Metro Nashville
DISTRICT ENERGY SYSTEM

Operations Monitoring Report

Third Quarter FY11

Prepared by:

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I. Executive Summary

A review of the fiscal year 2011 (FY11) Third Quarter performance and contract obligations between Constellation Energy (CE) 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 2011, CE has satisfactorily met all of the contract obligations to Metro and has had no contract violations.

Constellation Energy Projects and Services Group (CEPS), a subsidiary of Constellation Energy, is the contract operator of the Metro District Energy System (DES). During the Third Quarter, FY11, they changed their name to Constellation New Energy (CNE). This report refers to the contract operator by the name Constellation Energy (CE) in reference to their parent company.

For the Third Quarter FY11, the chilled water sendout increased by approximately 20.3% over the previous Third Quarter (FY10), and the sales increased by approximately 21.5%. The Third Quarter FY11 had 14 cooling degree days, whereas the Third Quarter FY10 had none. The peak chilled water demand for the current quarter was 9,760 tons, which is approximately 9.7% higher than the previous Third Quarter.

The steam sendout for the current quarter decreased by approximately 6.1% over the previous Third Quarter. Likewise, steam sales also decreased by approximately 6.0% over the previous Third Quarter. The current quarter saw a decrease in the number of heating degree days of approximately 16.3% over the previous Third Quarter. Steam system losses were approximately 8.6% of the sendout which was marginally lower than in the previous Third Quarter (relative to sendout). The peak steam demand for the current quarter was 123,938 pounds per hour, which represents an approximate 2.0% increase from the previous Third Quarter.

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. The steam plant electric consumption was slightly higher than in the previous Third Quarter. The steam plant fuel efficiency increased by 3.1% from the previous Third Quarter. The total water consumption for the steam and chilled water plants increased approximately 9.2% from the previous Third Quarter. The chilled water EDS make-up has increased by approximately 25.5%. The steam plant make-up, however, decreased by approximately 20.5% over the previous Third Quarter.

Work continued on DES Capital and Repair & Improvement Projects during the Third Quarter of FY11. DES059, 063, 066 and 082 were closed during the Third Quarter FY11. Design associated with DES 061B (Manholes 3 and 4) was completed during the quarter and the work was bid and awarded. Work on this project is scheduled to begin during the Fourth Quarter FY11. Due to expansion of the scope, the design for DES080 continues and should be completed and bid during the Fourth Quarter FY11. Construction continues on DES077 with an

anticipated completion date during the First Quarter FY12. DES076 is still on hold awaiting completion of a secondary fiber optic cable installation by the State. Repair and Improvements to the EDS continue as scheduled.

The current fiscal year system operating costs were $12,883,356 at the end of the Third Quarter. This value represents approximately 63.5% of the total budgeted operating cost for FY11. The customer revenues from the sales of steam and chilled water for FY11 to date were $11,629,418 which is approximately 65.1% of the budgeted amount. The difference between the operating costs and customer revenue, the Metro funding amount (MFA), is $1,253,512 (51.3% of budget).

Metro Nashville DISTRICT ENERGY SYSTEM

Table of Contents

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 Third Quarter chilled water sales is shown in Figure 1. This data reflects an increase in sales for the current quarter over the same quarter of the previous fiscal year by 21.5%. A comparison of the two quarters reveals a significant increase in the number of cooling degree days.

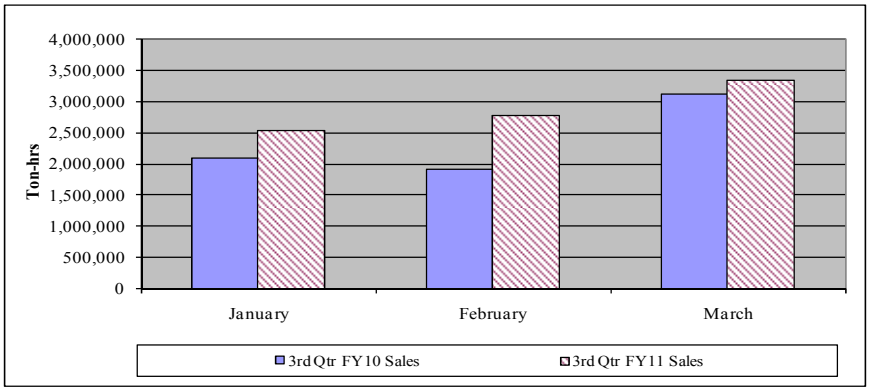

Figure 1. Third Quarter FY11 Sales Comparison

The peak chilled water demand for the current quarter is 9,760 tons. This peak demand is approximately 9.7% higher than in the previous Third 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.

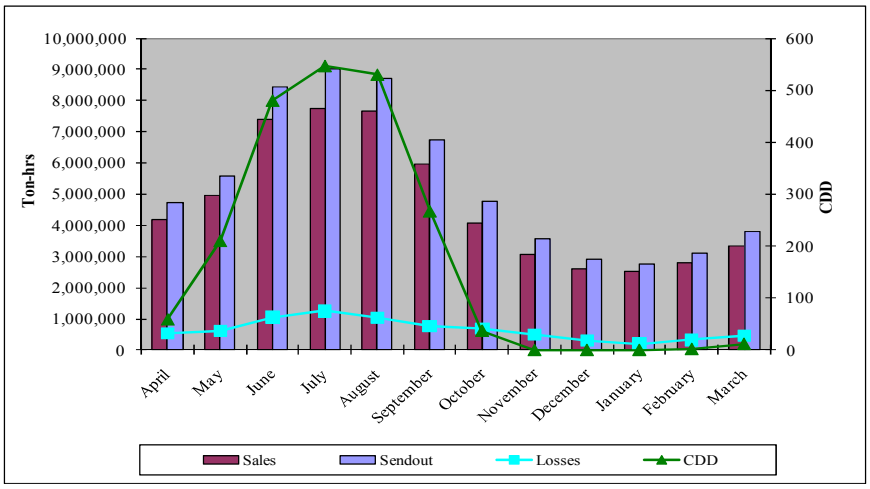

Figure 2. Chilled Water Sales, Sendout, Losses and CDD for the Previous Twelve Months

2. Losses

A comparison of the total, chilled water energy losses in the EDS for the Third Quarter is shown in Figure 3. These losses are the difference in chilled water sendout and sales. Due to an apparent error in the reading of the sendout meter at the EGF, the calculation of the energy losses is believed to be errant. The typical increase in the supply temperature between the EGF and the customers is less than 0.5°F. Therefore, the losses cannot be as significant as indicated by this calculation.

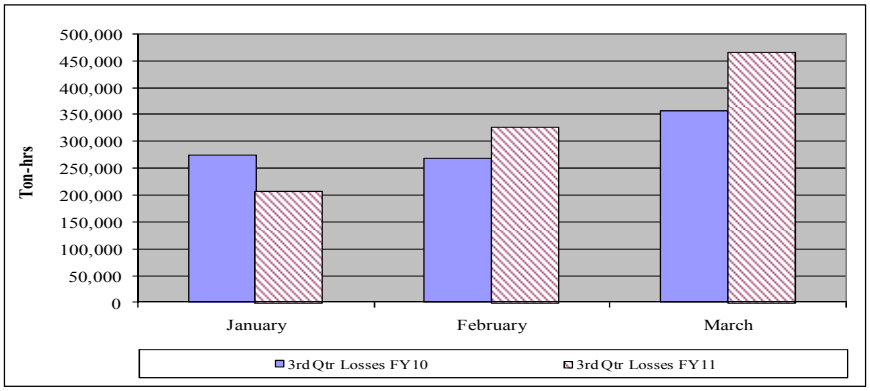

Figure 3. Chilled Water System Loss Comparison for the Third Quarter FY11

The EDS make-up increased by approximately 25.5% over the previous Third Quarter this increase may be indicative of an additional leak in the system. However, several known causes for EDS make-up, including filling the in-building system at the Municipal Auditorium, contributed to this increase in

make-up. The total energy losses have increased by approximately 10.7% over the previous Third Quarter. The make-up to the cooling towers increased by approximately 27% due to the increase in chilled water sales. The number of cycles of concentration in the condensing water circuit experienced a marginal change in the Third Quarter over the previous Third Quarter. The overall city water make-up comparison for the chilled water system is shown in Figure 4.

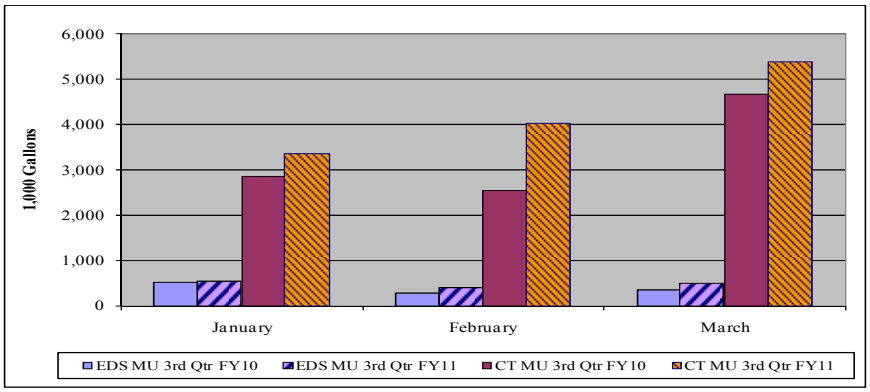

Figure 4. Chilled Water System City Water Usage Comparison

3. Performance

The performance of the chilled water aspect of the EGF is presented by the following two charts, Figures 5 and 6, for FY11. Under the management of CE, the System Performance Guarantee levels as described in the ARMA are being achieved quite satisfactorily.

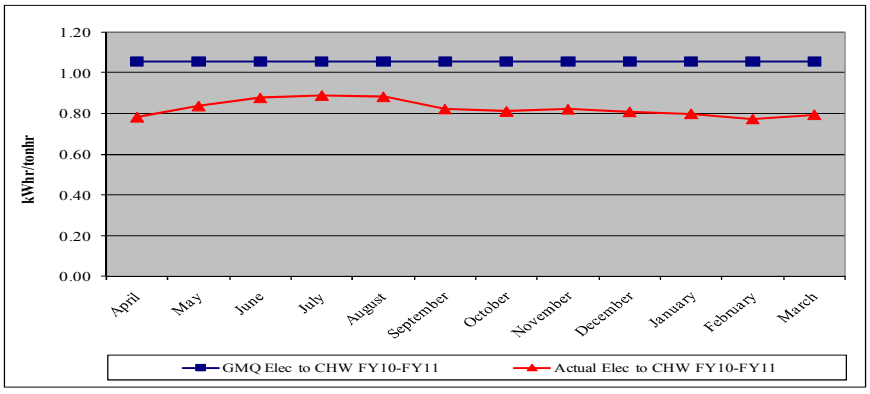

Figure 5. Chiller Plant Electric Performance Guarantee Comparison for the Previous Twelve Months

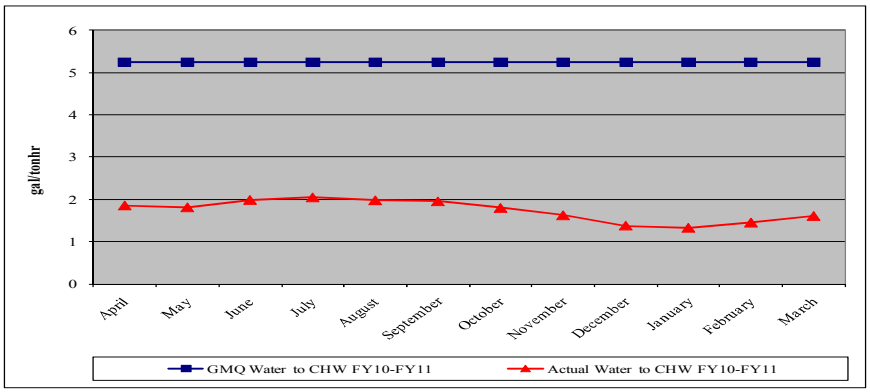

Figure 6. Chiller Plant Water Consumption Performance Guarantee Comparison for the Previous Twelve Months

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 19.5% over the Third Quarter for FY10 due to an increase in chilled water sales. The actual electric conversion factor decreased by 1.6% over the previous Third Quarter.

The actual chilled water plant water conversion factor is approximately 4.4% greater than in the previous Third Quarter. The total consumption of city water for the chiller plant for the current quarter is approximately 26.8% greater than that for the previous Third Quarter. This increase in water consumption is primarily due to an increase in the cooling tower make-up, the increase in sales and in the significant increase in cooling degree days for the quarter.

B. Steam

1. Sales and Sendout

The steam sendout decreased by approximately 6.1% over the previous Third Quarter (FY10), and the sales decreased by approximately 6.0%. The steam system losses have decreased by approximately 6.6% over the previous Third Quarter. The number of heating degree days decreased by 16.3% over the previous Third Quarter. A comparison for the Third Quarter steam sales is shown in Figure 7.

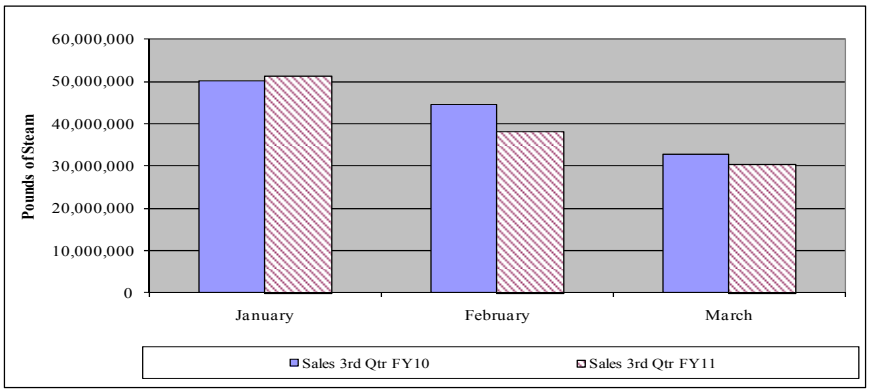

Figure 7. Steam Sales Comparison for the Third Quarter FY11

The peak steam demand for the current quarter is 123,938 pph, which reflects an approximate 2.0% increase in the peak steam production over the previous Third Quarter. This peak demand occurred in February 2011, which was markedly cooler than February 2010.

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.

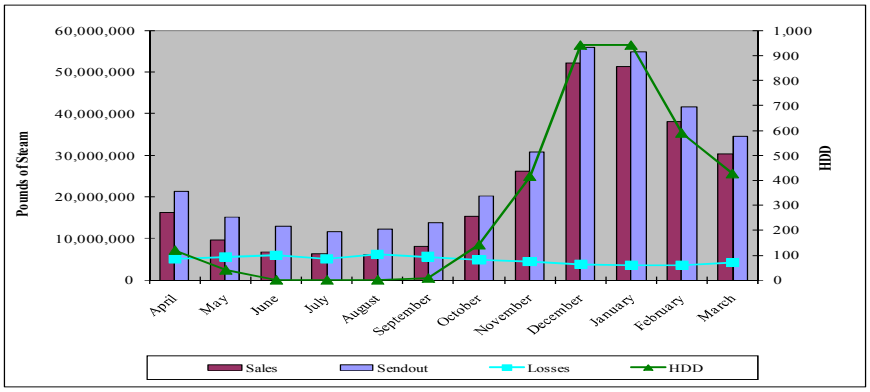

Figure 8. Steam Sales, Sendout, Losses and HDD for the Previous Twelve Months

2. Losses

A comparison of the total steam mass losses in the EDS for the Third 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. The total losses for the current quarter are approximately 6.6% lower than in the previous Third Quarter.

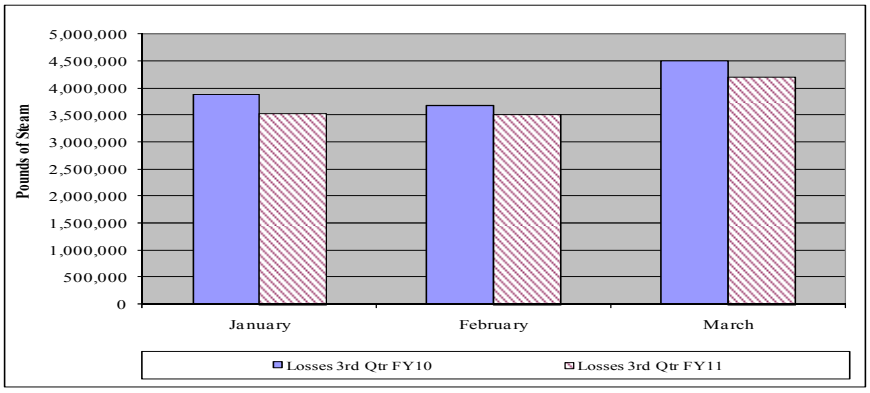

Figure 9. Third Quarter FY11 Steam System Losses

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 Third Quarter data in Figure 10. Figure 10 depicts a decrease in city water make-up to the steam system of approximately 20.5% for the current quarter due primarily to the ongoing capital and maintenance improvements within the EDS.

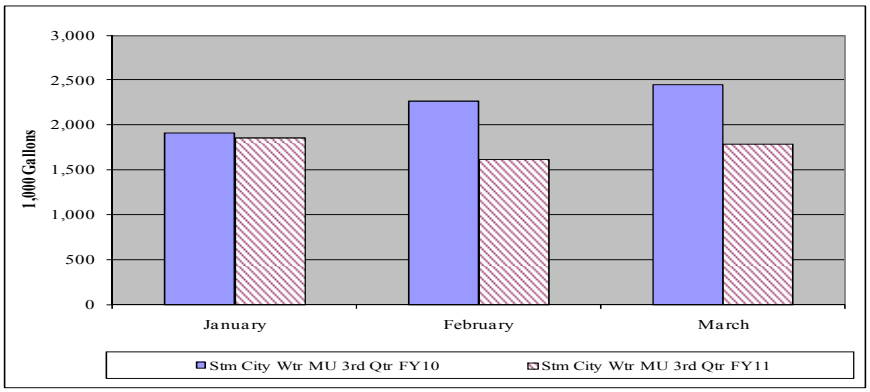

Figure 10. Third Quarter FY11 Steam System City Water Make-up Comparison

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 CE, the System Performance Guarantee levels as described in the ARMA are being achieved satisfactorily.

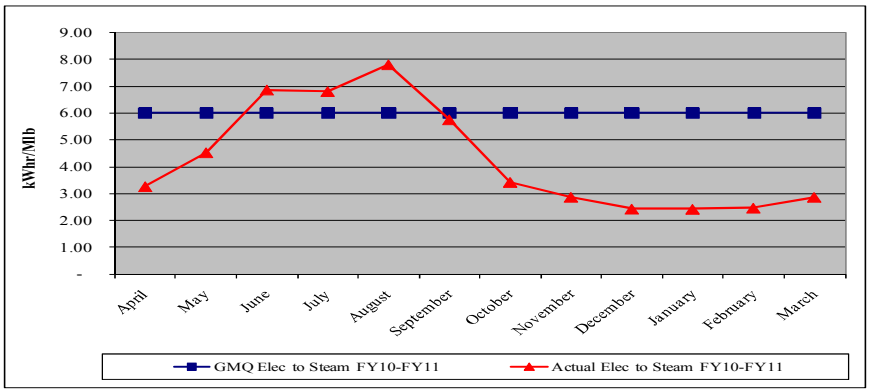

Figure 11. Steam Plant Electric Performance Guarantee for the Previous Twelve Months

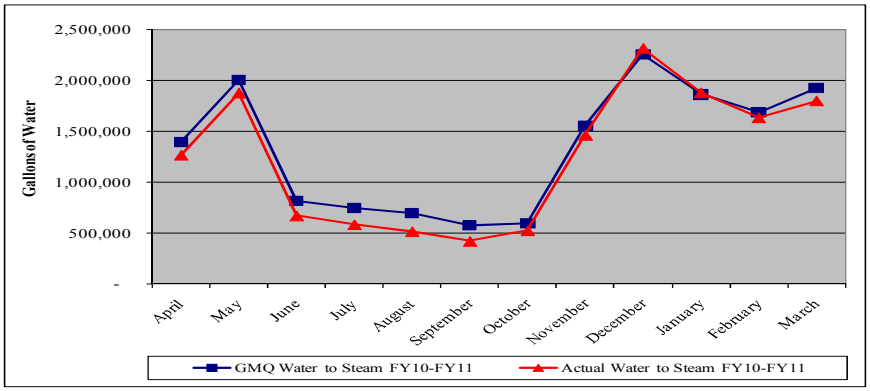

Figure 12. Steam Plant Water Performance Guarantee for the Previous Twelve Months

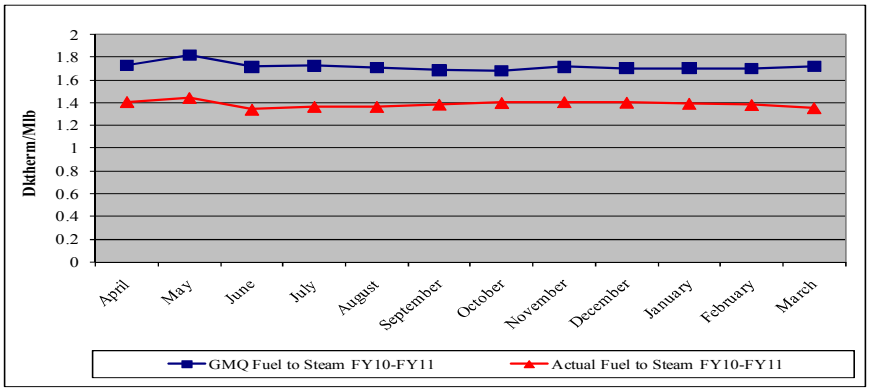

Figure 13. Steam Plant Fuel Performance Guarantee for the Previous Twelve Months

The current quarter experienced a 5.0% decrease in the steam plant electric consumption while experiencing a 1.1% increase in the electric conversion factor. The water consumption for the steam plant decreased 20.5% this quarter as

compared to the previous Third 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 3.1% 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. Additional parameters, such as cooling tower blowdown and peak demands are listed in this table, as well. Table 2 presents the Third Quarter comparison of the Guaranteed Maximum Quantities (GMQ) of the criteria commodities (fuel, water and electricity).

Table 1. Third Quarter FY11 Production, Sales and Consumption Summary

Item	Unit	Third Quarter FY11	Third Quarter FY10	*Percent Difference
	days	90	90	0.00%
Total Electric Use	kWhrs	7,144,178	6,045,308	18.18%
Chilled Water	kWhrs	6,838,860	5,723,838	19.48%
Steam	kWhrs	305,318	321,470	-5.02%
Total Water Use	kgal	19,492	17,843	9.24%
Total Chilled Water	kgal	14,233	11,227	26.77%
EDS Make-up	kgal	1,440	1,147	25.54%
Cooling Towers	kgal	12,793	10,080	26.91%
Calc CT Evaporation	kgal	10,923	8,600	27.01%
CT Blowdown	kgal	1,870	1,480	26.35%
Calc # Cycles		5.84	5.81	0.52%
Steam	kgal	5,259	6,616	-20.51%
Total Fuel Use	mmBTU	180,672	198,436	-8.95%
Natural Gas	mmBTU	180,471	197,826	-8.77%
Propane	mmBTU	201	610	-67.05%
Condensate Return	kgal	11,312	11,224	0.79%
	lbs	92,258,976	91,537,998	0.79%
Avg Temp	°F	165.0	162.0	1.85%
Sendout				
Chilled Water	tonhrs	9,675,300	8,046,100	20.25%
Steam	lbs	131,049,000	139,512,000	-6.07%
Peak CHW Demand	tons	9,760	8,900	9.66%
Peak Steam Demand	lb/hr	123,938	121,500	2.01%
CHW LF		45.89%	41.85%	9.65%
Steam LF		48.95%	53.16%	-7.91%
Sales				
Chilled Water	tonhrs	8,677,051	7,144,087	21.46%
Steam	lbs	119,797,832	127,460,706	-6.01%
Losses				
Chilled Water	tonhrs	998,249	902,013	10.67%
Steam	lbs	11,251,168	12,051,294	-6.64%
		8.59%	8.64%	-0.61%
Degree Days				
CDD		14	0	n.a.
HDD		1,956	2,336	-16.27%

*positive percent difference values imply an increase from FY10 to FY11

Table 2. Third Quarter FY11 Performance Guarantee Comparison for Steam and Chilled Water

GMQ Calculations	Unit	Third Quarter FY11	Third Quarter FY10	*Percent Difference
Steam				
GMQ Elec Conversion	kWhr/Mlb	6.00	6.00	
Electric Conversion	kWhr/Mlb	2.55	2.52	1.05%
GMQ Plant Efficiency	Dth/Mlb	1.709	1.718	
Plant Efficiency	Dth/Mlb	1.379	1.422	-3.07%
Actual %CR		70.40%	65.61%	7.30%
Avg CR Temp	°F	165	162	1.85%
GMQ Water Conversion	gal	5,469,513	6,764,482	
Water Conversion	gal	5,311,590	6,682,160	-20.51%
Chilled Water				
GMQ Elec Conversion	kWhr/tonhr	1.055	1.055	
Electric Conversion	kWhr/tonhr	0.788	0.801	-1.63%
GMQ Water Conversion	gal/tonhr	5.25	5.25	
Water Conversion	gal/tonhr	1.64	1.57	4.38%

*positive percent difference values imply an increase from FY10 to FY11

D. Operating Costs

The operating costs for the DES include the management fee to CE, debt service payments on the bonds and engineering and administration costs. Some of these costs are fixed, implying that they do not vary depending on the production or sales of steam or chilled water. 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 FY11 to date were $12,883,356. This value represents approximately 63.5% of the total budgeted operating cost for FY11. The customer revenues from the sales of steam and chilled water for FY11 to date are $11,629,418 which is approximately 65.1% of the budgeted amount. The difference between the operating costs and customer revenue, the Metro funding amount (MFA), is

approximately $1,253,512. This value is approximately 51.3% of budget. However there remain a few outstanding invoices to CE at the time of this report. Payment of these invoices would increase the system operating costs and the MFA.

Table 3. DES Expenses and Revenues to Date

Item		FY11 Budget	Third Quarter Expenses	Fourth Quarter Expenses	Total Spending to Date	% of Budget
FOC:	Basic	$ 3,976,200	$ 988,756	$ -	$ 2,966,267	74.60%
	9th Chiller	$ 37,200	$ 9,265	$ -	$ 27,794	74.72%
	C/O 6A	$ 73,400	$ 18,292	$ -	$ 54,875	74.76%
	C/O 6B	$ 64,300	$ 16,013	$ -	$ 48,040	74.71%
Pass-thru Charges:	Water	$ 574,000	$ 63,145	$ -	$ 287,879	50.15%
	Chemical Treatment	$ 150,000	$ 40,368	$ -	$ 117,825	78.55%
	Engineering	$ 26,200	$ 6,163	$ -	$ 26,556	101.36%
	Insurance	$ 27,700	$ 23,235	$ -	$ 23,235	83.88%
	EDS Electricity	$ -	$ 13,124	$ -	$ 39,558	n.a.
	EDS R&I	$ 176,500	$ 40,225	$ -	$ 72,315	40.97%
	EDS Surcharge	$ 70,600	$ -	$ -	$ -	0.00%
Marketing:	CES Sales Activity	$ -	$ 900	$ -	$ 900	n.a.
	Incentive Payments	$ -	$ -	$ -	$ -	n.a.
	Metro Marketing	$ 15,000	$ 467	$ -	$ 467	3.11%
	Project Administration	$ 30,700	$ -	$ -	$ 426	1.39%
FEA:	Steam	$ -	$ 51,147	$ -	$ 101,192	n.a.
	Chilled Water	$ -	$ 77,690	$ -	$ 275,546	n.a.
Misc:	Metro Credit	$ -	$ (76,269)	$ -	$ (327,437)	n.a.
	ARFA	$ -	$ 14,360	$ -	$ 43,080	n.a.
	Deferral	$ -	$ (128,837)	$ -	$ (159,406)	n.a.
	Subtotal - Man Fee =	**$ 5,045,300**	**$ 1,111,188**	**$ -**	**$ 3,499,348**	**69.36%**
Reimbursed Management Fee			**$ -**	**$ -**	**$ 2,388,160**	
Metro Costs:	Metro Incremental Cost	$ 469,900	$ 127,183	$ -	$ 561,641	119.52%
	EDS Water/Sewer	$ -	$ 25	$ -	$ 142	n.a.
	Natural Gas	$ 4,445,500	$ 961,931	$ -	$ 2,074,856	46.67%
	Propane	$ -	$ -	$ -	$ -	n.a.
	Electricity	$ 4,949,700	$ 743,298	$ -	$ 3,038,569	61.39%
	Subtotal - Operations =	**$ 15,086,900**	**$ 2,990,480**	**$ -**	**$ 9,274,321**	**61.47%**
Debt Service	2002 Bonds	$ 4,239,500	$ 1,090,723	$ -	$ 3,272,170	77.18%
	2005 Bonds	$ 628,100	$ 142,153	$ -	$ 170,475	27.14%
	2007 Bonds	$ 227,800	$ -	$ -	$ 224,150	98.40%
	2008 Bonds	$ 220,500	$ -	$ -	$ -	0.00%
	2010 Bonds	$ -	$ -	$ -	$ -	n.a.
	Interest Revenue	$ (100,000)	$ (12,919)	$ -	$ (57,760)	57.76%
Oper. Reserve Funding Deposit		$ -	$ -	$ -	$ -	n.a.
	Subtotal - Capital =	**$ 5,215,900**	**$ 1,219,958**	**$ -**	**$ 3,609,035**	**69.19%**
	Total =	**$ 20,302,800**	**$ 4,210,438**	**$ -**	**$ 12,883,356**	**63.46%**
	Revenues =	**$ 17,858,700**	**$ 3,858,481**	**$ -**	**$ 11,629,418**	**65.12%**
	Metro Funding Amount =	**$ 2,444,100**	**$ 351,957**	**$ -**	**$ 1,253,512**	**51.29%**

The DES serves 26 customers and 40 buildings in downtown Nashville. 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. 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	$ 2,759,244	14,020,448	$ 0.1968		$ 1,217,428	70,561	$ 17.2535	
State Government	$ 2,455,054	12,295,899	$ 0.1997		$ 1,617,564	85,908	$ 18.8291	
Metro Government	$ 2,327,187	13,497,275	$ 0.1724		$ 1,423,175	77,720	$ 18.3115	
New Customers	$ 895,024	4,534,914	$ 0.1974		$ 191,442	12,869	$ 14.8767	
Total	**$ 7,541,485**	**39,813,622**	**$ 0.1894**		**$ 4,258,167**	**234,189**	**$ 18.1826**	

Total Revenue	**$**	**11,799,652**
True-up and Adjustments	**$**	**(170,233)**
Net Revenue	**$**	**11,629,419**

III. EGF Operations

Items relating to the facility operations presented herein are derived from the monthly reports issued by CE for FY11. Communication between TEG and CE continues to be excellent, and CE 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.

- During the month of January, the steam pressure dropped below 150 psig due to a boiler trip caused by operator error.
- Other minor occurrences of higher than normal chilled water supply temperatures are included in the Monthly Operational Reports from CE.

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 Third 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.

CE completed their registration for the Green House Gas Reporting with the US EPA in January. The annual Title V Certificate of Compliance was submitted in February to the EPA and the Metro Health Department. The Annual Air Emission Inventory Report was also submitted to the Metro Health Department in February.

Monthly safety meetings were conducted by HazMat, Inc and through CE personnel.

D. Personnel

The EGF currently has twenty-four full time employees. Of the current number of employees, seventeen were previously employed by Nashville Thermal Transfer Corporation. CE is actively pursuing candidates for on an open position for Stationary Engineer (SE-2).

E. Training

Staff training for this quarter consisted of the Health and Safety training discussed previously.

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 steam and condensate system had excellent chemistry for most of the quarter with a few exceptions. Condensate was dumped for the majority of March due to high hardness levels.

- Condensing Water System
  - The conductivity of the condensing water continues to be normal with only a few excursions resulting in high cycles of concentration and low blowdown rates.

- Chilled Water System
  - The system control and chemistry continues to be excellent.

G. Maintenance and EGF Repairs

CE 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 Expansion Tank #2 bladder was replaced during the quarter.
- A refrigerant leak was repaired on Chiller #7A.
- The fan belt on Cooling Tower #16 was replaced, and a vibration test was performed on Cooling Tower #7.
- Other minor repairs and maintenance were made during the quarter and are listed in the monthly reports issued by CE.

H. EGF Walk-through

A quarterly Walk-through of the EGF was performed on March 29, 2011, 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.

- The operator log book indicated recurring problems with the condensate pumps within MH-18. These pumps return the majority of the condensate collected from the customers to the EGF. Additional investigation may be required to resolve this chronic problem.
- The log book also noted frequent problems with the water softener #3. These problems were resolved in March.
- The purge pump for #3 chiller had ice build-up that was more significant than the other chillers. Ray Stepp indicated that this chiller was due for its regular PM by Trane. The ice build-up could be indicative of a refrigerant leak.
- The wooden platform that was constructed in order to make repairs on the expansion tank bladder should be removed by CE personnel.

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. Third Quarter FY11 Open Projects

The following projects remained open at the end of the Third Quarter FY11.

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. DES048 – Tunnel Lighting & Electrical Upgrades Phase III

The first two phases of this project have been completed, and the final phase is budgeted and awaiting the completion of the Tunnel Rock Rehabilitation Project (DES067). Now that DES067 is complete, this final phase of the tunnel lighting and electrical upgrades should begin in the very near future.

3. DES060 – Manhole & Tunnel Insulation Repair (Revised from DES050 for FY10)

The work associated with this project will be ongoing as required.

4. DES061B – Manhole 3 and 4 Structural Repairs

The design for the structural repairs for Manholes 3 and 4 was completed, bid and awarded during the Third Quarter FY11. Work is scheduled to begin during the Fourth Quarter FY11.

5. DES067 – EDS Tunnel Structural (Rock) Rehabilitation

This project was bid during the Third Quarter FY10. A formal award was made during the Fourth Quarter FY10 and mobilization was planned for the same quarter. This mobilization was delayed due to the flood in May 2010. Work began on this project in the First Quarter FY11. Substantial completion of this project occurred during the Third Quarter FY11. It is expected that this project will be closed out during the Fourth Quarter FY11.

6. DES073 – MH-18 Platform Extension & Sump Pump Control Modifications

Work on the platform extension was started and completed during the Second Quarter FY11. Work began on the Sump Pump Control Modifications during the Third Quarter FY11. It is anticipated that this project will be closed out during the Fourth Quarter FY11.

7. DES076 – Manhole S4A Rehabilitation

The State has concluded that the structural repair of the manhole is their responsibility, and they are moving forward with the installation of a secondary fiber optic line to replace the fiber optics within this manhole. Once this fiber optic work is complete, work will begin on the manhole structure. It is anticipated that the manhole work will begin in the Fourth Quarter FY11.

8. DES077 – Music City Center Service Connection

Work continues with the extension of services to the MCCC. All of the new vaults have been set and the majority of the direct-buried piping has been

installed. A temporary shut-down of the service to the Symphony building is scheduled to occur during the Fourth Quarter in order to make the connection between the new piping and the existing EDS. A temporary chiller will be installed in order to provide service to this customer while the work is completed. The completion of the work is anticipated in the early summer of 2011 (Fourth Quarter FY11 or First Quarter FY12). Service is not expected to be required by the MCCC until November 2011.

9. DES080 – Misc. Manhole & Tunnel Safety Repairs

As a result of the ongoing review of the manholes and tunnels, some safety items have been noted that require attention. This project was established to address these items.

Manholes 16A, 22B, D2 and D3 require the addition of some safety related items such as handrails, ladder cages etc. Design was started on the addition of these items during the Fourth Quarter FY10. Some additional items were added to the scope of this project and it is now anticipated that the design will be completed during the Fourth Quarter FY11 followed by its bidding and award.

10. DES081 – Flood Related Repairs

Some of the lighting and electrical damage caused by the May 2, 2010 flood in the Broadway and 4th Avenue Tunnels is still being repaired also. Due to this continuing work, the close out of this project will not take place until either the Fourth Quarter FY11 or First Quarter FY12.

11. DES 083 – Manhole 13 Leak Repair

A steam leak developed at a flanged steam line connection in this manhole, Upon investigation, it was determined that a structural stop was required on the steam line in order to ensure that the steam line would not be over-stressed during operation and shutdowns, As the leak is not critical and a partial system shutdown is required to make repairs, this work will be completed during a mild weekend during the Fourth Quarter FY11.

12. DES 086 – Manhole 12 Roof Replacement

During the Second Quarter FY11 vault review, the concrete roof of this manhole was noted to be in poor condition. A structural engineer reviewed the roof's condition and confirmed that it was in poor condition and needed to be replaced. Due to its condition, entry into the manhole was prohibited until repairs could be made. The design for the roof's replacement and the bidding of this work was completed during the Third Quarter FY11. Work is scheduled to begin and be completed during the Fourth Quarter FY11.

B. Third Quarter FY11 Closed Projects

DES059, 063, 066 and 082 were closed during the Third Quarter FY11.

C. Capital Projects Budget

The following table summarizes the costs and remaining balance of the DES capital projects based on reported expenditures at the end of the Second Quarter FY11. 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. Since the remaining funds from the 2002A bond have been consumed, the previous projects associated with this bond are no longer noted in the following table. The 2008 Bond fund is also depleted and the projects associated with it are also not shown. The remainder of the 2007 Bonds was added to new funding and is now referred to as the 2010 Bond. The MCCC Fund represents the monies allocated for the MCCC connection and new projects in FY11.

Table 5. Capital Projects Expense Summary

	DES Project #	Description	Total Budget	FY11 Spending to Date	Total Spent to Date	Remaining Balance
2005B Bond Projects						
	DES064	Spring 09 Steam Shutdown	$ -	$ -	$ 950.19	$ (950.19)
	DES063	Sump Pump MH B and M	$ -	$ 13,166.04	$ 18,359.72	$ (18,359.72)
	DES056	Citizen's Plaza Steam and Condensate	$ -	$ -	$ 251.93	$ (251.93)
	DES057	Manhole 13	$ -	$ -	$ 176.87	$ (176.87)
	DES061	Tunnel Steel Corrosion	$ -	$ 27,613.92	$ 35,670.93	$ (35,670.93)
	DES073	MH 18 Condensate and Platform Exp	$ -	$ 3,713.38	$ 16,369.11	$ (16,369.11)
		Total Closed Projects	$ 7,320,301.40	$ 518.67	$ 6,769,851.84	$ 550,449.56
		Project Development	$ 866,198.60	$ 22,336.89	$ 315,570.26	$ 528,291.45
		Total 2005B Bond	**$ 8,186,500.00**	**$ 67,348.90**	**$ 8,143,380.79**	**$ 43,119.21**
2007 Bond Projects						
		Total Closed Projects	$ 2,374,348.00	$ -	$ 2,620,770.53	$ (246,422.53)
		Project Development	$ 464,152.00	$ -	$ -	$ 464,152.00
		Total 2007 Bond	**$ 2,838,500.00**	**$ -**	**$ 2,838,500.00**	**$ -**
2010 Bond Projects						
	DES059	CJC Steam & Cond Ser. Line Replace.	$ 150,000.00	$ 15,936.22	$ 18,999.89	$ 131,000.11
	DES062	Stm and Cnd Line MHK to Wildhorse	$ 300,000.00	$ -	$ 240,670.01	$ 59,329.99
	DES066	First Ave MH Abandoment	$ -	$ 97.35	$ 1,493.89	$ (1,493.89)
	DES067	Tunnel Rock Repair	$ 1,152,000.00	$ 964,239.38	$ 983,874.86	$ 168,125.14
	DES068	St. Mary's Cond Tempering Station	$ 20,000.00	$ 35,358.96	$ 73,480.53	$ (53,480.53)
	DES069	Municipal Aud Tempering Station	$ 25,000.00	$ 38,140.30	$ 42,466.62	$ (17,466.62)
	DES070	MH 6 to 23 Cond Line	$ 300,000.00	$ -	$ 526.62	$ 299,473.38
	DES071	Hermitage Hotel Ser Modifications	$ 125,000.00	$ -	$ 1,119.07	$ 123,880.93
	DES072	Sheraton Stm & Cond Line	$ 250,000.00	$ -	$ 31.38	$ 249,968.62
	DES073	MH 18 Condensate and Platform Exp	$ -	$ 18,580.63	$ 19,330.20	$ (19,330.20)
	DES075	2010 CHW Outage	$ -	$ -	$ -	$ -
	DES076	MH S4A Rehabilitation	$ -	$ 2,573.72	$ 3,255.27	$ (3,255.27)
	DES077	Music City Convention Center Design	$ -	$ 47,865.78	$ 149,927.62	$ (149,927.62)
	DES079	TN Tower Repaving	$ -	$ 2,250.00	$ 2,250.00	$ (2,250.00)
		Transfer from 2010 Bond/MCCC Connection Fund	$ -	$ (149,927.62)	$ (149,927.62)	$ 149,927.62
		Transfer from 2007 Bond Remaining Balance	$ -	$ (217,729.47)	$ (217,729.47)	$ 217,729.47
		Total Closed Projects	$ -	$ -	$ -	$ -
		Metro Project Admin	$ -	$ -	$ -	$ -
		Project Man, Development, etc	$ 88,000.00	$ -	$ -	$ 88,000.00
		Total 2010 Bond	**$ 2,410,000.00**	**$ 757,385.25**	**$ 1,169,768.86**	**$ 1,240,231.14**
MCCC Construction Fund						
	DES077	Music City Convention Center Design/Const	$ 997,362.00	$ 54,985.20	$ 157,047.04	$ 840,314.96
	DES077	Bell/Clark Construction Fund	$ 4,697,860.00	$ 1,683,666.00	$ 1,683,666.00	$ 3,014,194.00
		Metro Project Admin	$ -	$ -	$ -	$ -
		Project Man, Development, etc	$ 2,804,778.00	$ -	$ -	$ 2,804,778.00
		Total MCCC Construction Fund	**$ 8,500,000.00**	**$ 1,738,651.20**	**$ 1,840,713.04**	**$ 6,659,286.96**

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

Several EDS repairs and improvements were made during the Third 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 $600,770. Table 6

provides a summary of the FY11 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	Net Market Adjustment	Market Value	Balance
Value at end of FY10						**$ (7.36)**	**$ 493,424.22**	**$ 493,424.22**
Transfer to General Account	07/08/10			$ 6,682.81				
Period 5/1/10 - 5/31/10 (EDS Repair)	06/30/10	DES-1196	CEPS	$ 613.67				
Period 6/1/10 - 6/30/10 (EDS Repair)	06/30/10	DES-1203	CEPS	$ 1,399.60				
Overpayment Credit	08/12/10	-	-	$ (1,019.45)				
Period 7/1/10 - 7/31/10 (EDS Repair)	09/13/10	DES-1224	CEPS	$ 1,268.79				
Sub-Total First Quarter				**$ 8,945.42**	**$ 61,775.01**	**$ -**	**$ 52,829.59**	**$ 52,829.59**
Period 8/1/10 - 8/31/10 (EDS Repair)	10/20/10	DES-1236	CEPS	$ 374.14				
DES Repair And Improvements, for billing period of 7/04/10 - 10/02/10	10/05/10	DES-1231	TEG	$ 2,808.96				
DES Repair And Improvements, for billing period of 10/03 - 10/30/10	11/04/10	DES-1243	TEG	$ 1,684.25				
Period 10/1/2010-10/31/2010 (Mgmt. Fee)	12/14/10	DES-1274	CEPS	$ 657.68				
Period 9/1/10 - 9/30/10 (EDS Repair)	11/23/10	DES-1251	CEPS	$ 3,780.20				
DES-059 CJC Repair October 3102010	11/23/10	DES-1253	CEPS	$ 18,886.75				
DES Repair And Improvements, for billing period of 10/31/10- 11/27/10	12/07/10	DES-1258	TEG	$ 616.55				
Sub-Total Second Quarter				**$ 28,808.53**	**$ 61,775.01**	**$ -**	**$ 32,966.48**	**$ 32,966.48**
DES Repair And Improvements, for billing period of 11/28/10-1/29/11	2/3/2011	DES-1291	TEG	$ 4,990.80				
Period 11/01/2010/11/30/2010 (Mgmt. Fee)	1/26/2011	DES-1287	CEPS	$ 3,802.10				
Period 12/31/2010 Andrew Jackson Repairs (Mgmt. Fee)	1/26/2011	DES-1295	CEPS	$ 7,910.00				
DES Repair And Improvements, for billing period of 01/30/11 - 02/26/11	3/23/2011	DES-1312	TEG	$ 13,676.93				
Period 12/31/2010 manhole B2 Replaced (Mgmt. Fee)	1/26/2011	DES-1303	CEPS	$ 7,920.00				
Period 12/01/10 - 12/31/10 (Mgmt. Fee)	1/26/2011	DES-1302	CEPS	$ 1,925.02				
Sub-Total Third Quarter				**$ 40,224.85**	**$ 61,775.01**	**$ -**	**$ 21,550.16**	**$ 21,550.16**
Sub-Total Fourth Quarter				**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
FY11 Year to Date				**$ 77,978.80**	**$185,325.03**	**$ -**	**$600,770.45**	**$ 600,770.45**

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.

1. EDS Tunnel and Manhole Inspections
   a. Some leaks were found during the quarter and continue to be monitored.
   b. Minor repairs were made during the quarter.
2. State Tunnel Inspections
   a. CE continues to monitor some steam and condensate leaks within the tunnel.
   b. The tunnel radio system is continues to be non-operational. State personnel have been notified.
   c. Other minor repairs were made during the quarter.

3. Other EDS Inspections
   a. The thermo-graphic surveys for the quarter indicated a new hot spot along Molloy Street near 2nd Avenue South and MH-B2.
   b. Other minor items are included in the CE monthly reports.

C. Emergencies

No emergencies were reported during the quarter.

D. EDS Walk-through

The primary EDS walkthrough was conducted on April 28, 2011, by Jon Belcher, PE with TEG. The structures visited included the State Tunnel, the AA Birch Tunnel including Manholes D2 and D3, and the Broadway, 7th Avenue and 4th Avenue Tunnels including MH 23. The following comments and observations are a result of these visits:

1. State Tunnel
   a. Due to a State telecommunications cabling relocation project, there is a lot of cabling and conduits in the floor and hanging down from the cable trays at the southern end of the west tunnel. Once the State's relocation project is complete, this area of the tunnel should be re-visited to ensure that walkways are free from obstructions.
   b. Several light bulbs were not working. The State of Tennessee is in charge of maintaining the lighting. The State should be contacted and told that several bulbs require replacement.
   c. There is a pinhole leak on a high pressure condensate expansion joint at Column W74. This leak should be repaired.
   d. There is some steam piping insulation which is damaged at Column N62. This insulation should be repaired.
   e. There is no insulation on the steam expansion joints at Columns N19 and N20. These expansion joints should have insulation blankets installed and any missing pipe insulation restored.
   f. The steam expansion joints at Columns E1 and E44 have small leaks. These leaks should be monitored and repaired once they are of a magnitude that they can be sealed successfully.

2. AA Birch Tunnel
   a. There are several locations throughout the tunnel where groundwater is infiltrating into the tunnel. This infiltration could result in detrimental effects to the tunnel's structural integrity. Therefore, these tunnel sections are currently being evaluated by TEG's structural engineer.

3. Manhole D2
   a. The western rail of the ladder which gives access to the elevated platform in this manhole does not extend above the elevated

platform; this makes access to the platform difficult, and its absence does not meet OSHA requirements. TEG is in the process of preparing design drawings that will include modifications of this platform and its access to meet OSHA requirements.

b. There is some minor corrosion of some of the structural components in this manhole. This will be addressed through the issuance of the design drawings mentioned in Item 3.a. above.

c. There are some leaves which have accumulated on top of the piping in this manhole. As these leaves can retain moisture which could lead to corrosion, these leaves should be removed from the manhole.

d. The link seal on the western-most chilled water piping penetration in this manhole is leaking. The link-seal should be adjusted to stop this leak.

4. Manhole D3

a. TEG is in the process of preparing design drawings that will include modifications of the platform and ladder in this manhole to meet OSHA requirements.

b. There is some minor corrosion present on one of the platforms support shapes. This will be addressed in the design documents mentioned in Item 4.a. above.

c. There is some minor debris in this manhole which should be removed.

5. Manhole 23

a. The large amount of surface water which normally is present at the entrance to this manhole has apparently drained. This presents an excellent opportunity to clean this entrance area of all the accumulated debris and also to verify that the floor drain is clear and unobstructed.

b. There is steam leak on a dripleg in this manhole that should be repaired.

c. There is a minor amount of debris and construction material in this vault that needs to be cleaned and removed.

d. The steel structural components in the vault have experienced some corrosion. This vault should be included in the capital project to repair and prevent structural corrosion. These repairs should be addressed once the tunnel rock rehabilitation project has been completed.

e. There is some minor insulation damage in this manhole. This manhole should have this insulation repaired when the 7th Avenue tunnel insulation repairs are performed and after the structural repairs mentioned in Item 5.d. above are repaired.

6. 7th Avenue Tunnel
   a. There is some missing or damaged insulation in the 7th Avenue Tunnel at the following Column locations: 7-81, 7-61, 7-52, 7-46, 7-45, 7-44, 7-42, 7-40, 7-22, 7-11 and 7-1. The main tunnel systems are listed on the manhole/tunnel re-insulation list and since the tunnel rock rehabilitation project is now complete, should be addressed soon.
   b. The light fixtures at Columns 7-54 and 7-47 are missing their bulbs and covers; this should be corrected.
   c. The light fixtures at Columns 7-43, 7-38, 7-23, 7-20 and 7-10 are not functioning; this should be corrected.
   d. There is water infiltration at Column 7-41 and 7-42 which needs to be directed away from piping and structures. This should be corrected when the 7th Avenue piping insulation is repaired.

7. Broadway Tunnel
   a. There are minor steam leaks at the steam expansion joints at Columns B-96, B-92 and B-20. These leaks should be monitored and repaired once they are of a magnitude that they can be sealed successfully.
   b. The light fixtures at Columns B-70, B-66 and B-56 are not functioning; this should be corrected.
   c. There is some missing or damaged insulation in the Broadway Tunnel at the following locations: Manhole 18, intersection of Broadway and 4th Avenue Tunnels, B-62, B-74, B-82 and B-83. The main tunnel systems are listed on the manhole/tunnel re-insulation list and since the tunnel rock rehabilitation project is now complete, should be addressed soon.
   d. There is a steam piping guide that has been cut off and removed at Marker B-49. The alignment of this section of piping should be verified along with the alignment of the slip type expansion joint. There does not appear to be any misalignment of the joint at this time, however, because the next closest guide is 40 feet away, this guide “hoop” should be re-installed once the piping alignment is verified.
   e. The emergency lights and Columns B-19 and B-8 are not functioning and should be repaired/replaced (this damage is related to the May 2010 flood).
   f. There is debris at Manhole 18 that needs to be removed.

8. 4th Avenue Tunnel
   a. There is some missing or damaged insulation in the 4th Avenue Tunnel at the following locations: 4-11, 4-14, 4-15, 4-52, 4-61, 4-62, 4-81, 4-88 and 4-95. The main tunnel systems are listed on the manhole/tunnel re-insulation list and since the tunnel rock rehabilitation project is now complete, should be addressed soon.

b. The steam expansion joints at Columns 4-17, 4-45 and 4-61 are leaking. These leaks should be monitored and repaired once they are of a magnitude that they can be sealed successfully.
c. The emergency lights and Columns 4-24, 4-46, 4-61, 4-74 and 4-85 are not functioning and should be repaired/replaced (this damage is related to the May 2010 flood).
d. The light fixture at Column 4-92 is not functioning; this should be corrected.
e. There is a steam leak at Column 4-95 that should be repaired.

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 26 customers, comprised of 40 different buildings, connected to the EDS. Service to each of these buildings continues to prove satisfactory, and the responsiveness to customer issues is handled by CE in an excellent and professional manner.

A. Marketing

TEG and Metro DES continue to monitor and remain involved with the progress associated with the development of the new Music City Convention Center (MCCC). Construction for this project which began in the First Quarter FY11 and is expected to be completed by the early summer of 2011.

TEG and CE have continued to be involved with developing the estimated costs of service to the new Omni Hotel which is to be constructed adjacent to the MCCC on Korean Veterans Boulevard and 4th Ave.

B. Customer Interaction

The CE 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.

- Several customers reported issues with either their in-building heating or cooling systems. These issues were addressed by the CE customer service representative (CSR). In most cases, the issues related to failed customer equipment or the improper control of the building system.
- After observing a significant amount of steam from MH-S5 (adjacent to the Tennessee Library and Archives building), building personnel notified CE. After investigating the issue, CE determined that the cause of the steam was due to a city water leak that caused city water to enter the vault and flash upon contact

with the hot steam and condensate piping. Metro Water Services was notified, and the necessary repairs were made.

- A meeting was held between the contractor for the MCCC project, the Symphony, CE and TEG to discuss providing temporary chilled water service to the Symphony during the outage required to connect the new service to the MCCC with the existing EDS at Almond and Molloy Streets.
- CE requested that the CJC begin tempering their condensate to drain due to a discovery in March of high levels of hardness.
- A problem with the compressed air system in the Andrew Jackson building caused the main steam PRV for the state steam tunnel to close. CE investigated the problem after receiving numerous calls from steam customers along the tunnel route. Meetings with State building personnel are expected to occur during the Fourth Quarter to discuss potential design changes to the existing PRV.
- Other minor issues and customer interactions are noted in the monthly CE reports.

VII. Recommendations

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

- The repair of the cracks in the west wall of the EGF and the repair of the flashing in this area, as noted in previous reports, should be addressed.
- Safety items noted in the EDS Walk-through will be addressed in project DES080.
- Steam leaks noted in the EDS walk through should be repaired.
- Lighting deficiencies noted in the EDS walk through should be addressed. Note: The final phase of the tunnel lighting replacement has been awaiting the completion of the tunnel rock rehabilitation project. Since this project is now complete, this third and final phase of the lighting repairs should begin in the near future.
- Insulation which is not present or in disrepair within the tunnels and manholes should be addressed through either additional capital projects, which include work within these manholes, or through DES060.