



**Operations Monitoring Report
Fourth Quarter FY07**

Prepared by:



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I. Executive Summary

A review of the fiscal year 2007 (FY07) Fourth Quarter performance and contract obligations between Nashville District Energy, LLC (NDE) and the Metropolitan Government of Nashville and Davidson County (Metro) is presented in this report by Thermal Engineering Group, Inc (TEG). The status and available funds for all active capital construction and repair and improvement projects are presented. In addition, this review includes a summary of the FY07 customer and total operating costs.

For the Fourth Quarter FY07, the chilled water sendout decreased by approximately 1% over the previous Fourth Quarter (FY06), while the sales increased by approximately 2%. The increase in sales is reflected in an increase in the number of cooling degree days by approximately 14% over the same periods. The peak chilled water demand for the current quarter is 16,251 tons, equating the peak demand from the previous Fourth Quarter, with a cooling load factor for the quarter of approximately 52%.

The steam sendout is approximately 10% lower this quarter than the previous Fourth Quarter, and steam sales are down by approximately 24%. However, an approximate increase in the number of heating degree days of 42% over the previous Fourth Quarter is noted. These values reflect a high steam demand during the month of April marked by a decrease in steam demand for the balance of the quarter. Steam system losses were approximately 31% of the sendout compared to 22% from the previous Fourth Quarter. The peak steam demand for the current quarter is 80,563 pounds per hour, an approximate increase of 16%. The heating load factor for the quarter is approximately 35%, which is a decrease of approximately 31% from the previous quarter.

The EGF performance continues to surpass the System Performance Guarantee (Guaranteed Maximum Quantity or GMQ) levels. The chilled water and steam plant electric consumptions continue to perform considerably lower than the guaranteed levels. The steam plant fuel consumption is down approximately 4% from the previous quarter. The total water consumption for the steam and chilled water plants has remained approximately the same as in the previous Fourth Quarter. The make-up to the chilled water EDS appears to continue to increase and remains under investigation. The theoretical make-up required for evaporation at the cooling towers appears to exceed the amount of evaporation indicated by the recorded value for the cooling tower make-up. This phenomenon will continue to be monitored to determine the source of this apparent discrepancy.

Work on the active DES Capital Projects during the Third Quarter are largely complete. TEG continues to investigate the remaining issues related to DES-017, 020 and 021 with resolutions expected within the First Quarter FY08. Repair and Improvements to the EDS continue as scheduled. A significant amount of work was completed during the planned outage in April, and the EDS condensate is now being returned to the EGF. The R&I remaining budget at the end of FY07 is \$286,764.52.

The total annual cost of chilled water to the customers for FY07 was \$9,891,164. The total annual amount of chilled water consumed was 60,720,304 tonhrs, resulting in an annual average unit cost of \$0.1629 per tonhr. The total annual cost of steam to the customers was \$8,751,589. The total annual consumption of steam was 322,648 Mlbs, resulting in an annual average unit cost of \$27.12 per Mlb. The total customer revenue for FY07 was \$18,642,753.

The total operating cost budget for FY07 was \$23,436,054 with an anticipated revenue from steam and chilled water sales of \$21,153,871. The budgeted Metro Funding Amount was \$2,282,182. The actual operating costs for FY07 were \$20,942,853, approximately 90% of the budgeted amount. However, the actual revenue from energy sales was \$18,642,753, resulting in a net deficiency of \$17,918. These values were developed prior to completion of the True-up calculations, thus the net deficiency will be reconciled with the Initial System Customers (ISC) in those calculations.

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II. Energy Distribution System Sales and Performance

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.

A. Chilled Water

1. Sales and Sendout

A comparison for the Fourth Quarter chilled water sales is shown in Figure 1. This data reflects an approximate 2% increase in sales for the current fiscal year over the previous fiscal year. The increase in sales may be largely attributed to an increase in the number of cooling degree days from the previous period. (The current fiscal year data is shown with the hatched bars in Figure 1.)

The peak chilled water demand for the current quarter is 16,251 tons occurring during the month of June. This same peak demand also occurred during the month of June 2006. The cooling load factor for the current quarter, relative to sendout, is approximately 52% and approximately 53% for the previous Fourth Quarter.

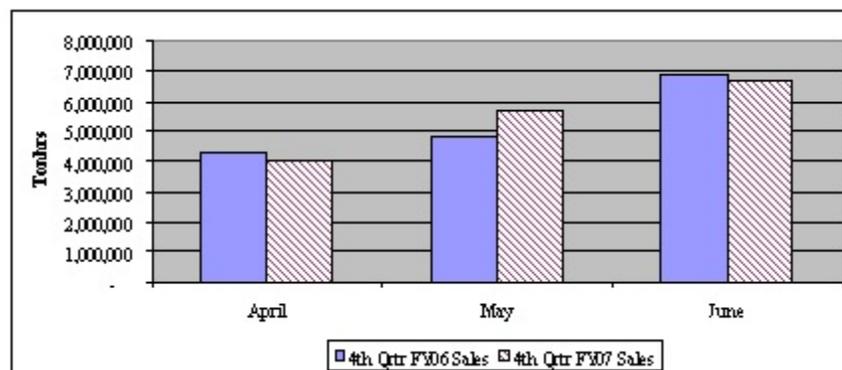


Figure 1. Fourth Quarter Chilled Water Sales Comparison

For the total fiscal year, the annual chilled water sales were 60,720,304 tonhrs to all of the customers. With an annual peak demand (as recorded at the EGF) of 17,300 tons, the annual cooling load factor is 45.27%.

Figure 2 shows the chilled water sales, sendout and losses for the 2007 fiscal year. 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.

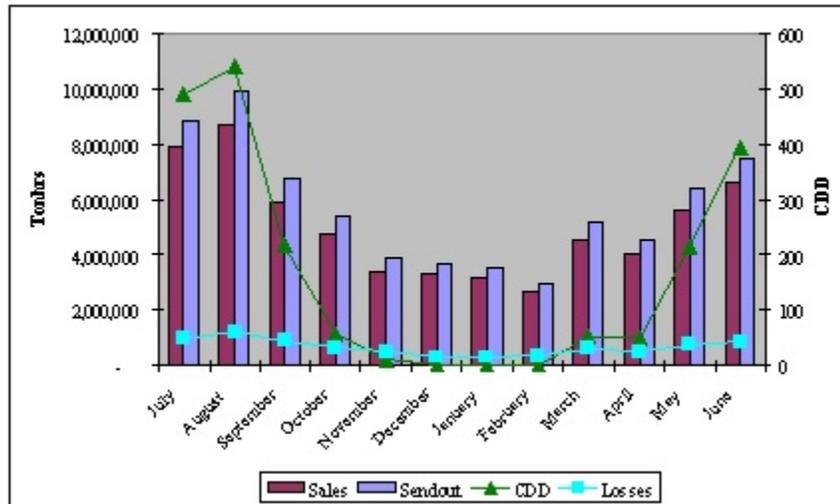


Figure 2. FY07 Chilled Water Sales, Sendout and Losses

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. The energy loss is caused by a combination of the loss in the mass of chilled water and a net heat gain into the chilled water piping. The increase in supply temperature between the EGF and the customers is typically less than 1°F.

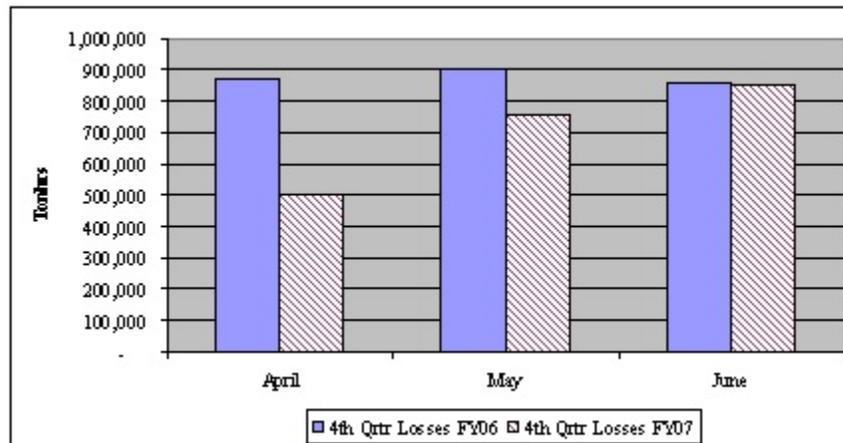


Figure 3. Fourth Quarter Chilled Water Energy Losses

The mass loss to the EDS is reflected in the amount of city water make-up (MU) to the system. An increase in the mass loss is noted with a comparison between the Fourth Quarter data for FY06 and FY07 of approximately 38%. An increase in the amount of city water make-up to the cooling towers is also apparent in the comparison of Fourth Quarter data as shown in Figure 4. The total cooling tower make-up increased by approximately 5%.

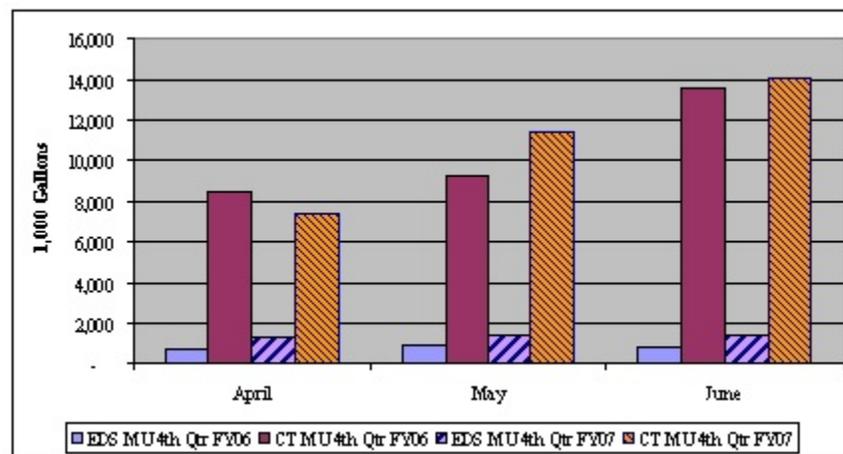


Figure 4. Fourth Quarter Chiller Plant City Water Make-up

In the operation of a cooling tower, the majority of make-up water required is due to the evaporation of the circulating cooling water. The balance of the make-up is due to the blow down of the tower required by the levels of concentration of particulates and other contaminants entrained in the circulating water. TEG requested that NDE begin recording the amount of blow down in an attempt to determine the source of

the increase and historic excessive water usage. However, this recorded data is only available for the months of May and June 2007.

A comparison between the theoretical cooling tower make-up and the actual amount used indicates that the actual amount of evaporation is less than the theoretical model would suggest occurred, assuming that the meter readings are correct. This comparison may also suggest that the theoretical amount of energy rejected in the cooling towers is higher than the actual amount, indicating that some of the electrical energy accounted for in the theoretical model is not rejected at the cooling towers. The recorded data also suggests that the cooling towers are operating at approximately 5 cycles of concentration for these two months.

However, the total water consumption for the EDS continues to increase, and the recorded amount is considerably higher than the theoretical amount. The theoretical model assumes that the EDS make-up averages 0.05% of the circulated EDS flow rate, based on industry standards for closed-loop systems. The Fourth Quarter FY07 recorded average is approximately 0.17%. The Fourth Quarter FY06 recorded average is approximately 0.10%. TEG will continue to monitor the water usage to determine the source of the increase in metered water usage.

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 fiscal-year-to-date. Under the management of NDE, the System Performance Guarantee levels as described in the ARMA are being achieved quite satisfactorily.

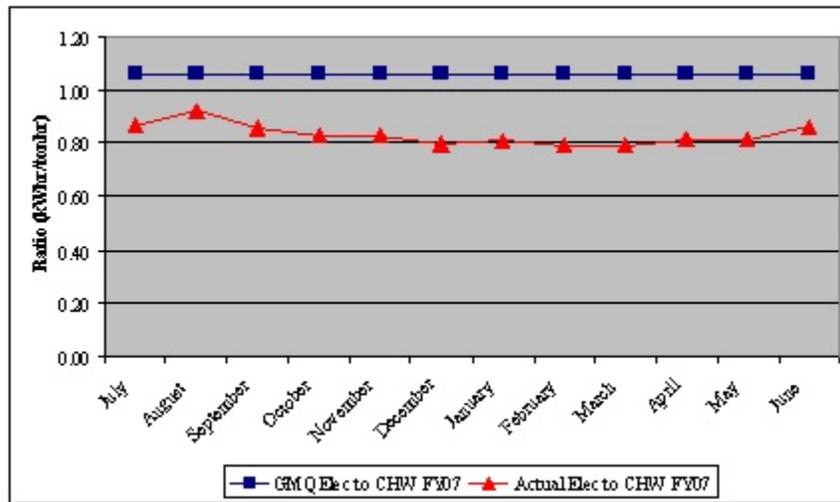


Figure 5. Chilled Water Plant Electric Performance Guarantee Comparison

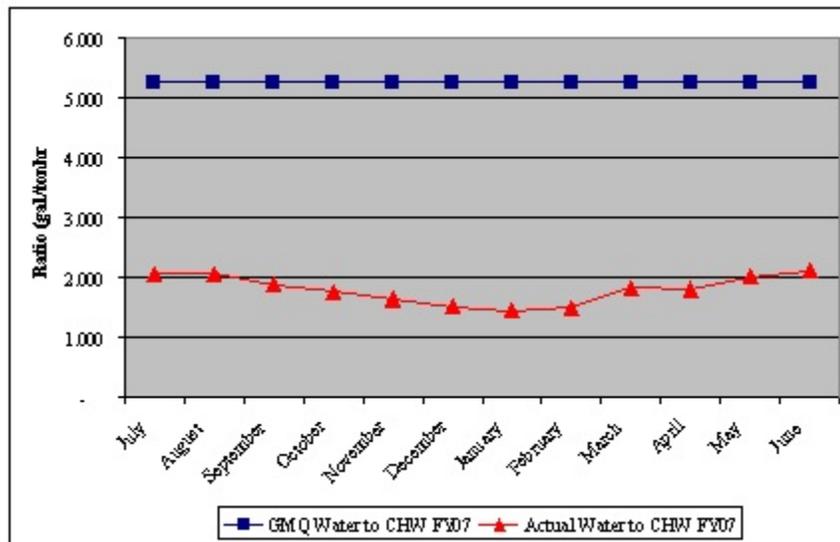


Figure 6. Chilled Water Plant Water Consumption Performance Guarantee Comparison

The chilled water allocation of the electric consumption falls under the GMQ limit of 1.055 kWhr per tonhr over the current fiscal year. The electric usage for the current quarter is approximately 2% less than in the Fourth Quarter for FY06. Also,

the actual chilled water plant water conversion factor is approximately 6.8% greater than in the Fourth Quarter of FY06.

B. Steam

1. Sales and Sendout

The steam sendout decreased by approximately 10% for the current fiscal-year-to-date (FY07) over the previous fiscal-year-to-date (FY06), and the sales decreased by approximately 24%. Steam system losses were approximately 31% of the sendout compared to 22% from the previous Fourth Quarter. The number of heating degree days increased by approximately 42% over the same periods. The peak steam demand for the current fiscal-year-to-date is 80,563 pounds per hour. This value reflects an approximate 16% increase of the previous fiscal-year-to-date (FY06). A comparison for the Fourth Quarter steam sales is shown in Figure 7.

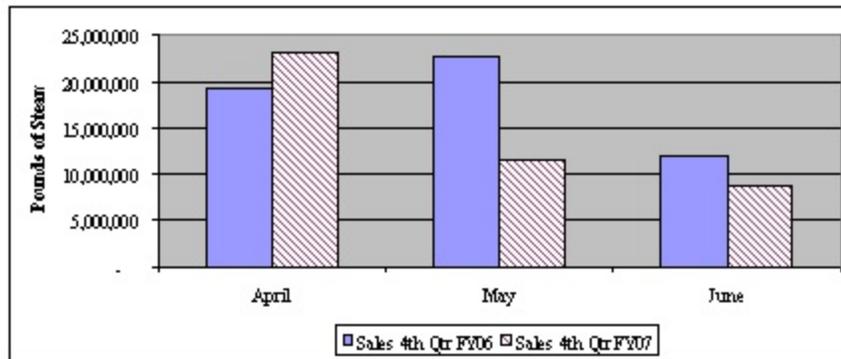


Figure 7. Fourth Quarter Steam Sales Comparison

For the total fiscal year, the annual steam sales were 322,648 Mlbs to all of the customers. With an annual peak demand (as recorded at the EGF) of 122,250 pounds per hour, the annual heating load factor is 36.68%.

Figure 8 shows the steam sales, sendout and losses for the previous twelve (12) 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. The number of heating degree days per month are also tracked for comparison.

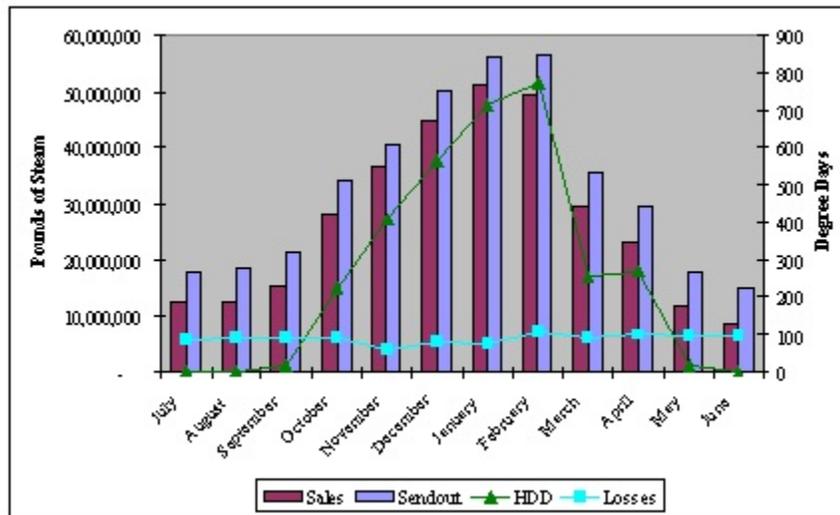


Figure 8. Steam Sales, Sendout and Losses for FY07

The peak steam demand for the current quarter is 80,563 pounds per hour and equates to an approximate 16% increase in demand over the previous Fourth Quarter. The heating load factor for the current quarter, relative to sendout, is approximately 35.4% and reflects a decrease in the heating load factor from the previous Fourth Quarter of approximately 31%.

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. An apparent increase in EDS losses (approximately 21% from the previous Fourth Quarter) is noted, however, a significant amount of condensate is currently being returned to the EGF with the repairs to the condensate return line between Manholes 18 and L. The amount of EDS steam loss should be expected to decrease in future quarters.

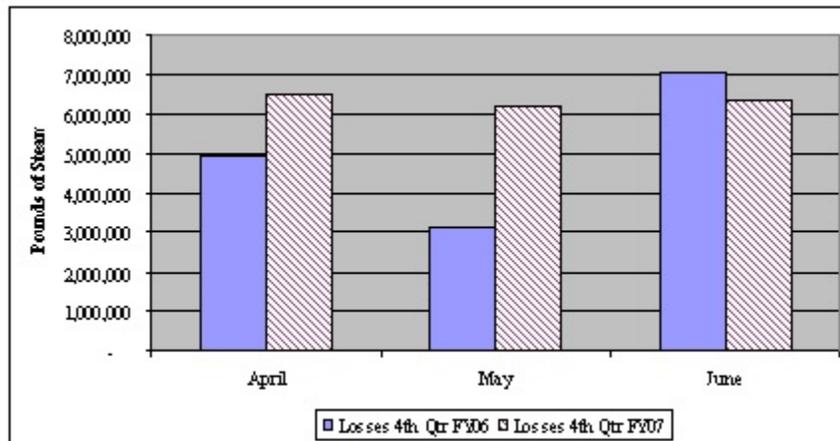


Figure 9. Fourth Quarter Comparison of the Steam Losses Between the EGF and the Customers

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. A decrease in the mass loss is noted with a comparison between the Fourth Quarter data for FY06 and FY07 of approximately 52%, due largely to an increase in the amount of condensate return to the EGF. This data is shown in the comparison of Fourth Quarter data in Figure 10.

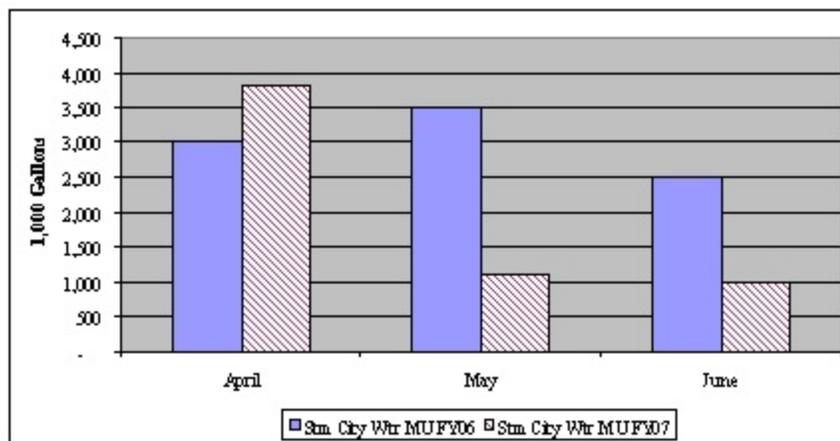


Figure 10. Steam System City Water Make-up Comparison

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 NDE, the System

Performance Guarantee levels as described in the ARMA are being achieved quite satisfactorily. The fuel and water consumptions remain below the GMQ for the quarter and current fiscal year. The electric usage for the current quarter is approximately 22% greater than in the Fourth Quarter for FY06.

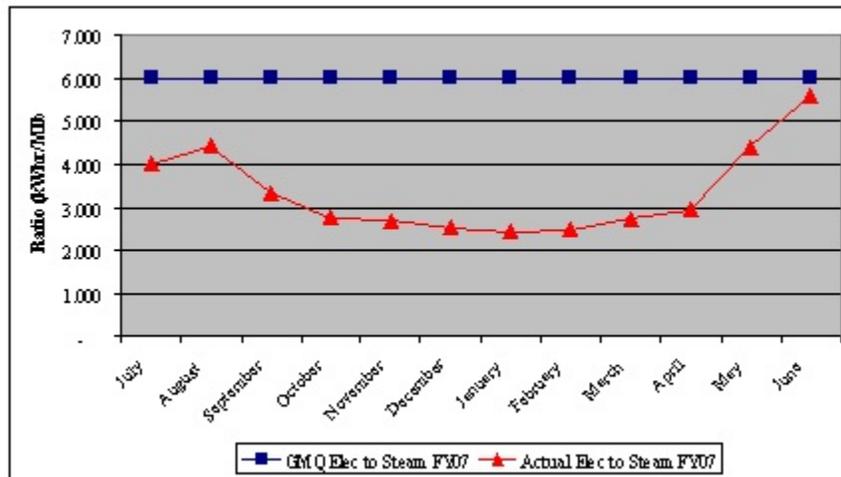


Figure 11. Steam Plant Electric Performance Guarantee Comparison

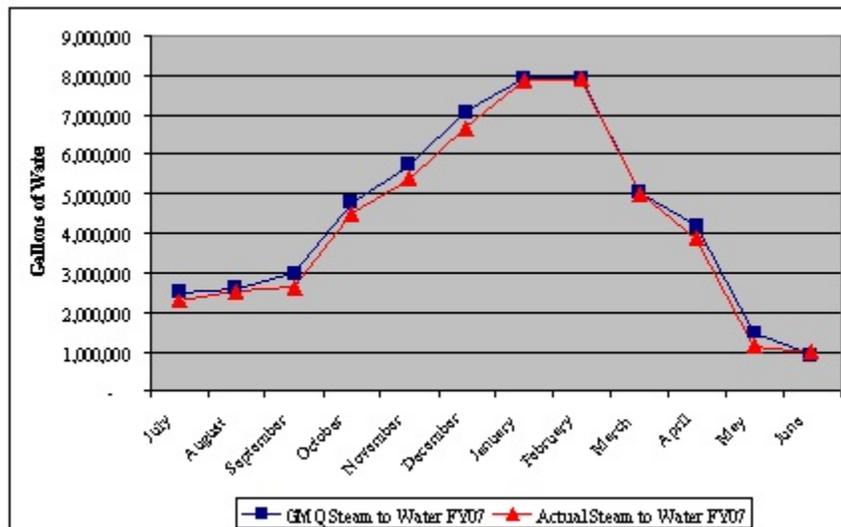


Figure 12. Steam Plant Water Consumption Performance Guarantee Comparison

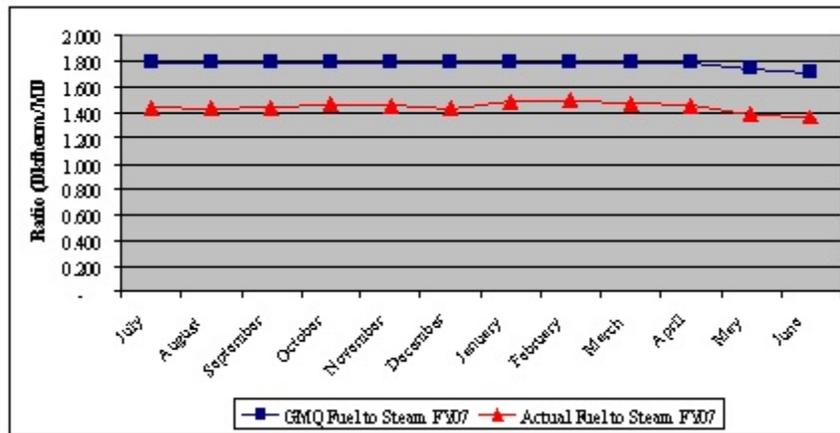


Figure 13. Steam Plant Fuel Consumption Performance Guarantee Comparison

C. Contract Guarantee Performance

The production and sales performance for the EGF and EDS are summarized in Table 1. Additional parameters, such as cooling tower blowdown and peak demands are listed in this table, as well. Table 2 presents the Fourth Quarter comparison of the Guaranteed Maximum Quantities (GMQ) of the criteria commodities (fuel, water and electricity).

Table 1. EGF Production and Sales Performance Comparison

	Unit	Fourth Quarter FY07	Fourth Quarter FY06	*Percent Difference	Total Year FY07	Total Year FY06	*Percent Difference
	days	91	91	0.00%	365	365	0.00%
Electric Use	kWhrs	13,759,053	13,734,173	0.18%	52,122,731	48,209,465	7.51%
Chilled Water	kWhrs	13,592,110	13,572,996	0.14%	51,182,726	47,323,128	7.54%
Steam	kWhrs	166,943	161,177	3.45%	940,005	886,337	5.71%
Water Use	kgal	42,836	42,725	0.26%	177,177	157,393	11.17%
Total Chilled Water	kgal	36,915	33,715	8.67%	126,910	111,495	12.15%
EDS Make-up	kgal	4,113	2,549	38.03%	12,942	6,826	47.26%
Cooling Towers	kgal	32,802	31,166	4.99%	113,968	104,669	8.16%
Calc CT Evaporation	kgal	30,900	31,139	-0.77%	115,054	105,166	8.59%
Calc CT Blowdown	kgal	1,902	27	98.56%	-1,086	-497	54.27%
Calc #Cycles		16.25	1,137	-6897.38%	-106	-212	-99.86%
Steam	kgal	5,921	9,010	-52.17%	50,267	45,898	8.69%
Total Fuel Use	mmBTU	87,767	100,370	-14.36%	570,146	517,691	9.20%
Natural Gas	mmBTU	87,767	99,745	-13.65%	569,952	516,020	9.46%
Propane	mmBTU	0	625	N/A	194	1,671	-761.34%
Condensate Return	kgal	1,935	12	99.38%	1,951	163	91.65%
b/s		15,778,308	97,308	99.38%	15,910,370	1,328,320	91.65%
Avg Temp	°F	173.0	155.0	10.40%	159.7	155.2	2.82%
Sendout							
Chilled Water	tonhrs	18,468,700	18,646,600	-0.96%	68,604,100	62,554,400	8.82%
Steam	b/s	62,256,000	68,716,000	-10.38%	392,839,000	354,779,000	9.69%
Peak CHWDemand	tonr	16,251	16,251	0.00%	17,300	16,251	6.06%
Peak SteamDemand	lb/hr	80,563	67,844	15.79%	122,250	108,781	11.02%
CHWLF		52.04%	52.54%	-0.96%	45.27%	43.94%	2.93%
SteamLF		35.38%	46.38%	-31.07%	36.68%	37.23%	-1.49%
Sales							
Chilled Water	tonhrs	16,355,933	16,021,454	2.05%	60,720,304	52,304,033	13.86%
Steam	b/s	43,183,394	53,629,316	-24.19%	322,648,258	304,333,779	5.68%
Losses							
Chilled Water	tonhrs	2,112,767	2,625,146	-24.25%	7,883,796	10,250,367	-30.02%
Steam	b/s	19,072,606	15,086,684	20.90%	70,190,742	50,445,221	28.13%
		30.64%	21.96%		17.87%	14.22%	
Degree Days							
CDD		658	566	13.98%	2,026	2,023	0.15%
HDD		286	166	41.96%	3,241	3,322	-2.50%

*positive percent difference values imply an increase from FY06 to FY07

Table 2. GMQ Calculations and Performance Guarantees

GMQ Calculations	Unit	Fourth Quarter FY07	Fourth Quarter FY06	*Percent Difference	Total Year FY07	Total Year FY06	*Percent Difference
Steam							
GMQ Elec Conversion	kWhr/Mlb	6.00	6.00		6.00	6.00	
Electric Conversion	kWhr/Mlb	3.87	3.01	22.26%	2.91	2.91	0.04%
GMQ Plant Efficiency	Dth/Mlb	1.774	1.778		1.778	1.778	
Plant Efficiency	Dth/Mlb	1.410	1.461	-3.61%	1.451	1.459	-0.54%
Actual %CR		25.3442%	0.1416%	99.44%	4.0501%	0.3744%	90.76%
Avg CR Temp	°F	173	155	10.40%	160	155	2.82%
GMQ Water Conversion	gal	6,553,498	9,675,447		53,148,099	49,837,636	
Water Conversion	gal	5,980,210	9,100,100	-52.17%	50,769,670	46,356,980	8.69%
Chilled Water							
GMQ Elec Conversion	kWhr/tonhr	1.055	1.055		1.055	1.055	
Electric Conversion	kWhr/tonhr	0.831	0.847	-1.94%	0.843	0.905	-7.34%
GMQ Water Conversion	gal/tonhr	5.25	5.25		5.25	5.25	
Water Conversion	gal/tonhr	2.26	2.10	6.76%	2.09	2.13	-1.99%

*positive percent difference values imply an increase from FY06 to FY07

D. Customer Costs

The total costs for steam and chilled water to each of the customers include the pass-through charges, energy charges and capacity charges. The cost to the EGF for chemical treatment, water, sewer, engineering, insurance, EDS electric use and EDS maintenance are pass-through charges that are divided among the customers based on their contract demands or monthly consumption of steam and chilled water.

The capacity charges vary depending on the contract demand for steam and chilled water. Beginning in the Fourth Quarter, the actual customer demands for steam and chilled water were reviewed to determine if any excursion above the contract amounts occurred. During this quarter, the Ryman Auditorium was the only customer to have their contract demand adjusted (steam). The Thermal Inefficiency Fuel Surcharge (TIFS) also came into effect this quarter with the commissioning of the new customer metering system. Several customers have incurred this additional charge due to their inability to provide a return chilled water temperature in accordance with their contract amounts.

The energy charges are the pass-through cost for energy required to produce the chilled water or steam. Electricity is the only energy source used to produce chilled water, but natural gas, propane and electricity are used to produce the steam. The allocation between the customers for these costs is based on the monthly consumption of the commodity purchased.

The thirty-eight customer buildings are divided into three categories: privately-owned, Metro Government-owned and State Government-Owned. Currently, seventeen privately owned buildings receive steam and/or chilled water service from the DES. Metro Government manages and owns eight of the customer buildings, and the State of Tennessee owns thirteen of the buildings. The following table provides a summary of the annual costs and consumptions for the customers according to ownership category. The total costs shown are the total costs paid by each customer and represent the revenue from energy sales.

Table 3. FY07 Total Annual Customer Costs

Building	Chilled Water			Steam		
	Total Cost	Consumption (tonhrs/yr)	Unit Cost (\$/tonhr)	Total Cost	Consumption (MB/yr)	Unit Cost (\$/MB)
Private Customers	\$ 3,853,255.53	22,930,446	\$ 0.1680	\$ 2,662,179.45	102,948.03	\$ 25.859
State Government	\$ 3,140,562.32	19,226,530	\$ 0.1633	\$ 3,172,637.33	114,311.53	\$ 27.754
Metro Government	\$ 2,897,346.11	18,563,328	\$ 0.1561	\$ 2,916,772.25	105,388.70	\$ 27.676
Total	\$ 9,891,163.96	60,720,304	\$ 0.1629	\$ 8,751,589.03	322,648	\$ 27.124

Total Revenue \$ 18,642,752.99

E. Total Operating Costs

The total Operations cost of the DES includes the utility charges (water, sewer, electricity, etc.), the FOC, the FEA and maintenance costs. The total budgeted cost for these items was \$18,065,440. An additional \$5,370,614 was also budgeted for the debt service for the 2002A and 2005B bonds and for the Operating Reserve Funding (ORF) amount. Therefore, the total budget for the annual FY07 operating costs was \$23,436,054. The budgeted revenue from steam and chilled water sales was \$21,153,871, resulting in a budgeted Metro Funding Amount (MFA) of \$2,282,182.

The actual Operations cost for FY07 for the DES was \$15,572,244 (approximately 86% of the budgeted amount). The total amount of the actual debt service and ORF was \$5,370,609, thus the total actual operating costs were \$20,942,853 (approximately 89% of the budgeted amount). However, the total net revenue from sales was \$18,642,753 (88% of budgeted amount), resulting in a net balance of \$2,300,100. The difference between this value and the budgeted MFA will be required as an adjustment of \$17,918 to the Initial System Customers upon completion of the True-up calculations. The following table provides a summary of the budgeted and actual operating costs for FY07.

Table 4. FY07 Budgeted and Actual Operating Costs

Item	FY07 Budget	FY07 Actual Costs	% of Budget
FOC Basic	\$3,659,463	\$3,659,463	100.00%
9th Chiller	\$34,289	\$34,290	100.00%
C/O 6A	\$67,698	\$67,698	100.00%
C/O 6B	\$59,267	\$56,230	94.87%
Chemicals	\$132,870	\$152,008	114.40%
Engineering	\$53,788	\$0	0.00%
Insurance	\$32,632	\$39,883	122.22%
Marketing - CES Sales Activity	\$30,000	\$21,544	71.81%
- Metro Marketing	\$59,700	\$37,716	63.18%
- Incentive Payments	\$28,528	\$28,415	99.60%
- Metro Project Admin	\$61,300	\$0	0.00%
Metro Incremental Cost	\$592,100	\$654,023	110.48%
Water	\$693,918	\$520,489	75.01%
Natural Gas	\$8,015,491	\$6,238,268	77.83%
Electricity	\$4,318,594	\$3,722,836	86.20%
EDS Repair & Improvement	\$161,363	\$11,729	5.19%
EDS Surcharge	\$64,438	incl.	
FEA Steam		\$182,556	
CHW		\$145,098	
Subtotal - Operations	\$18,065,440	\$15,572,244	86.20%
Debt Service 2002 Bonds	\$4,299,502	\$4,299,500	100.00%
2005 Bonds	\$637,838	\$637,838	100.00%
Oper. Reserve Funding Deposit	\$433,274	\$433,272	100.00%
Total	\$23,436,054	\$20,942,853	89.36%
Revenue	\$21,153,871	\$18,642,753	88.13%
Metro Funding Amount	\$2,282,182	\$2,300,100	100.79%

III. EGF Operations

Items relating to the facility operations presented herein are derived from the reports issued by NDE for the months of April, May and June 2007. Communication between TEG and NDE has proven to be excellent, and NDE has reported and managed all EGF operations satisfactorily and according to agreement.

A. Reliability

The principle issues surrounding the reliable operation of the EGF relates to the ability to operate without interruption, exclusive of planned outages, and disruption of service to the customers. NDE reported several disruptions in service during the quarter, but the duration of each was short and had negligible apparent effects on the customers. The reliability issues are summarized in this section.

- The planned steam outage occurred on April 8 and 9. Several repairs were made to the steam and condensate systems during this outage. The repair and activation of the new steam and condensate lines between Manholes 18 and L were completed permitting the return of condensate to the EGF from the DES and customers. The duration of this outage was approximately thirty-one hours.
- The EDS condensate return to the EGF was fully restored on April 23rd.
- The chiller plant was shut down on June 16 to repair a cracked thermowell. The plant was unable to produce chilled water for approximately one hour around midnight.
- The chiller plant experienced a power surge from NES on June 14 causing the plant to trip. The outage occurred by a failed NES capacitor resulting in a voltage transient. The plant was offline for approximately 20 minutes during the late morning.
- Due to recorded hardness and iron content in the condensate samples, the condensate return to the EGF was drained in the tunnel on June 22nd until the cause of the problem could be determined. Upon investigation, NDE found the source of the contaminants to be the heat exchangers at the Renaissance Hotel and Convention Center. The customers transferred their heating load to different heat exchangers to solve the problem. The condensate system was restored to normal on June 28th.
- For FY07, and exclusive of the planned steam outage, NDE reports that the steam pressure to the EDS fell below 150 psig only twice for a total time of 139 minutes. The chilled water supply temperature is reported to have increased above 43.5°F a total of ten times during the fiscal year for a total excursion time of 245 minutes.

B. Efficiency

Beginning on April 1, the contractual performance guarantees became enforced. The operation of the EGF satisfied the guaranteed levels for all commodity usage except for the water usage to the steam plant. This value was recorded higher than the allowable level during the month of June due to an increase in the boiler blowdown and the washing of the boiler internals with softened water. A more detailed discussion of the contract guarantee performance was presented previously in this report.

C. Environment, Health and Safety

The annual and semi-annual emissions monitoring reports were completed and submitted as required. No environmental violations were reported during the quarter.

There were no employees reported to be on light duty and were no reported lost-time accidents during the quarter. Monthly safety meetings were conducted by HazMat, Inc. And the Metro Fire Department.

D. Personnel

Steven Bowman was hired by NDE as a maintenance mechanic on April 23rd. Stephen Bowers was hired as an instrument technician on April 30th. The EGF currently has twenty-six full time employees, of which, nineteen were former employees of the Nashville Thermal Transfer Corporation.

E. Training

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

F. Maintenance and EGF Repairs

NDE continues to report on the numerous maintenance and preventive maintenance 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.

- The motor for CWP #4 failed on May 2nd due to an internal short circuit. The motor was repaired by Tennessee Electric Motor and re-installed on May 18.
- The gaskets for chillers #7 and #8 were replaced by Trane in May and on chiller #6 in June due to refrigerant leaks.
- A new distribution system condensate return meter and a new soft water meter were installed in May.
- Repair was made on several aspects of the chemical feed systems for both the steam and chilled water systems.
- Various other minor repairs, regular and preventive maintenance items were completed throughout the EGF during the quarter.

G. EGF Walk-through

A quarterly Walk-through of the EGF was performed on July 17 by Jon Belcher, P.E., Kevin Jacobs, P.E. and Dan Coyle of TEG. This review involved a tour of the facility with the primary points of interest and concern noted herein.

- The access hatch for DA #2 was open. Upon observing the internals, a crack or tear in the metal of the internals could be observed at the location of a support. The cause of the tear or crack should be established and reported. DA #1 should be inspected for similar problems. The following is photograph of the defect observed.



- The logbook continues to indicate several control system reboots occurring regularly and frequently.
- The level control valve for the cooling tower makeup was noted numerous times in the log during the June. No mention of it was made in July. The operator confirmed that maintenance addressed the problem and the actuator was repaired.
- Boilers #2 and #4 were shut down with the drums and furnaces open for inspection and repair. The drums and internals appeared clean. The west furnace wall of boiler #4 has a flame scorch mark or carbon deposit.
- The compressors for chillers #7 and #8 appeared to be sweating. Water was pooled on the flow near these two chillers.
- At various other locations throughout the plant, puddles of water and other debris were observed. Some water puddles appeared to be associated with work that was on-going. Nevertheless, effort should be made to manage or control the spills and to clean up the other locations.
- Numerous cracks in the outside concrete walls were noticed. NDE appears to have repaired some of these cracks.
- The re-grading and sloping of the area at the west face of the EGF has not been completed. These repairs could help prevent further settling of the foundation and soil erosion.
- Other items noted in the Third Quarter report appear to have been addressed by NDE.

IV. Capital Projects

The Capital Projects discussed in this section are those projects funded through the issuance of bonds by Metro. The status of scheduling of the projects are discussed, and the end of quarter cost status is also presented.

A. Fourth Quarter Open Projects

The following projects remained open at the end of the Fourth Quarter of FY07.

1. DES004, 021, 022 - Customer Metering

The Work relating to this project is complete, and NDE began operating under the terms of the ARMA on April 1, 2007. Additional work is required at the Wildhorse Saloon and Municipal Auditorium. The Work at the Wildhorse as been approved, designed and is scheduled to begin in the First Quarter of FY08. The additional design for the Municipal Auditorium is complete, and the formal bidding of the work is scheduled to begin in the First Quarter of FY08.

Additional investigations by TEG regarding the decoupled chilled water customers began in the Fourth Quarter in order to improve the performance of the systems for these customers. The evaluation and potential design and construction phases of this work is expected to be completed during the First Quarter FY08.

2. 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. No work was reported for this project during the Fourth Quarter FY07. This project will remain open.

3. DES035 - Condensate Line Replacement from MH 5 to 6

The vast majority of the Work for this project is complete. However, additional insulation is required in MH 6. This Work is expected to be completed by the end of the First Quarter FY08.

4. DES040 - EDS Tunnel Lighting Rehabilitation Phase II

Work on this project began during the Fourth Quarter and is expected to be completed by the end of the First Quarter FY08.

5. DES041 - Symphony Condensate Repair

The discharge of the condensate return from MH B4, originating from the Symphony building, was reported to have damaged some sewer piping near the manhole. At the end of the Fourth Quarter, TEG was evaluating options for the repair of this system.

6. DES042 - Regions Bank Condensate Line Repair

Due to a previous failure, the condensate line between MH 3 and 4 was isolated, and the condensate from the steam traps in MH 4 was piped into the Regions Bank building where it was drained to the sewer. The condensate has collapsed and is in need of replacement. Economic evaluations were performed regarding the repair of the condensate line between MH 3 and 4 to return the condensate to the EGF. The results of this evaluation indicate that the condensate line between MH 4 and Regions Bank should be repaired in lieu of restoring the condensate return to the EGF. The design of these modifications were begun in FY07 but will not be complete until the First Quarter FY08.

B. Fourth Quarter Closed Projects

1. DES017 - Tennessee Tower Decoupling

The construction Work related to this project was complete prior to this quarter. However, this project remained open during the Fourth Quarter FY07 due to issues surrounding the performance of the installed system. TEG investigated these issues and presented a report to Metro on April 5, 2007 recommending the inspection and cleaning of the new heat exchangers. The State and Metro have reached an agreement for the funding of the additional Work required. The inspection, cleaning and additional Work are expected to be completed during the FY08.

2. DES020 - Renaissance Hotel Metering and Piping

The construction Work related to this project was complete prior to this quarter. However, this project remained open during the Fourth Quarter FY07 due to issues with the mechanical seals to the new pumps. TEG continues to investigate the remaining issues with the assistance of the Nashville Machine Company and expects to present Metro with a resolution during the First Quarter FY08.

3. DES024B - MH 18 to L Steam and Condensate Replacement

The Work for this project was completed during the Fourth Quarter. The submission of the closeout documents are expected during the First Quarter FY08.

4. DES029 - Tennessee Tower Condensate Line Replacement

The Work for this project was completed during the Fourth Quarter. The submission of the closeout documents are expected during the First Quarter FY08.

5. DES037 - James K Polk Steam and Condensate Service Line Replacement

The Work for this project was completed during the Fourth Quarter. The submission of the closeout documents are expected during the First Quarter FY08.

C. Capital Projects Budget

The following table in summarizes the reported expenditures and remaining balance of the DES capital projects at the end of the FY07. Open projects or completed projects that require some additional management are shown. Projects that were closed during FY07 are shown with a gray highlight. The total, historic budget and expenditures of the 2002A Bond are not shown; the values shown reflect the more recent projects.

Table 5. Bond Project Summary at End of FY07

DES Project #	Description	Total Budget	Total Spent to End of FY07	Remaining Balance
2002A Bond Projects				
DES017	TN Tower Decoupling	\$ 1,350,422.00	\$ 1,223,600.23	\$ 126,821.77
	Interest Earned	\$ -	\$ (1,285.53)	\$ 1,285.53
	Total Closed Projects	\$ 2,377,280.59	\$ 2,377,280.59	\$ -
	Total 2002A Bond	\$ 3,727,702.59	\$ 3,599,595.29	\$ 128,107.30
2005B Bond Projects				
DES020	Renaissance Decoupling	\$ 538,818.00	\$ 575,864.58	\$ (37,046.58)
DES004, 021, 022	Customer Metering	\$ 1,676,439.40	\$ 1,675,825.26	\$ 614.14
DES042	Regions Cond Line Replacement	\$ -	\$ 1,236.12	\$ (1,236.12)
DES018	Library Connection	\$ 767,151.00	\$ 767,149.11	\$ 1.89
DES019	Symphony Connection	\$ 2,470,924.00	\$ 2,471,812.06	\$ (888.06)
DES027	Viridian Connection	\$ 1,546,969.00	\$ 1,611,435.27	\$ (64,466.27)
	Project Development	\$ 1,186,710.03	\$ 315,570.26	\$ 871,139.77
	Total 2005B Bond	\$ 8,187,011.43	\$ 7,418,892.67	\$ 768,118.76
2007 Bond Projects				
DES024B	MH 18 to L Steam/Cond	\$ 818,206.00	\$ 775,113.68	\$ 43,092.32
DES029	Tn Tower Cond Line	\$ 317,031.00	\$ 254,276.63	\$ 62,754.37
DES035	MH 5 of MH 6 Cond Line	\$ 489,688.00	\$ 393,867.51	\$ 95,820.49
DES037	JK Polk Cond Line	\$ 413,123.00	\$ 385,017.79	\$ 28,105.21
DES040	Tunnel Lighting Ph II	\$ 152,551.00	\$ -	\$ 152,551.00
DES034	State Tunnel Communications	\$ 20,500.00	\$ 20,509.00	\$ (9.00)
DES038	Wachovia Cond Line	\$ 83,016.00	\$ 69,646.50	\$ 13,369.50
DES039	2" State Cond Line	\$ 80,233.00	\$ 67,255.66	\$ 12,977.34
	Project Development	\$ 484,152.00	\$ 13,941.59	\$ 470,210.41
	Total 2007 Bond	\$ 2,858,500.00	\$ 1,979,628.36	\$ 878,871.64

D. Future Projects (FY08)

Several projects are anticipated by NDE for FY08. A list of these projects was submitted to Metro on during the Third Quarter for their consideration and are shown in Table 6. The

funding for each of the projects listed in Table 6 have been approved, but construction is not expected to begin until the completion of all open capital projects.

Table 6. Proposed Future Project List for FY08

Description	Estimated Cost
Condensate Line Replacement:	
MH 5 to MH 9 on 5 th Ave	\$550,000
MH 6 to MH 23 on Union St	\$550,000
at the Sheraton Hotel	\$150,000
at the Ryman Auditorium on 4 th Ave	\$150,000
State Steam Tunnel	\$325,000
Tunnel Lighting & Electrical Phase III	\$90,000
Temporary Boiler Connection at MH 15	\$93,500
MH and Tunnel Insulation Repair & Replacement	\$100,000
Tunnel & MH Access Modifications at MH 22	\$220,000
Expansion Joint Replacement at 4 th Ave Tunnel North of MH 17	\$20,000
<u>PM/Contingency/EDS Upgrades</u>	<u>\$500,000</u>
Total	\$2,748,500

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

Several EDS repairs and improvements were made during the Fourth Quarter. A steam system shut-down on April 8 and 9, facilitated the completion of several capital projects and EDS maintenance. 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 items listed herein fall outside the scope of the DES Project Work.

- The actuator for the temperature control valve at the Nashville Public Library was repaired in May, but was reported to be continuing having problems in June. Additional work may be required with this system.

- Additional design and construction repair is required for the 4th Ave Tunnel exhaust fan. Work on this project is progressing and is anticipated to be complete in the First Quarter of FY08.
- Minor work was performed at several of the customer buildings relating to steam and condensate leaks.
- The DES meter internet connection was completed for the Nashville City Center on June 12th.
- The remaining value of the R&I budget at the end of the Fourth Quarter FY07 is \$286,764.52. Table 7 provides a summary of the FY07 expenditures and revenues associated with the R&I budget.

Table 7. Repair and Improvement Budget Summary FY07

Description	Date	Tracking #	Vendor	Expenditure	Transfers	Net Market Adjustment	Market Value	Balance
Market Value and **Cost Value** at end of FY06						\$ -	\$ 183,264.22	\$ 183,142.68
G08 Task (C009-0.52 (G08) - May 2006)	07/07/06	D/E-571	G08	\$ 3,882.95				
G08 Task (C009-0.52 (G08) - May 2006)	07/07/06	D/E-570	G08	\$ 354.76				
Repair Condensate Line at Jervis K. Park Building	07/13/06	D/E-581	NDE, LLC	\$ 5,400.00				
Repair Payment Several MH's on 2nd Ave North	07/13/06	D/E-579	NDE, LLC	\$ 12,729.00				
Repair Condensate Line on 2nd Ave North	07/13/06	D/E-580	NDE, LLC	\$ 5,092.90				
G08 - Task (G20199-05 2 (G08) - May 2006)	07/21/06	D/E-584	G08	\$ 400.76				
175 Historic Courthouse Project - Cond Line Replacement	08/10/06	D/E-605	Herm	\$ 31,528.00				
G08 - Task (G20199-05 2 (G08) (G20199-05) repair G08 07/06)	08/30/06	D/E-619	G08	\$ 1,222.45				
Sub-Total First Quarter FY07				\$ 111,071.32	\$ 56,450.25	\$ (197.55)	\$ (54,811.62)	\$ (54,621.07)
M1200610181018200601 MH MH Data	12/04/06	D/E-675	E2P	\$ 2,400.00				
Sub-Total Second Quarter FY07				\$ 2,400.00	\$ 56,450.25	\$ 245.41	\$ 54,263.66	\$ 54,050.25
M1200611221122200601 MH MH	01/04/07	D/E-694	E2P	\$ 3,400.00				
Sub-Total Third Quarter FY07				\$ 3,400.00	\$ 56,450.25	\$ 247.16	\$ 53,289.41	\$ 53,042.25
G08 Task (C009-0.52 (G08) - Feb 2007)	04/03/07	D/E-548	G08/G07	\$ 407.40				
Repair 30 Amp Breaker on AA Birch Tunnel and material to replace lat	05/08/07	D/E-557	NDE, LLC	\$ 461.04				
175 M1-2017041603P 04/16/07 MH 4,9,10,11,13 & W (Labor & City Security)	05/08/07	D/E-557	NDE, LLC	\$ 160.00				
City Security	06/21/07	D/E-608	NDE, LLC	\$ 420.00				
Condensate Repair MH-83 for period of 4/29/07 - 6/2/07	06/15/07	D/E-611	TEG	\$ 3,851.40				
Sub-Total Fourth Quarter FY07				\$ 5,299.84	\$ 56,450.25	\$ 146.05	\$ 51,297.66	\$ 51,150.41

FY07 Year to Date	\$ 122,179.16	\$ 225,801.00	\$ 412.07	\$ 20,797.13	\$ 286,764.52
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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.

- EDS Tunnel and Manhole Inspections: There continues to be lighting failures along 7th Avenue. Rock continues to fall from the ceilings in the tunnels under Broadway and 7th Avenues. There are several steam and condensate leaks. The repair of portions of the mechanical and electrical systems in the tunnels and manholes were completed during the April 8 and 9 steam system shut-down, but NDE reports that additional repairs are required.
- State Tunnel Inspections: NDE advises the replacement of expansion joints, valves, condensate piping and steam trap assemblies.

- Reviews of several customer meter installations were made upon determination of their energy consumptions for their monthly bills. In each case, the meters were determined to be operating properly.
- A faulty shedder bar in the steam meter to the Tennessee Tower building was replaced on April 24th.
- The thermo-graphic review of the EDS revealed “hot spots” in the following areas: 5th Ave and Deaderick St, in the sidewalk near the James K Polk Building and near First Ave and Broadway at MH L. NDE will continue monitoring these areas to determine if repair is warranted.

C. Emergencies

NDE did not report any emergencies with the EDS during the quarter.

D. EDS Walk-through

Coincident with this quarterly report, Jon B. Belcher of TEG made site observations in a few of the EDS manholes. Because the majority of Metro’s investment in the district energy system is in the steam and chilled water distribution system, TEG will begin reviewing the monthly manhole inspection reports from NDE and include a quarterly walk-through of the distribution system. The principle observations relative to the manholes reviewed are presented herein. Only a portion of the manholes were reviewed, and site visits through the tunnels were not made.

- Housekeeping
 - In general, significant debris is present in many of the manhole floors and presents a safety hazard. This debris should be removed from all of the manholes.
 - The condition of some of the platforms, rails and ladders potentially pose safety hazards. Repairs and maintenance to these items should be addressed relative to industry standards.
- Manhole “K”
 - There is an opening to a lower level that presents a safety hazard; this opening should be covered or a railing should be erected around the opening.
 - The steam service line primary isolation valve is leaking and should be repaired.
- 4th Ave Tunnel Manhole & 7th Ave Tunnel Manhole
 - There are supplies and debris on the elevated platform which present a safety hazard; these platforms should be kept clean and in an orderly manner.
 - There are openings in the handrails on the elevated levels that are not secured and present a safety hazard; safety chains should be installed across these rail openings.

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.

A. Marketing

- Of the six potential new customers identified in the Third Quarter FY07 report, only the Westin Hotel remains a potential customer.
- The NDE Marketing Plan was issued to DES during the Fourth Quarter.
- NDE reports investigating the possible construction of potential customers along Gateway Corridor.
- The Country Music Hall of Fame is currently experiencing problems with their air-cooled chillers and have discussed the possibility of receiving services from DES. Additional meetings and further discussion is expected in the First Quarter FY08.

B. Customer Interaction

- The DES customers were notified regarding the planned outage that occurred on April 8 and 9. The customers were notified by email when the system was operational again.
- Various customers reported steam or condensate leaks at their buildings during the quarter. NDE responded to each of these reports and made the necessary repairs or assisted building personnel in repairing the leaks.
- NDE personnel assisted the Nashville City Center in back-washing their plate and frame heat exchanger that decouples them from the DES chilled water system on April 6.
- Several customers contacted either NDE or TEG regarding their invoices during the quarter. In each case, the consumptions for the months in question appeared to be in agreement with the historic data. NDE investigated the metering station at each of the concerned customer and reported that the metering equipment was operating appropriately.
- In April, TEG authorized the adjustment to the chilled water return temperature setpoint at the John Sevier building from 55°F to 52°F.
- The Property Management Company that manages the Sun Trust Bank, Parkway Towers and the Wachovia Plaza contacted NDE in April requesting that the steam service to these buildings be closed during the cooling season. NDE performed subsequently isolated these buildings from the DES steam system.
- In May, TEG authorized the adjustment to the chilled water return temperature setpoint at the State Capitol building from 49°F to 47°F. This adjustment is valid for sixty days at the request of the State Capitol Facility Manager.

- Several tours of the EGF were given to customers and the customer's representatives during the quarter.
- Due to multiple steam demand excursions exceeding their contract demand, the steam demand for the Ryman Auditorium was increased from 954 pph to 1,143 pph. This new demand, and demand penalty, will be in effect for the next twelve months.
- Chilled water service was re-connected to the newly renovated Ben West building on June 22.
- The Spring newsletter was issued during the Fourth Quarter.

VII. Recommendations

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

- As mentioned in the Third Quarter report, further investigation is recommended regarding the addition of automated O₂-trim to the boilers. This increase in automation may increase the fuel efficiency of the boilers and may have a relatively short return on investment. TEG will begin the investigation of the economic benefit related to this modification during the First Quarter FY08.
- Due to the apparent soil erosion on the west face of the EGF, NDE should determine if the terrain on the west side of the EGF needs regrading to prevent rainwater from flowing into and under the foundation wall. These repairs could help prevent further settling of the foundation and soil erosion.
- TEG will continue to monitor and investigate the apparent excessive city make-up water usage to the chilled and condensing water systems. NDE should also continue to monitor these systems to assist in determining the source of the water loss.
- TEG asked NDE to include a discussion of the EGF water treatment in their monthly reports and to provide TEG with the water treatment contractor's (Chemtreat) monthly chemistry report. TEG will review and monitor the EGF and EDS water treatment as part of the regular monthly monitoring activities.
- The condition of the platforms, ladders and handrails in some of the manholes should be addressed to reduce the potential for safety hazards.
- The debris present in the manholes should be removed.