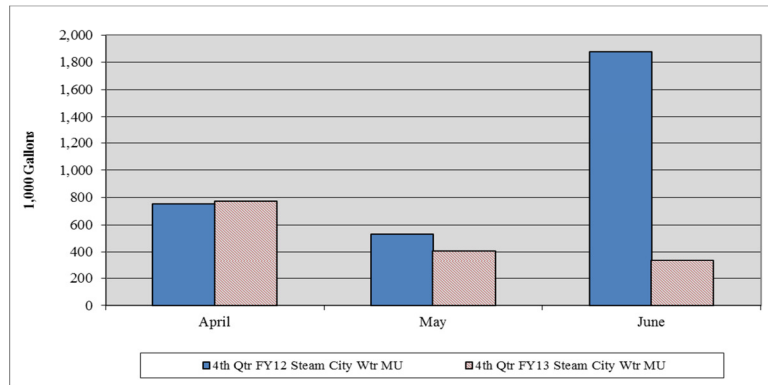
A comparison of the total steam mass losses in the EDS for the Fourth Quarter is shown in Figure 9. The mass loss is caused by the heat loss in the EDS between

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. Fourth Quarter FY13 Steam System Losses**

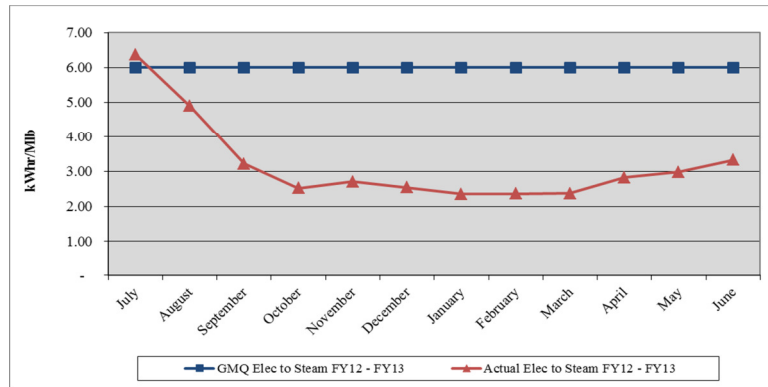
The amount of city water make-up (MU) to the steam system consists of the loss in mass between the EGF and the customers, in the condensate return from the customers to the EGF and losses at the EGF. This data is shown in the comparison of Fourth Quarter data in Figure 10.



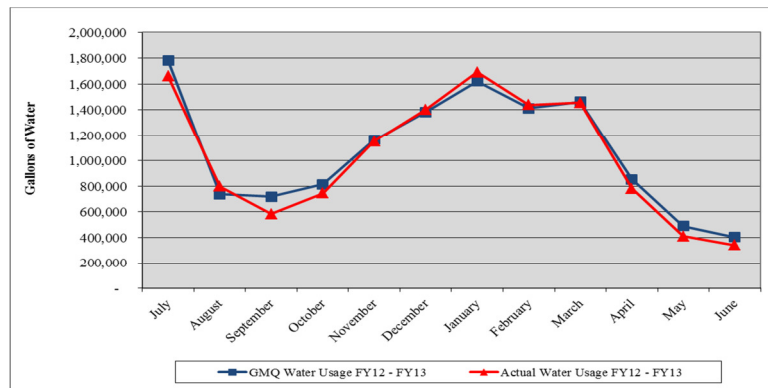
**Figure 10. Fourth Quarter FY13 Steam System City Water Make-up Comparison**

### 3. Performance

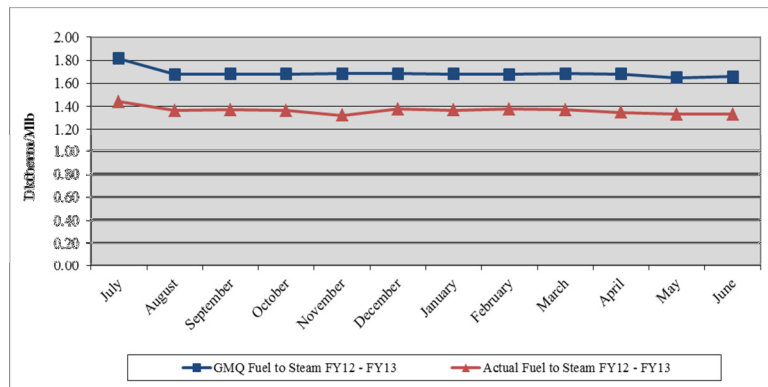
The performance of the steam system aspect of the EGF is presented by the following three charts, Figures 11, 12 and 13. Under the management of CNE, the System Performance Guarantee levels as described in the ARMA are being achieved satisfactorily.



**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 35.4% increase in the steam plant electric consumption while experiencing a 26.6% decrease in the electric conversion factor (due to an increase in steam sales). The water consumption for the steam plant decreased 52.1% this quarter as compared to the previous Fourth 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 increased 5.6% for the current quarter due to an increase in the amount and temperature of the condensate return.

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 Fourth Quarter comparisons of the Guaranteed Maximum Quantities (GMQ) of the criteria commodities (fuel, water and electricity).

**Table 1. Fourth Quarter FY13 and Fiscal Year Production, Sales and Consumption Summary**

Item	Unit	Fourth Quarter FY13	Fourth Quarter FY12	*Percent Difference	Total Year FY13	Total Year FY12	*Percent Difference
	days	91	91	0.00%	365	366	-0.27%
<b>Total Electric Use</b>	kWhrs	16,069,747	14,056,204	14.32%	53,700,006	48,893,244	9.83%
Chilled Water	kWhrs	15,862,373	13,903,038	14.09%	52,677,334	48,069,290	9.59%
Steam	kWhrs	207,374	153,166	35.39%	1,022,672	823,954	24.12%
<b>Total Water Use</b>	kgal	38,485	38,078	1.07%	134,544	126,510	6.35%
Total Chilled Water	kgal	36,969	34,916	5.88%	122,208	114,021	7.18%
EDS Make-up	kgal	2,899	2,182	32.88%	10,873	9,102	19.46%
Cooling Towers	kgal	34,070	32,734	4.08%	111,335	104,919	6.12%
Calc CT Evaporation	kgal	29,747	27,728	7.28%	94,790	89,807	5.55%
CT Blowdown	kgal	4,323	5,006	-13.64%	16,545	15,112	9.48%
Calc # Cycles		6.88	5.54	24.23%	5.73	5.94	-3.59%
Steam	kgal	1,516	3,163	-52.06%	12,336	12,490	-1.23%
<b>Total Fuel Use</b>	mmBTU	113,573	77,195	47.12%	620,241	433,297	43.14%
Natural Gas	mmBTU	143,548	77,195	85.96%	619,936	432,944	43.19%
Propane	mmBTU	25	0	n.a.	305	353	-13.60%
<b>Condensate Return</b>	kgal	8,887	3,408	160.78%	41,990	25,742	63.11%
	lbs	72,480,223	27,793,506	160.78%	342,460,452	209,950,338	63.11%
Avg Temp	°F	174.3	161.3	8.06%	169.3	163.8	3.36%
<b>Sendout</b>							
Chilled Water	tonhrs	20,199,000	17,136,000	17.87%	65,404,588	61,659,200	6.07%
Steam	lbs	84,860,000	54,438,000	55.88%	433,527,000	309,290,000	40.17%
Peak CHW Demand	tons	18,008	14,299	25.94%	18,008	16,411	9.73%
Peak Steam Demand	lb/hr	104,563	62,750	66.63%	124,156	116,813	6.29%
CHW LF		51.36%	54.87%	-6.40%	41.46%	42.77%	-3.07%
Steam LF		37.16%	39.72%	-6.45%	39.86%	30.14%	32.24%
<b>Sales</b>							
Chilled Water	tonhrs	19,272,990	16,325,188	18.06%	62,537,600	57,232,609	9.27%
Steam	lbs	69,384,222	37,643,107	84.32%	374,366,126	250,413,839	49.50%
<b>Losses</b>							
Chilled Water	tonhrs	926,010	810,812	14.21%	2,866,988	4,426,591	-35.23%
Steam	lbs	15,475,778	16,794,893	-7.85%	59,160,874	58,876,161	0.48%
		18.24%	30.85%	-40.89%			
<b>Degree Days</b>							
CDD		572	702	-18.52%	1,791	1,991	-10.05%
HDD		284	166	71.08%	3,532	2,832	24.72%

\*positive percent difference values imply an increase from FY12 to FY13

**Table 2. Fourth Quarter FY13 and Fiscal Year Performance Guarantee Comparison for Steam and Chilled Water**

GMQ Calculations	Unit	Fourth Quarter FY13	Fourth Quarter FY12	*Percent Difference	Total Year FY13	Total Year FY12	*Percent Difference
<b>Steam</b>							
GMQ Elec Conversion	kWhr/Mlb	6.00	6.00		6.00	6.00	
Electric Conversion	kWhr/Mlb	2.99	4.07	-26.55%	2.73	3.29	-16.98%
GMQ Plant Efficiency	Dth/Mlb	1.663	1.745		1.688	1.718	
Plant Efficiency	Dth/Mlb	1.338	1.418	-5.62%	1.431	1.401	2.12%
Actual %CR		85.41%	51.06%	67.29%	78.99%	67.88%	16.37%
Avg CR Temp	°F	174	161	8.06%	169	164	3.36%
GMQ Water Conversion	gal	1,745,587	3,756,956		12,840,664	14,007,199	
Water Conversion	gal	1,531,160	3,194,155	-52.06%	12,459,360	12,614,425	-1.23%
<b>Chilled Water</b>							
GMQ Elec Conversion	kWhr/tonhr	1.055	1.055		1.055	1.055	
Electric Conversion	kWhr/tonhr	0.823	0.852	-3.36%	0.842	0.840	0.29%
GMQ Water Conversion	gal/tonhr	5.25	5.25		5.25	5.25	
Water Conversion	gal/tonhr	1.92	2.14	-10.31%	1.95	1.99	-1.91%

\*positive percent difference values imply an increase from FY12 to FY13

#### 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 FY13 to date are \$17,525,391. This value represents approximately 89.5% of the total budgeted operating cost for FY13 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 Fourth 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 FY13 are \$16,731,236 which is approximately 96.9% of the budgeted amount. The MFA transferred to date is \$2,315,655 (100% 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	FY13 Budget	First Quarter Expenses	Second Quarter Expenses	Third Quarter Expenses	Fourth Quarter Expenses	Total Spending to Date	% of Budget
<b>Operating Management Fee</b>							
<b>FOC:</b> Basic	\$ 4,190,190	\$ 1,045,307.76	\$ 1,045,307.76	\$ 1,045,307.76	\$ 1,045,307.76	\$ 4,181,231.04	99.79%
9th Chiller	\$ 39,300	\$ 9,794.76	\$ 9,794.76	\$ 9,794.76	\$ 9,794.76	\$ 39,179.04	99.69%
C/O 6A	\$ 77,900	\$ 19,337.76	\$ 19,337.76	\$ 19,337.76	\$ 19,337.76	\$ 77,351.04	99.30%
C/O 6B	\$ 68,200	\$ 16,929.33	\$ 16,929.33	\$ 16,929.33	\$ 16,929.33	\$ 67,717.32	99.29%
C/O 7	\$ 25,510	\$ 6,377.73	\$ 6,377.73	\$ 6,377.73	\$ 6,377.73	\$ 25,510.92	100.00%
<b>Pass-thru Charges:</b> Chemical Treatment	\$ 217,600	\$ 25,210.68	\$ 25,232.10	\$ 28,725.14	\$ 24,423.76	\$ 103,591.68	47.61%
Insurance	\$ 29,400	\$ -	\$ -	\$ -	\$ 27,171.67	\$ 27,171.67	92.42%
<b>Marketing:</b> CES Sales Activity	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Incentive Payments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
<b>FEA:</b> Steam	\$ -	\$ 13,874.40	\$ 41,592.65	\$ 53,506.64	\$ 31,390.30	\$ 140,363.99	n.a.
Chilled Water	\$ -	\$ 153,376.00	\$ 80,722.58	\$ 76,051.83	\$ 139,766.25	\$ 449,916.66	n.a.
<b>Misc:</b> Metro Credit	\$ -	\$ (217,556.62)	\$ (118,721.22)	\$ (91,959.71)	\$ (136,183.27)	\$ (564,420.82)	n.a.
ARFA	\$ -	\$ 15,181.47	\$ 15,181.47	\$ 15,181.47	\$ 15,181.47	\$ 60,725.88	n.a.
Deferral	\$ -	\$ -	\$ (58,460.93)	\$ (129,558.47)	\$ (171,153.55)	\$ (359,172.95)	n.a.
<b>Subtotal - Man Fee =</b>	<b>\$ 4,648,100</b>	<b>\$ 1,087,833</b>	<b>\$ 1,083,294</b>	<b>\$ 1,049,694</b>	<b>\$ 1,028,344</b>	<b>\$ 4,249,165</b>	<b>91.42%</b>
<b>Reimbursed Management Fee + Chem Treatment</b>		\$ 1,256,659.24	\$ 1,239,718.68	\$ 1,139,951.62	\$ 759,369.93	\$ 4,395,699.47	0.00%
<b>Metro Costs</b>							
<b>Pass-thru Charges:</b> Engineering	\$ 27,800	\$ 2,039.36	\$ 613.70	\$ 1,324.44	\$ 4,365.61	\$ 8,343.11	30.01%
EDS R&I Transfers	\$ 262,200	\$ 65,497.50	\$ 65,445.00	\$ 65,550.00	\$ 65,550.00	\$ 262,042.50	99.94%
Metro Marketing	\$ 16,000	\$ 292.50	\$ -	\$ -	\$ -	\$ 292.50	1.83%
Project Administration	\$ 32,400	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Metro Incremental Cost	\$ 513,000	\$ 124,749.83	\$ 89,224.20	\$ 129,992.46	\$ 148,655.33	\$ 492,621.82	96.03%
<b>Utility Costs:</b> Water/Sewer	\$ 616,500	\$ 200,346.34	\$ 103,479.18	\$ 78,532.35	\$ 118,240.32	\$ 500,598.19	81.20%
EDS Water/Sewer	\$ -	\$ 1,303.95	\$ 40.02	\$ 959.38	\$ 2,607.81	\$ 4,911.16	n.a.
EDS Electricity	\$ -	\$ 17,210.28	\$ 15,242.04	\$ 13,427.36	\$ 17,942.95	\$ 63,822.63	n.a.
Electricity	\$ 5,673,500	\$ 2,176,472.60	\$ 805,473.84	\$ 801,136.40	\$ 1,439,457.67	\$ 5,222,540.51	92.05%
Natural Gas Consultant	\$ 95,500	\$ 4,612.50	\$ 2,625.00	\$ 2,847.50	\$ 6,975.00	\$ 17,060.00	17.86%
Natural Gas Transport	\$ -	\$ 38,620.31	\$ 68,441.69	\$ 84,297.45	\$ 50,040.00	\$ 241,399.45	n.a.
Natural Gas Fuel	\$ 3,089,600	\$ 242,838.82	\$ 656,411.33	\$ 871,743.75	\$ 482,454.83	\$ 2,253,448.73	72.94%
Propane	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
<b>Subtotal - Metro Costs =</b>	<b>\$ 10,326,500</b>	<b>\$ 2,873,984</b>	<b>\$ 1,806,996</b>	<b>\$ 2,049,811</b>	<b>\$ 2,336,290</b>	<b>\$ 9,067,081</b>	<b>87.80%</b>
<b>Subtotal - Operations =</b>	<b>\$ 14,974,600</b>	<b>\$ 3,961,817</b>	<b>\$ 2,890,290</b>	<b>\$ 3,099,505</b>	<b>\$ 3,364,633</b>	<b>\$ 13,316,246</b>	<b>88.93%</b>
<b>Debt Service</b>							
2002 Bonds	\$ 3,719,778	\$ 917,091.80	\$ 532,916.04	\$ 1,277,916.08	\$ 578,458.34	\$ 3,306,382.26	88.89%
2005 Bonds	\$ 515,477	\$ 220,116.37	\$ 271,934.58	\$ -	\$ -	\$ 492,050.95	95.46%
2007 Bonds	\$ 221,400	\$ -	\$ 441,300.00	\$ -	\$ -	\$ 441,300.00	199.32%
2008 Bonds	\$ 219,900	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
2010 Bonds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Interest Revenue	\$ (71,700)	\$ (10,745.32)	\$ (5,077.50)	\$ (7,897.54)	\$ (6,867.50)	\$ (30,587.86)	42.66%
MIP	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Oper. Reserve Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
<b>Subtotal - Capital =</b>	<b>\$ 4,604,855</b>	<b>\$ 1,126,463</b>	<b>\$ 1,241,073</b>	<b>\$ 1,270,019</b>	<b>\$ 571,591</b>	<b>\$ 4,209,145</b>	<b>91.41%</b>
<b>Total =</b>	<b>\$ 19,579,455</b>	<b>\$ 5,088,280</b>	<b>\$ 4,131,363</b>	<b>\$ 4,369,524</b>	<b>\$ 3,936,224</b>	<b>\$ 17,525,391</b>	<b>89.51%</b>
<b>Customer Revenues</b>							
Taxes Collected		\$ 89,714.59	\$ 68,916.32	\$ 70,768.52	\$ 74,229.43	\$ 303,628.86	n.a.
Taxes Paid		\$ 91,566.00	\$ 69,974.00	\$ 70,831.81	\$ 46,910.00	\$ 279,281.81	n.a.
Penalty Revenues/Credits		\$ (60,689.15)	\$ (83,826.72)	\$ 1,946.96	\$ 356.85	\$ (142,212.06)	n.a.
Energy Revenues Collected		\$ 4,864,842.59	\$ 3,758,032.12	\$ 3,883,023.46	\$ 4,343,203.10	\$ 16,849,101.27	n.a.
<b>Revenues =</b>	<b>\$ 17,263,800</b>	<b>\$ 4,802,302.03</b>	<b>\$ 3,673,147.72</b>	<b>\$ 3,884,907.13</b>	<b>\$ 4,370,879.38</b>	<b>\$ 16,731,236.26</b>	<b>96.92%</b>
<b>Metro Funding Amount =</b>	<b>\$ 2,315,655</b>	<b>\$ 285,978</b>	<b>\$ 458,215</b>	<b>\$ 484,617</b>	<b>\$ (434,655)</b>	<b>\$ 794,155</b>	<b>34.30%</b>

The DES serves 28 customers and 41 buildings in downtown Nashville, including the new Music City Convention Center (MCCC) and Nashville Hyatt Place (not yet taking service). 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	\$ 3,868,896	19,760,842	\$ 0.1958	\$ 1,324,499	86,618	\$ 15.2913
State Government	\$ 3,407,215	16,456,479	\$ 0.2070	\$ 1,870,844	110,793	\$ 16.8859
Metro Government	\$ 4,084,810	26,320,279	\$ 0.1552	\$ 2,277,732	176,955	\$ 12.8718
New Customers	\$ 1,302,055	6,497,513	\$ 0.2004	\$ 232,495	16,411	\$ 14.1666
<b>Total</b>	<b>\$ 11,360,922</b>	<b>62,537,600</b>	<b>\$ 0.1817</b>	<b>\$ 5,473,075</b>	<b>374,366</b>	<b>\$ 14.6196</b>

Total Revenue \$ 16,833,997  
 True-up and Adjustments (Net) \$ (102,760)  
 Net Revenue \$ 16,731,236

### III. EGF Operations

Items relating to the facility operations presented herein are derived from the monthly reports issued by CNE for FY13. 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.

- The testing of the in-building steam system at the Music City Center caused the steam pressure to fluctuate in April and early May. The steam pressure dropped as low as 141 psig during the tests.
- The chilled water supply temperature exceeded 43.3°F for forty minutes during May while transferring refrigerant back into chiller 6A. The highest recorded temperature was 45.8°F.
- 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 Fire Extinguisher Safety, Emergency Preparedness, and Chemical Safety.

Section 9 of the CNE Safety Manual: Emergency Response Plan was updated in April.

#### 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 85.4% of the steam sendout during the quarter and 80% for the fiscal year.
  - The steam system make-up decreased significantly over the previous Fourth Quarter.
- 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.

- The pneumatic actuators on #2, #3, #4 and #6 chiller condenser water valves were replaced.
- CNE began replacing the fill in #1, #6, #9 and #14 cooling towers.
- The breaker was replaced on #17 cooling tower.
- The outboard bearing on #6 chilled water pump was replaced.
- Trance replaced all flat gaskets on #6 chiller.
- The bearings were replaced on #12 and #13 cooling tower fan shaft.
- PGTI replaced the meters on switchgear 5B and 6B.
- A leak was repaired on #3 boiler mud drum blowdown valve.
- 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 June 25, 2013, 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 empty boxes and other items are still being stored in the electric room. These items need to be removed.
- The riser pipes in several of the cooling towers remain in need of repair. The fill in some of the cooling towers was replaced by CNE during the quarter. The riser pipes in these cooling towers were painted.
- The leak in expansion tank #2 has not been repaired.
- 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.

## 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. Fourth Quarter FY13 Open Projects

The following projects remained open at the end of the Fourth Quarter FY13.

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

CNE purchased the access equipment for the metering equipment and have received permission from the MCC to store it in the DES mechanical room. The final Customer Service Agreement between the DES and the MCC personnel has been executed and the MCC began paying for steam and chilled water service in May 2013. This project will most likely be closed-out during the First Quarter FY14.

3. DES080 – Misc. Manhole & Tunnel Safety Repairs

It is anticipated that this project will be closed during the First Quarter FY14.

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

Work associated with this project will be ongoing as required.

5. 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.

6. DES 094 – Molloy Street Exploratory Dig

This project was closed during the Fourth Quarter FY13.

7. DES 095 – Manhole B2 Water Infiltration Remediation

This project will be closed during the First Quarter FY14.

8. DES 098 – Nashville Hyatt Place Customer Connection

Final electrical connections to the metering equipment and panel are anticipated during the First Quarter FY14. Start-up of the chilled water service is expected in July 2014. Negotiations on the Customer Service Agreement continue. Final execution of the agreement is anticipated in early FY14.

## 9. DES 100 – MH-10 Roof Replacement

The design of the roof replacement began in the Fourth Quarter FY13. A pre-bid meeting for this project was held in May, but the site review with the contractors revealed additional aspects of the mechanical and structural work within the vault that needed to be included in the design. Therefore, additional design work was implemented and the contractor's bid was put on hold. It is anticipated that the revised design will be completed in July FY14.

## 10. DES 101 – MH-1 Abandonment

The design of the MH-1 abandonment and the necessary modifications to MH-2 were completed and bid during the quarter. A contractor was selected and construction is scheduled to begin in July FY14 with completion no later than August 1, 2013.

## B. Fourth Quarter FY13 Closed Projects

DES 094 Molloy Street Exploratory Dig was closed during the Fourth Quarter FY13.

## 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	FY13 Spending to Date	Total Spent to Date	Remaining Balance
<b>2010 Bond Projects</b>					
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 Stm & Cond Line	\$ 11,000	\$ -	\$ 10,462	\$ 538
DES076	MH S4A Rehabilitation	\$ 233,000	\$ (119)	\$ 208,998	\$ 24,002
DES091	NES Time of Use Electric Rate	\$ 100,000	\$ 13,122	\$ 61,760	\$ 38,240
<b>Total Closed Projects</b>		<b>\$ 1,763,304</b>	<b>\$ -</b>	<b>\$ 1,605,534</b>	<b>\$ 157,770</b>
	Metro Project Admin	\$ -	\$ -	\$ -	\$ -
	Project Man, Development, etc	\$ 262,696	\$ -	\$ -	\$ 262,696
<b>Total 2010 Bond</b>		<b>\$ 2,410,000</b>	<b>\$ 13,003</b>	<b>\$ 1,888,400</b>	<b>\$ 521,600</b>
<b>MCCC Construction Fund</b>					
DES077	Music City Convention Center Design/Const	\$ 545,900	\$ 47,381	\$ 453,281	\$ 92,619
DES077	MCCC Metering	\$ 121,870	\$ 21,031	\$ 141,701	\$ (19,831)
DES077	Bell/Clark Construction Fund	\$ 4,697,860	\$ 212,080	\$ 4,267,623	\$ 430,237
DES097	EGF Cooling Tower Test #2	\$ 30,000	\$ 21,492	\$ 22,914	\$ 7,086
DES098	Nashville Hyatt Service Connection	\$ 300,000	\$ 236,945	\$ 249,557	\$ 50,443
DES100	MH-10 Roof Repair	\$ 300,000	\$ 3,537	\$ 3,537	\$ 296,463
DES101	MH-1 Abandonment	\$ 55,000	\$ 9,409	\$ 9,409	\$ 45,591
<b>Sub-Total Closed Projects</b>		<b>\$ 656,197</b>	<b>\$ 1,000</b>	<b>\$ 656,197</b>	<b>\$ -</b>
	Metro Project Admin	\$ 50,000	\$ 21,515	\$ 21,515	\$ 28,485
	Project Man, Development, etc	\$ 1,743,173	\$ -	\$ -	\$ 1,743,173
<b>Total MCCC Construction Fund</b>		<b>\$ 8,500,000</b>	<b>\$ 574,389</b>	<b>\$ 5,825,733</b>	<b>\$ 2,674,267</b>

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

Several EDS repairs and improvements were made during the Fourth 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 \$51,893. Table 6 provides a summary of the FY13 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
<b>Value at end of FY12</b>						\$ -	\$ 428,758.17
DES 090B S4A Pipe In	6/30/2012	N/A	CE	\$ 2,547.75			
DES 080 Misc Safety	6/30/2012	N/A	CE	\$ 72,280.00			
DES 090A Misc EDS	6/30/2012	N/A	CE	\$ 90,161.25			
DES 093A Manhole 6 S	6/30/2012	N/A	CE	\$ 38,407.20			
May 2012 EDS Repair & Escrow	6/30/2012	N/A	CE	\$ 8,485.33			
Overage Correction	8/2/2012	N/A	N/A	\$ (105.00)			
DES-080 MISC TUNNEL	8/3/2012	N/A	TEG	\$ 144.40			
DES-093 MH 6 REHAB	8/3/2012	N/A	TEG	\$ 492.61			
DES-094 MOLLOY HOT SPOT	8/3/2012	N/A	TEG	\$ 674.25			
DES-096 MH B4 VALVE	8/3/2012	N/A	TEG	\$ 695.35			
DES-099 EDS STEAM SHUTDOWN	8/3/2012	N/A	TEG	\$ 960.30			
DES 087/ Manhole D E	8/14/2012	N/A	CE	\$ 29,488.52			
June 2012 EDS Repair	7/1/2012	N/A	CE	\$ 12,303.61			
Misc tunnel Repair D	9/10/2012	N/A	TEG	\$ 673.11			
DES-094 Molloy Hot Spot DES	9/10/2012	N/A	TEG	\$ 132.24			
DES-096 MH B4 Valve Replacement	9/10/2012	N/A	TEG	\$ 220.65			
DES-099 EDS Steam Shutdown D	9/10/2012	N/A	TEG	\$ 848.60			
DES-096 Manhole B4 S	9/24/2012	N/A	CNE	\$ 15,092.46			
<b>Sub-Total First Quarter</b>				<b>\$ 273,502.63</b>	<b>\$ 65,392.50</b>	<b>\$ -</b>	<b>\$(208,110.13)</b>
DES-094 Molly Hot Sp	10/9/2012	N/A	TEG	\$ 1,299.60			
DES R&I Sept	10/9/2012	N/A	TEG	\$ 324.90			
EDS R&I July	10/9/2012	N/A	CNE	\$ 6,354.96			
EDS R&I Aug	10/9/2012	1585	CNE	\$ 4,690.15			
DES-080 Misc Tunnel/	11/9/2012	1592	TEG	\$ 1,023.60			
DES-094 Molloy Hot S	11/9/2012	1592	TEG	\$ 614.85			
EDS R&I Sept	11/6/2012	1596	CNE	\$ 1,996.18			
DES-099 Stean Outage	11/6/2012	1598	CNE	\$ 38,663.65			
DES-094 Molloy St Ex	11/6/2012	1599	CNE	\$ 199,459.50			
DES-076 MH-S4A Transfer	11/30/2012	-	-	\$ 118.50			
DES-076 MH-S4A Transfer	11/30/2012	-	-	\$ 12.76			
DES-090 MH Tunnel Repair	12/17/2012	1611	TEG	\$ 600.91			
EDS R & I 10/12	12/21/2012	1614	CNE	\$ 2,772.35			
EMR 12-002 Manhole 1	12/21/2012	1616	CNE	\$ 17,808.69			
<b>Sub-Total Second Quarter</b>				<b>\$ 275,740.60</b>	<b>\$ 65,445.00</b>	<b>\$ -</b>	<b>\$(210,295.60)</b>
DES 090 MH/Tunnel In	1/18/2013	1625	TEG	\$ 36.10			
35965-EDS R&I 11/12	1/31/2013	1630	CNE	\$ 3,395.37			
Misc Tunnel/MH Repair	2/11/2013	1635	TEG	\$ 506.59			
DES 090C Mhohle AB,	2/28/2013	1642	CNE	\$ 13,505.00			
35968 - R & I 12/1	2/28/2013	1641	CNE	\$ 9,955.64			
DES 080 2/3/13-3/2/1	3/13/2013	1645	TEG	\$ 37.18			
DES 080 Misc EDS Saf	3/25/2013	1657	CNE	\$ 28,454.00			
35965 - 01/13	3/26/2013	1658	CNE	\$ 15,798.05			
<b>Sub-Total Third Quarter</b>				<b>\$ 71,687.93</b>	<b>\$ 65,550.00</b>	<b>\$ -</b>	<b>\$(6,137.93)</b>
Credit for 21310866	4/16/2013	N/A	CNE	\$ (30.00)			
35965 - R & I 02/13	4/22/2013	1668	CNE	\$ 7,727.83			
35965 - R & I 03/13	5/23/2013	N/A	CNE	\$ 7,122.78			
35965 - R & I 04/13	6/20/2013	N/A	CNE	\$ 3,051.09			
<b>Sub-Total Fourth Quarter</b>				<b>\$ 17,871.70</b>	<b>\$ 65,550.00</b>	<b>\$ -</b>	<b>\$ 47,678.30</b>
<b>FY13 Year to Date</b>				<b>\$638,802.86</b>	<b>\$261,937.50</b>	<b>\$-</b>	<b>\$ 51,892.81</b>

## 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. The water leaking into MH-B2 has significantly decreased due to repairs made this fiscal year. CNE began tracking their time for

- pumping out MH-S5 during the quarter. This vault appears to have a significant amount of ground water penetration.
    - b. The 4<sup>th</sup> Ave tunnel exhaust fan was repaired in April.
    - c. The concrete lid to MH-K at Riverfront Park was stenciled with the phrase, “PROPERTY OF MNDES DO NOT DRILL,” due to some unknown parties drilling holes in the concrete lid for tent stakes (presumably). The existing holes were filled with grout.
    - d. Minor repairs were made during the quarter.
  - 2. State Tunnel Inspections
    - a. CNE continues to monitor some minor steam and condensate leaks within the tunnel.
    - b. Other minor repairs were made during the quarter.
  - 3. Other EDS Inspections
    - a. The monthly thermographic analyses revealed no changes in the new hot spots near the James K Polk Building and in the Ryman Auditorium alley previously reported. The hot spots in Molloy Street remain.
    - 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 Fourth Quarter 2013 EDS walkthrough was conducted on July 17, 2013, by Jon B. Belcher, PE. The manholes that were visited included Manholes A, B, B5, K, L, M, N1, N2, S5, S6, and 15. The following comments and observations are a result of these visits:

- 1. Manhole A
  - a. There was water present and the vault had to be pumped out prior to entry.
  - b. There is mud and debris in the floor of this vault. The debris needs to be cleaned out; TEG will talk with CNE regarding the use of a contractor to clean the mud.
  - c. There is some corrosion on the piping supports. These supports should be cleaned and painted to prevent additional corrosion. TEG will talk with CNE regarding the hiring of a contractor to clean and paint these supports.
  - d. There is not a strainer ahead of the trap; the next time the trap needs to be replaced, a strainer should be added upstream of the trap.

2. Manhole B
  - a. There was a lot of water present in this vault and it required pumping for about an hour prior to entry.
  - b. The insulation and lagging on the condensate isolation valve on the chilled water side of the manhole is in dis-repair; this insulation should be repaired. TEG will coordinate this with CNE.
  - c. There is minor damage to the insulation jacketing on the chilled water piping; this should be repaired. TEG will coordinate this with CNE.
  - d. Most of the insulation on the steam piping which feeds the Molloy Street steam line on the steam side of Manhole B is absent; it has come off the pipe and is in the floor of the manhole. This piping needs to be re-insulated. TEG will coordinate this with CNE.
  - e. 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 “high” rating.
  - f. There is mud in the floor of the manhole that should be removed. TEG will coordinate this with CNE.
3. Manhole M
  - a. There was water present in this vault and it required pumping prior to entry.
  - b. The link seal on the steam line penetration at the northern wall has been dislodged from the top portion of the pipe. CNE personnel have tried to re-position this linkseal without success. CNE should continue to monitor the linkseal and report if water infiltration or other complications arise.
  - c. 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.
  - d. The surface above this manhole was paved with asphalt. As a result, there is asphalt on the floor of the manhole beneath the manway. CNE will be instructed to remove this asphalt.
  - e. This manhole is extremely warm; CNE personnel should determine the origin of the heat by checking for steam leaks; checking for heat infiltration from the piping wall penetrations, etc.
  - f. The slip joint insulation blankets in this manhole, by design, leave portions of the joints un-insulated, this might be contributing to the heat gain of the vault. The addition of insulation to these joints should be investigated. TEG will coordinate this with CNE
4. Manhole L
  - a. There was a minor amount of water in this manhole.
  - b. John E Green Company (JEG) replaced several trap line globe valves with gate valves. The insulation that needed to be removed



- was left on the floor of the manhole and the piping remains un-insulated. CNE should contact JEG and have them remove the debris and re-insulate the piping.
- c. 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.
5. Manhole K
- a. There was a minor amount of water in this manhole.
  - b. There is some mud in the floor of the manhole which was probably left from the May 2010 flood. This mud should be cleaned from the manhole. TEG will coordinate this with CNE.
  - c. 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.
6. Manhole N1
- a. There was no water present in this manhole.
  - b. A portion of the mortar around the base of the manhole lid frame has broken loose and there is now an opening into the manhole. As a result, there is a large amount of trash in the manhole. CNE will be instructed to remove the debris and repair the mortar.
7. Manhole N2
- a. There was water present in this manhole.
  - b. There is quite a bit of mud in the floor of this manhole. TEG will coordinate with CNE about getting a vacuum truck to remove the water and mud from the manhole.
8. Manhole S5
- a. There was water present in this manhole and it required pumping.
  - b. There is some degradation to the insulation in this manhole. This manhole should be listed as a “Moderate” priority on the Manhole Insulation priority list developed by CNE.
  - c. There is some structural distress of the concrete walls of this manhole. As the maintenance of the structure is the responsibility of the State, the structural integrity of the manhole should be monitored so the State can be informed if repairs become necessary. CNE’s CSR will notify the State of this pending problem.
9. Manhole S6
- a. There was no water present in this manhole.
  - b. Insulation is non-existent. Because of the small amount of piping that could be insulated in this manhole, the small size of the manhole and the absence of any valves or equipment that would require maintenance, there is no need to insulate this piping.

10. Manhole 15

- a. There is water flowing out of the side of the vertical shaft that connects with the 4<sup>th</sup> Avenue tunnel. Based on the flow of water it appears that this might be a city water leak. TEG will coordinate with CNE to try and get Metro Water to look at this and test the water to determine if it is a city water leak.

## **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 CSA between the Music City Center and the DES has been finalized and executed on May 22, 2013.

TEG is finalizing the CSA between the Nashville Hyatt Place and DES. An executed CSA is anticipated during July FY14.

### **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.
- Metro Library experienced some cooling issues during the early part of the quarter. CNE and TEG investigated these issues and determined that the control valve actuator needed to be tuned. Sometime afterwards, the existing actuator stopped responding. CNE replaced the existing valve and actuator with a style and manufacturer similar to all other DES chilled water customers. Their cooling issues appear to have been resolved.
- The Symphony building reported cooling and flow issues during the quarter. These were remedied by having the CNE operators increase the sendout chilled water pressure at the EGF. TEG and CNE are continuing to monitor possible

pressure issues within the EDS and CNE is taking steps to prevent further problems.

- TEG and CNE met with the new maintenance personnel at the Sheraton Hotel to discuss their chilled water service from DES and the internal operations of their building.
- The Andrew Jackson building began draining their in-building chilled water system without properly isolating the piping from the EDS. As a result, the EGF was having difficulty supplying make-up water to the system. The building chilled water system was eventually isolated. CNE met with the State's contractor to discuss the problem with them and the State personnel to ensure that such a situation did not happen again.
- TEG and CNE met with building personnel at the Viridian to discuss the operation of their chilled water system and TIF penalties.
- A programming change in the TCV operation at the Fifth Third Financial Center was required to prevent possible cooling issues with this building.
- CNE provided several customers assistance during the quarter regarding steam and chilled water leaks within buildings. Most of the time when such assistance is provided, it is determined that the leaks are the customers responsibility and are unrelated to the services provided by DES.
- Other minor issues and customer interactions are noted in the monthly CNE reports.

## **VII. Recommendations**

Based on the review of the Fourth 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.