

Operations Monitoring Report

Second Quarter FY12

Prepared by:

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I. Executive Summary

A review of the fiscal year 2012 (FY12) Second Quarter performance and contract obligations between Constellation Energy (CNE) and the Metropolitan Government of Nashville and Davidson County (Metro) is presented in this report by Thermal Engineering Group, Inc (TEG). The status of the available funds for all active capital construction and repair and improvement projects are also presented. For the fiscal year 2012, CNE has satisfactorily met all of the contract obligations to Metro and has had no contract violations.

For the Second Quarter FY12, the chilled water sales increased by approximately 4.4% over the previous Second Quarter (FY11). The Second Quarter FY12 saw a decrease in cooling degree days from the previous Second Quarter by approximately 62%; however, the Second Quarter has historically experienced very few cooling degree days. The peak chilled water demand for the current quarter was 10,909 tons, which is approximately 7.6% lower than the previous Second Quarter.

A decrease in the steam sendout for the current quarter of approximately 6.9% over the previous Second Quarter is noted along with a 17% decrease in heating degree days. Likewise, steam sales also decreased by approximately 8.2% over the previous Second Quarter. Steam system losses were approximately 13.5% of the sendout, which was higher than in the previous Second Quarter (relative to sendout). The peak steam demand for the current quarter was 99,438 pounds per hour, which represents an approximate 19% decrease from the previous Second 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 and was slightly higher than the value from the previous Second Quarter. The steam plant electric consumption increased approximately 8.1% over the previous Second Quarter. The steam plant fuel efficiency has increased marginally from the previous Second Quarter. The total water consumption for the steam and chilled water plants increased approximately 3% from the previous Second Quarter. The chilled water EDS make-up has increased by approximately 87%, indicative of distribution piping leaks. However, the steam plant make-up decreased by approximately 20.7% over the previous Second Quarter.

Work continued on DES Capital and Repair & Improvement Projects during the Second Quarter of FY12. DES061B and DES083 were closed during the Second Quarter. Work began on DES076, DES080, DES090 and DES094 during the Quarter. It is anticipated that work will begin on DES048 and Phase II of DES094 during the Third Quarter FY12; that DES076 will be substantially completed during the Third Quarter FY12; and that DES080, DES 090 and DES - 93 will be closed out during the same quarter. Installation of the new EGF chilled water pumps began during the quarter in anticipation of service to the new Music City Convention Center in April 2012. Repair and Improvements to the EDS continue as scheduled.

The current fiscal year system operating costs to date are \$8,768,144. This value represents approximately 42.2% of the total budgeted operating cost for FY12. The customer revenues from the sales of steam and chilled water for FY12 (to date) are \$8,316,002 which is approximately 45.2% of the budgeted amount. The difference between the operating costs and customer revenue is the Metro funding amount (MFA), which represents the shortfall in cash flow for the system. The MFA transferred to date for the First Quarter FY12 is \$1,181,500 (50% of budget). However, the actual MFA required cannot be accurately calculated due to the outstanding invoices.

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II. Energy Distribution Sales and Performance

A. Chilled Water

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

1. Sales and Sendout

A comparison for the Second Quarter chilled water sales is shown in Figure 1. This data reflects an increase in sales for the current quarter over the same quarter of the previous fiscal year by 4.4%. However, a comparison of the two quarters reveals a decrease in the number of cooling degree days by approximately 62.2%. The Second Quarter has historically had very cooling degree days, but this quarter has experienced much very than normal.

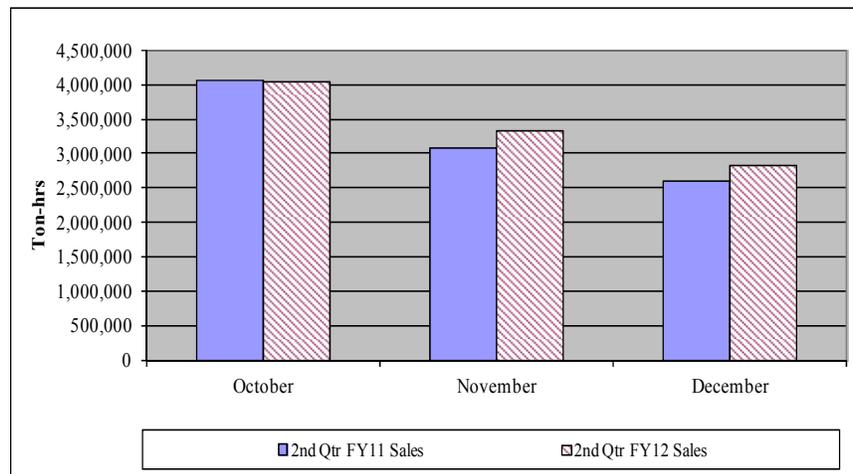


Figure 1. Second Quarter FY12 Sales Comparison

The peak chilled water demand for the current quarter is 10,909 tons. This peak demand is approximately 7.6% lower than in the previous Second Quarter.

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

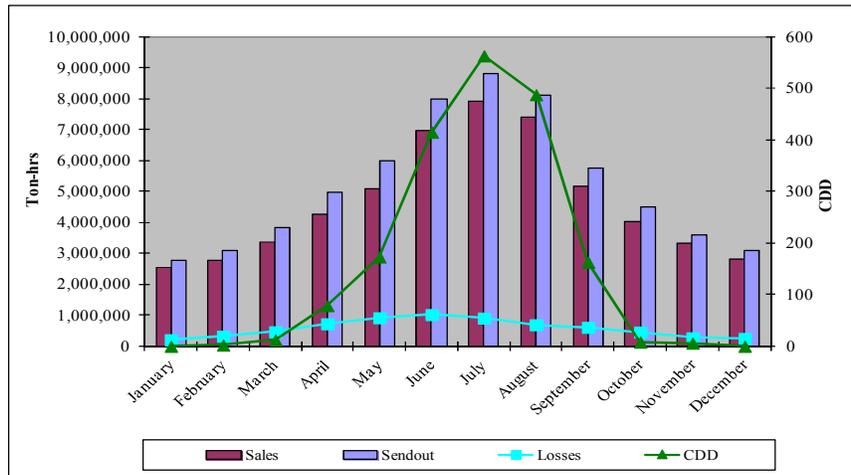


Figure 2. Chilled Water Sales, Sendout, Losses and CDD for the Previous Twelve Months

2. Losses

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

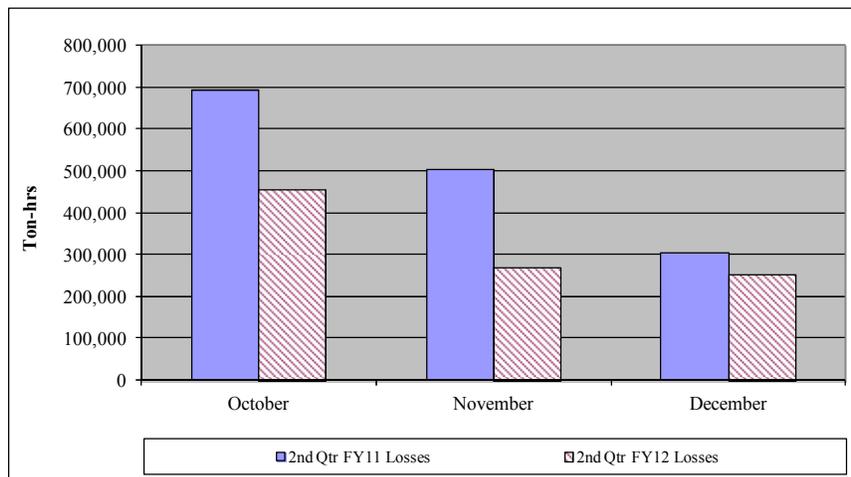


Figure 3. Chilled Water System Loss Comparison for the Second Quarter FY12

The EDS make-up increased by approximately 87% over the previous Second Quarter. This increase may be indicative of an additional leak in the system. The

total energy losses have decreased by approximately 35% over the previous Second Quarter. The make-up to the cooling towers increased by approximately 2.4%. The number of cycles of concentration in the condensing water circuit experienced an 11% increase during the current Second Quarter. The overall city water make-up comparison for the chilled water system is shown in Figure 4.

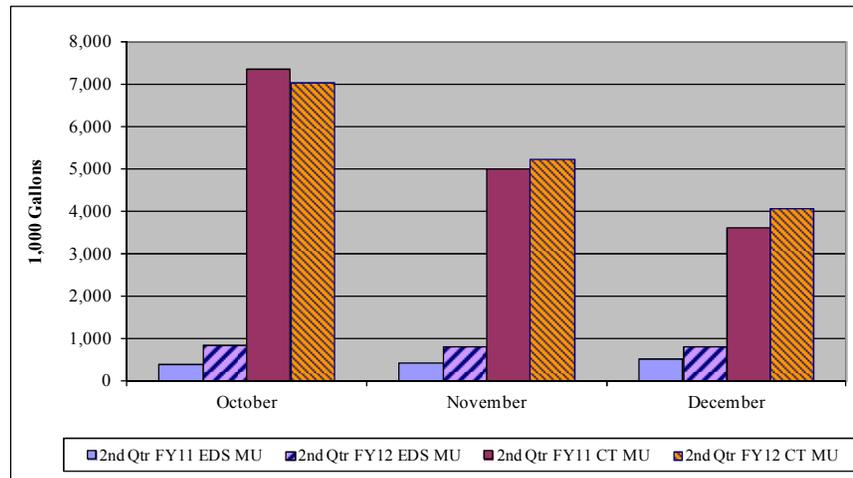


Figure 4. Chilled Water System City Water Usage Comparison

3. Performance

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

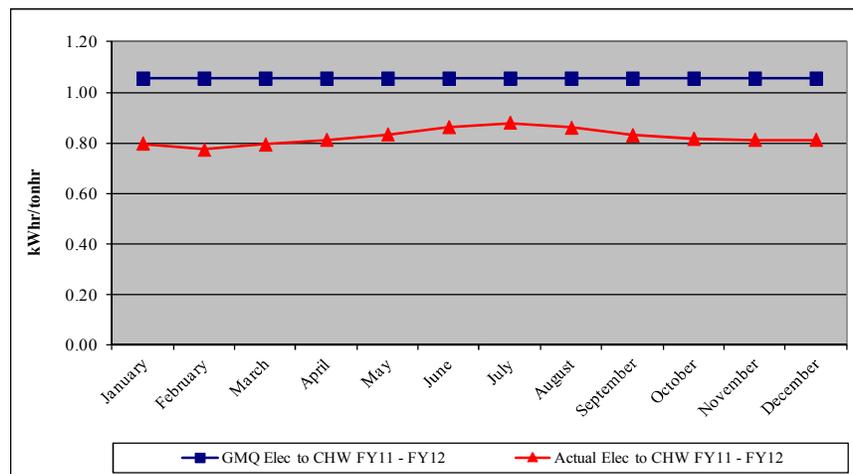


Figure 5. Chiller Plant Electric Performance Guarantee Comparison for the Previous Twelve Months

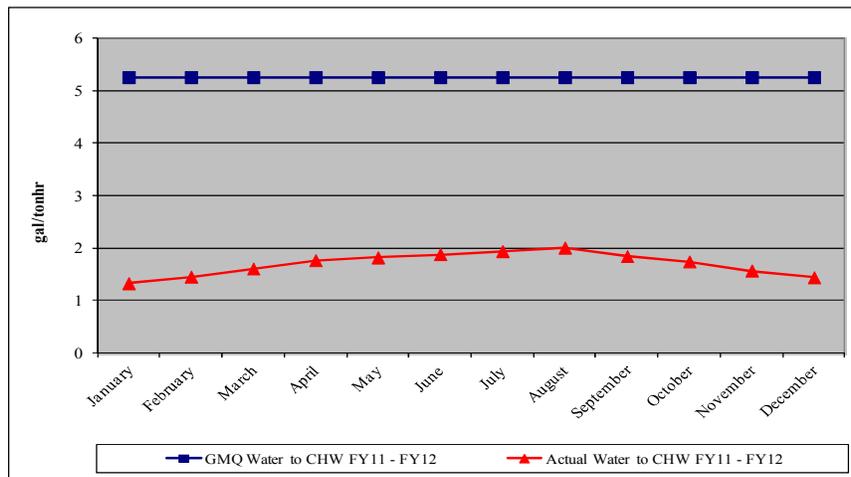


Figure 6. Chiller Plant Water Consumption Performance Guarantee Comparison for the Previous Twelve Months

The chilled water allocation of the electric consumption falls under the GMQ limit of 1.055 kWhr per tonhr for the current quarter, and no excursion is reported for the current fiscal year. The chiller plant electric usage for the current quarter increased approximately 4.6% over the Second Quarter for FY11. The actual electric conversion factor increased marginally in the quarter.

The actual chilled water plant water conversion factor increased approximately 4.2% over the previous second Quarter. The total consumption of city water for the chiller plant for the current quarter is approximately 8.8% higher than that for the previous Second Quarter.

B. Steam

1. Sales and Sendout

The steam sendout decreased by approximately 6.9% over the previous Second Quarter (FY11), and the sales decreased by approximately 8.2%. The steam system losses increased approximately 10% relative to sendout. The number of heating degree days have decreased by 17% over the previous Second Quarter. A comparison for the Second Quarter steam sales is shown in Figure 7.

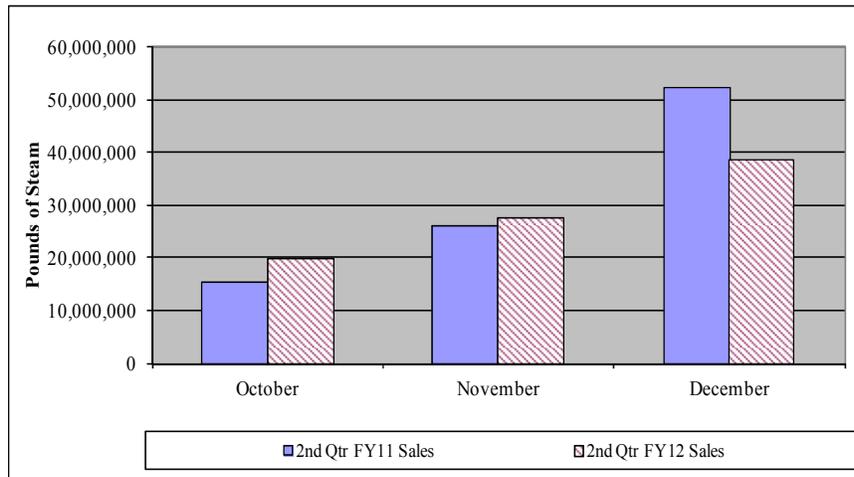


Figure 7. Steam Sales Comparison for the Second Quarter FY12

The peak steam demand for the current quarter is 99,438 pph, which reflects an approximate 7% decrease in the peak steam production over the previous Second Quarter.

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

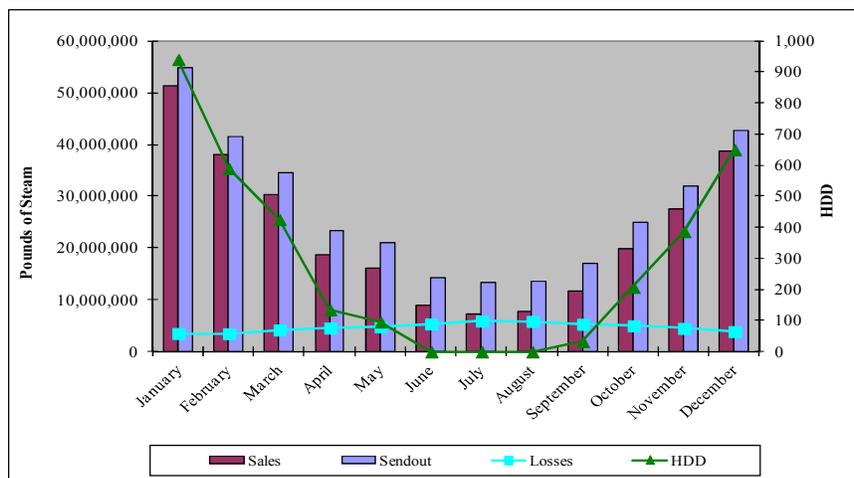


Figure 8. Steam Sales, Sendout, Losses and HDD for the Previous Twelve Months

2. Losses

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

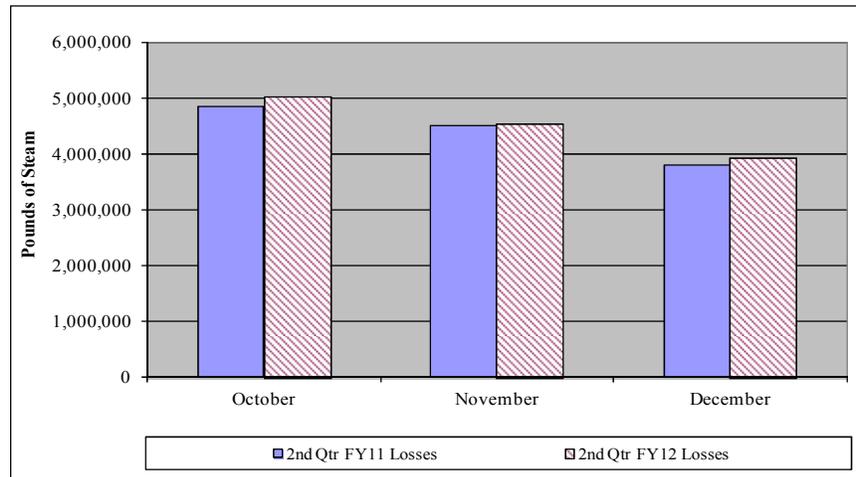


Figure 9. Second Quarter FY12 Steam System Losses

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 Second Quarter data in Figure 10. Figure 10 depicts a decrease in city water make-up to the steam system of approximately 21% for the current quarter. This dramatic reduction in city water make-up is due to the relative low volume of steam sendout and the high volume of condensate return.

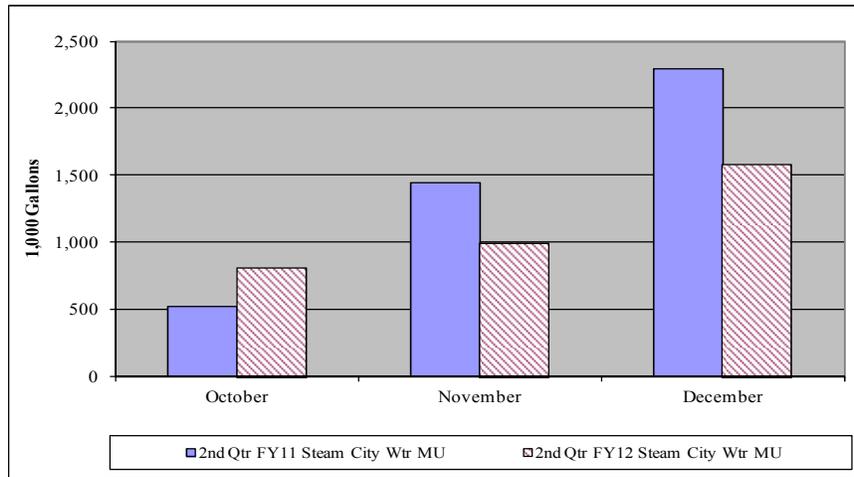


Figure 10. Second Quarter FY12 Steam System City Water Make-up Comparison

3. Performance

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

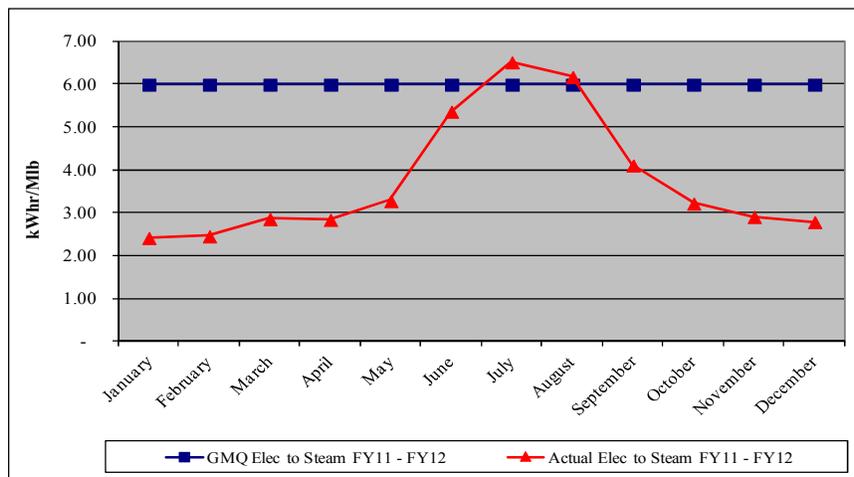


Figure 11. Steam Plant Electric Performance Guarantee for the Previous Twelve Months

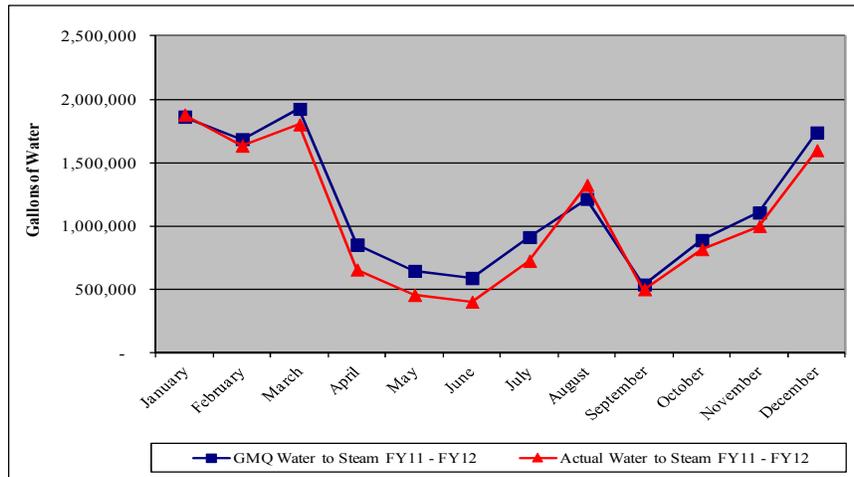


Figure 12. Steam Plant Water Performance Guarantee for the Previous Twelve Months

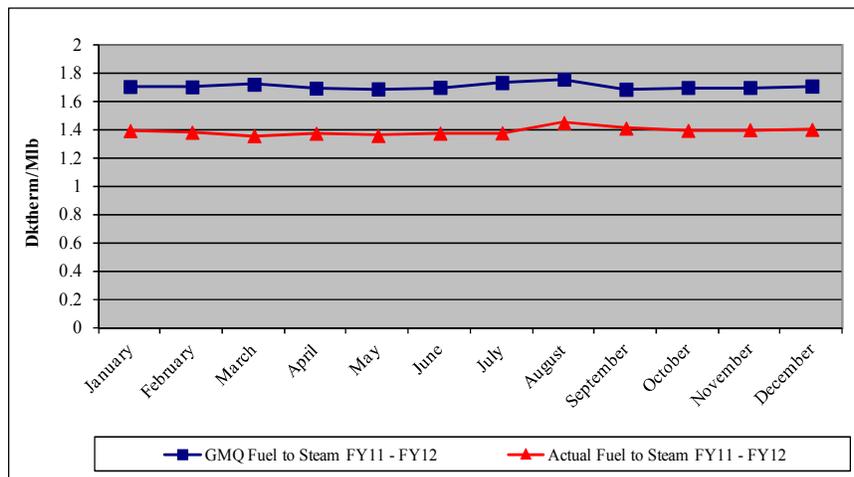


Figure 13. Steam Plant Fuel Performance Guarantee for the Previous Twelve Months

The current quarter experienced a marginal decrease in the steam plant electric consumption while experiencing an 8.1% increase in the electric conversion factor, which is indicative of lower than normal steam production. The water consumption for the steam plant decreased 21% this quarter as compared to the previous Second Quarter. The fuel consumption per unit of steam sales is relatively constant throughout the year and when compared to the historic data. The boiler plant fuel efficiency increased slightly 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 blow-down and

peak demands are listed in this table, as well. Table 2 presents the Second Quarter comparison of the Guaranteed Maximum Quantities (GMQ) of the criteria commodities (fuel, water and electricity).

Table 1. Second Quarter FY12 Production, Sales and Consumption Summary

| Item | Unit | Second Quarter FY12 | Second Quarter FY11 | *Percent Difference |
|---------------------------|--------|------------------------|------------------------|------------------------|
| | days | 92 | 92 | 0.00% |
| Total Electric Use | kWhrs | 8,538,728 | 8,176,513 | 4.43% |
| Chilled Water | kWhrs | 8,286,095 | 7,921,747 | 4.60% |
| Steam | kWhrs | 252,633 | 254,766 | -0.84% |
| Total Water Use | kgal | 22,090 | 21,464 | 2.92% |
| Total Chilled Water | kgal | 18,712 | 17,205 | 8.76% |
| EDS Make-up | kgal | 2,424 | 1,294 | 87.33% |
| Cooling Towers | kgal | 16,288 | 15,911 | 2.37% |
| Calc CT Evaporation | kgal | 13,996 | 13,464 | 3.95% |
| CT Blowdown | kgal | 2,292 | 2,447 | -6.33% |
| Calc # Cycles | | 6.11 | 5.50 | 10.98% |
| Steam | kgal | 3,378 | 4,259 | -20.69% |
| Total Fuel Use | mmBTU | 139,192 | 150,034 | -7.23% |
| Natural Gas | mmBTU | 139,135 | 147,977 | -5.98% |
| Propane | mmBTU | 57 | 57 | n.a. |
| Condensate Return | kgal | 8,965 | 9,291 | -3.51% |
| | lbs | 73,117,195 | 75,773,556 | -3.51% |
| Avg Temp | °F | 162.0 | 164.7 | -1.62% |
| Sendout | | | | |
| Chilled Water | tonhrs | 11,156,800 | 11,247,200 | -0.80% |
| Steam | lbs | 99,574,000 | 106,994,000 | -6.93% |
| Peak CHW Demand | tons | 10,909 | 11,800 | -7.55% |
| Peak Steam Demand | lb/hr | 99,438 | 122,719 | -18.97% |
| CHW LF | | 46.32% | 43.17% | 7.30% |
| Steam LF | | 45.35% | 39.49% | 14.85% |
| Sales | | | | |
| Chilled Water | tonhrs | 10,177,203 | 9,750,192 | 4.38% |
| Steam | lbs | 86,098,466 | 93,831,026 | -8.24% |
| Losses | | | | |
| Chilled Water | tonhrs | 979,597 | 1,497,008 | -34.56% |
| Steam | lbs | 13,475,534 | 13,162,974 | 2.37% |
| | | 13.53% | 12.30% | 10.00% |
| Degree Days | | | | |
| CDD | | 14 | 37 | -62.16% |
| HDD | | 1,244 | 1,498 | -16.96% |

*positive percent difference values imply an increase from FY11 to FY12

Table 2. Second Quarter FY12 Performance Guarantee Comparison for Steam and Chilled Water

| GMQ Calculations | Unit | Second Quarter FY12 | Second Quarter FY11 | *Percent Difference |
|----------------------|------------|------------------------|------------------------|------------------------|
| Steam | | | | |
| GMQ Elec Conversion | kWhr/Mlb | 6.00 | 6.00 | |
| Electric Conversion | kWhr/Mlb | 2.93 | 2.72 | 8.07% |
| GMQ Plant Efficiency | Dth/Mlb | 1.700 | 1.701 | |
| Plant Efficiency | Dth/Mlb | 1.398 | 1.402 | -0.31% |
| Actual %CR | | 73.43% | 70.82% | 3.68% |
| Avg CR Temp | °F | 162 | 165 | -1.62% |
| GMQ Water Conversion | gal | 3,730,491 | 4,402,179 | |
| Water Conversion | gal | 3,411,780 | 4,301,590 | -20.69% |
| Chilled Water | | | | |
| GMQ Elec Conversion | kWhr/tonhr | 1.055 | 1.055 | |
| Electric Conversion | kWhr/tonhr | 0.814 | 0.812 | 0.21% |
| GMQ Water Conversion | gal/tonhr | 5.25 | 5.25 | |
| Water Conversion | gal/tonhr | 1.84 | 1.76 | 4.20% |

*positive percent difference values imply an increase from FY11 to FY12

D. Operating Costs

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

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

The system operating costs for FY12 to date are \$8,768,144. This value represents approximately 42.2% of the total budgeted operating cost for FY12 and include expenses to date that have been invoiced but were not paid at the time of this report. Additional invoices are that would be charged to the Second Quarter have not been issued or paid at the time of this report. The customer revenues from the sales of steam and chilled water for FY12 are \$8,316,002 which is approximately 45.2% of the budgeted amount. The

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 | \$ 2,183,752 | 11,168,508 | \$ 0.1955 | \$ 729,535 | 35,581 | \$ 20.5037 |
| State Government | \$ 1,866,858 | 9,322,469 | \$ 0.2003 | \$ 940,221 | 41,299 | \$ 22.7660 |
| Metro Government | \$ 1,789,795 | 10,146,122 | \$ 0.1764 | \$ 820,943 | 36,074 | \$ 22.7570 |
| New Customers | \$ 728,102 | 3,732,866 | \$ 0.1951 | \$ 111,854 | 5,446 | \$ 20.5397 |
| Total | \$ 5,840,406 | 30,637,099 | \$ 0.1906 | \$ 2,490,699 | 112,954 | \$ 22.0505 |

| | | |
|-------------------------|----|-----------|
| Total Revenue | \$ | 8,331,105 |
| True-up and Adjustments | \$ | (15,103) |
| Net Revenue | \$ | 8,316,002 |

III. EGF Operations

Items relating to the facility operations presented herein are derived from the monthly reports issued by CNE for FY12. Communication between TEG and CNE continues to be excellent, and CNE has reported and managed all EGF operations satisfactorily and according to the ARMA with no contract violations.

A. Reliability

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

- In November, the chillers tripped twice while performing equipment maintenance causing the chilled water sendout temperature to rise above 43.3°F for approximately 30 minutes each time.
- While performing a boiler blowdown in December, the boiler tripped causing the steam sendout pressure to be less than 150 psig for approximately 45 minutes until another boiler could be started.
- Other minor occurrences of higher than normal chilled water supply temperatures are included in the Monthly Operational Reports from CNE.

B. Efficiency

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

C. Environment, Health and Safety

No environmental violations were reported during the quarter.

Monthly safety meetings were held on Safe Work Practices, Storm Water Pollution Prevention, Steam System Safety and Refrigerant System Safety.

D. Personnel

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

E. Training

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

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.
 - The condensate return averaged 73.4% of the steam sendout during the quarter.
- 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 control of the system chemistry continues to be excellent.

G. Maintenance and EGF Repairs

CNE continues to report on the numerous routine maintenance and preventive maintenance activities performed on the EGF primary and ancillary equipment. The

principle items are discussed herein as they relate to the repair, maintenance or replacement of equipment or devices at the facility and are not considered extraordinary. The cost for these items is included as part of the FOCs.

- The mortar seams in the expansion yard walls were repaired during the quarter.
- The strap-on ultra sonic flow meter was installed on the chilled water piping.
- Some of the foundation wall cracks were repaired.
- Other minor repairs and maintenance were made during the quarter and are listed in the monthly reports issued by CNE.

H. EGF Walk-through

A quarterly Walk-through of the EGF was performed on January 4, 2012, by Kevin Jacobs, P.E. with TEG. This review involved a tour of the facility with the primary points of interest and concern noted herein.

- Many of the housekeeping items noted in the previous walk-through have been repaired or resolved.
- Other minor items remaining include:
 - A light fixture is in need of repair on the chiller plant operating floor;
 - Corrosion is noted to have returned on the riser piping in the cooling towers; these may soon need cleaning and re-painting;

IV. Capital Projects

The Capital Projects discussed in this section are those projects funded through the issuance of bonds by Metro. Costs for these projects will be paid from funds already appropriated. The statuses of the projects are discussed, and the project cost-to-date and bond balances are also presented.

A. Second Quarter FY12 Open Projects

The following projects remained open at the end of the Second Quarter FY12.

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. The final phase had been postponed pending the completion of the Tunnel Rock Rehabilitation Project

(DES067). DES067 was completed during the Fourth Quarter FY11, therefore this final phase of the tunnel lighting and electrical upgrades was bid during the First Quarter of FY12. The start of this project was delayed because the successful bidder was not registered with Constellation as an approved bidder. The bidder has now been approved by Constellation and work is anticipated to begin during the Third Quarter FY12.

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

The project number for this work has been updated to DES090. The Broadway, 4th Avenue and 7th Avenue Tunnel insulation repairs were begun and almost completed during the Second Quarter FY12. It is anticipated that this work will be completed during the Third Quarter FY12. Work associated with this project will be ongoing as required.

4. DES061B – Manhole 3 and 4 Structural Repairs

This work was completed and closed out during the Second Quarter FY12.

5. DES076 – Manhole S4A Rehabilitation

This work was approved by the State and construction began in the middle of the Second Quarter FY12. Several unforeseen changes needed to be made during the construction process, however, to date, none of these changes warranted a change order. The underground work was substantially completed during the Second Quarter FY12 and it is anticipated that the site restoration will be completed during the Third Quarter FY12.

6. DES077 – Music City Center Service Connection

Although a few punchlist items remain, a certificate of substantial completion was issued in the Second Quarter FY12. Start-up of the new steam and condensate lines occurred on October 2, 2011.

Additional aspects of this project include the MCCC metering station, the cooling tower testing and the modification of the EGF chilled water pumps. The work on the MCCC metering station is subject to the schedule of the internal construction of the building. This aspect of the project is expected to be completed prior to the need of chilled water service in April 2012.

The installation of the new chilled water pumps and the new motors began during the quarter. This work is expected to be completed, including testing, during the Third Quarter FY12.

The cooling tower testing is complete. The new ultra-sonic meter for the EGF chilled water was installed during the quarter.

7. 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.

This project was bid and awarded during the First Quarter FY12. Work began during the Second Quarter FY12 and the project is expected to be completed during the Third Quarter FY12.

8. DES083 – Manhole 13 Leak Repair

This project was closed during the Second Quarter FY12.

9. DES088 – Andrew Jackson Steam Tunnel PRV Control

The contractor has been selected for this project and all submittals were approved during the quarter. This work is anticipated to begin and to be completed during the Third Quarter.

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

The evaluation of the feasibility of thermal storage is on-going.

11. DES092 – Sheraton Chilled Water Pumps

The contractor for this project has been selected and equipment is on-order. The work is anticipated to be completed during the Third Quarter FY12.

12. DES093 – Manhole 6 Repair and Structural Rehabilitation

The traps in Manhole 6 were not functioning and there is a condensate leak in this manhole which has existed for some time. In addition, the structural steel in this manhole needs cleaning and painting. Due to the immediate need for the replacement of the traps, this project was undertaken to address the additional items which need to be repaired. Work began and was substantially completed on this project during the Second Quarter FY 12. It is anticipated that this project will be closed during the Third Quarter FY12.

13. DES 094 – Molloy Street Exploratory Dig

As a result of the monthly thermographic surveys, a new “hot spot” appeared just east of Manhole B2. In addition, the vent and drain of the underground steam line is emitting steam, indicating that there is a breach in the steam line’s conduit system. The first phase of this work was started and substantially completed during the Second Quarter FY12. Several conduit breaches were repaired; however steam is still being vented from the conduit. Based on this, it is believed that additional conduit breaches exist on the pipeline where it crosses 1st Avenue. Planning is in place to excavate across 1st Avenue during the Third Quarter FY12 to make additional repairs.

B. Second Quarter FY12 Closed Projects

The following projects were closed during the First Quarter FY12: DES061B and DES083. The on-going work associated with DES060 has been renumbered to DES090.

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 FY12. Open projects or completed projects that require some additional management are shown. Total costs for projects that are closed are shown with a gray highlight. Only the funds currently available are shown.

Table 5. Capital Projects Expense Summary

| DES Project # | Description | Total Budget | FY12 Spending to Date | Total Spent to Date | Remaining Balance |
|-------------------------------------|---|---------------------|--------------------------|------------------------|----------------------|
| 2005B Bond Projects | | | | | |
| DES-061 | Tunnel Steel Corrosion | \$ 250,000.00 | \$ 4,718 | \$ 68,862 | \$ 181,138 |
| DES-048 | Tunnel Lighting Phase III | \$ - | \$ 525 | \$ 525 | \$ (525) |
| DES-063 | Sump Pump MH-A, B and M | \$ - | \$ 3,326 | \$ 3,326 | \$ (3,326) |
| Total Closed Projects | | \$ 7,320,301 | \$ - | \$ 7,759,672 | \$ (439,371) |
| Project Development | | \$ 616,199 | \$ 14,428 | \$ 293,328 | \$ 286,516 |
| Total 2005B Bond | | \$ 8,186,500 | \$ 22,997 | \$ 8,162,067 | \$ 24,433 |
| 2010 Bond Projects | | | | | |
| DES067 | Tunnel Rock Repair | \$ 1,176,354 | \$ 35,512 | \$ 1,097,604 | \$ 78,750 |
| DES070 | MH 6 to 23 Cond Line | \$ 250,000 | \$ - | \$ 527 | \$ 249,473 |
| DES071 | Hermitage Hotel Ser Modifications | \$ 125,000 | \$ - | \$ 1,119 | \$ 123,881 |
| DES072 | Sheraton Stm & Cond Line | \$ 150,000 | \$ 4,630 | \$ 5,430 | \$ 144,570 |
| DES076 | MH S4A Rehabilitation | \$ 50,000 | \$ 3,827 | \$ 17,321 | \$ 32,679 |
| DES088 | AJ/State Tunnel Steam PRV Air Control | \$ 25,000 | \$ 2,287 | \$ 2,287 | \$ 22,713 |
| DES091 | NES Time of Use Electric Rate | \$ 50,000 | \$ 17,824 | \$ 48,200 | \$ 1,800 |
| DES092 | Sheraton CHW Pumps | \$ 56,750 | \$ 2,037 | \$ 2,203 | \$ 54,547 |
| Total Closed Projects | | \$ 495,000 | \$ 33 | \$ 349,191 | \$ 145,809 |
| Metro Project Admin | | \$ - | \$ - | \$ - | \$ - |
| Project Man, Development, etc | | \$ 31,896 | \$ - | \$ - | \$ 31,896 |
| Total 2010 Bond | | \$ 2,410,000 | \$ 66,151 | \$ 1,527,801 | \$ 882,199 |
| MCCC Construction Fund | | | | | |
| DES077 | Music City Convention Center Design/Const | \$ 345,900 | \$ 38,679 | \$ 330,872 | \$ 15,028 |
| DES077 | MH-B4 Valve Replacement | \$ 8,000 | \$ - | \$ 7,119 | \$ 881 |
| DES077 | MCCC Metering | \$ 121,870 | \$ - | \$ - | \$ 121,870 |
| DES077 | EGF Cooling Tower Testing | \$ 47,884 | \$ - | \$ - | \$ 47,884 |
| DES077 | EGF Chilled Water Pumps | \$ 598,672 | \$ 496,461 | \$ 496,461 | \$ 102,211 |
| DES077 | Bell/Clark Construction Fund | \$ 4,697,860 | \$ 443,115 | \$ 4,000,151 | \$ 697,709 |
| Metro Project Admin | | \$ - | \$ - | \$ - | \$ - |
| Project Man, Development, etc | | \$ 2,679,814 | \$ - | \$ - | \$ 2,679,814 |
| Total MCCC Construction Fund | | \$ 8,500,000 | \$ 978,254 | \$ 4,834,603 | \$ 3,665,397 |

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

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

A. Repairs and Improvements

Several repairs were made to the EDS and at customer buildings during the quarter. The remaining value of the R&I budget at the end of the current quarter is \$493,446. Table 6 provides a summary of the FY12 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 FY11 | | | | | | \$ - | \$ 403,653.04 | \$ 403,653.04 |
| DES Repair And Improvements, for billing period of (7/3/11 - 7/30/11) | 8/8/2011 | DES-1384 | TEG | \$ 6,452.15 | | | | |
| ADJUSTMENT FROM 2010 BOND | 7/31/2011 | N/A | N/A | \$ (89,912.00) | | | | |
| ADJUSTMENT FROM 2010 BOND | 7/31/2011 | N/A | N/A | \$ (35,478.66) | | | | |
| DES Repair And Improvements, for July 2011 | 8/9/2011 | N/A | CE | \$ 1,282.76 | | | | |
| TEG August Invoice | 9/13/2011 | N/A | TEG | \$ 4,246.12 | | | | |
| CE; DES Proj;DES-086 MH | 9/16/2011 | N/A | CE | \$ 66,589.48 | | | | |
| CE; 401 Union bldg Strm | 9/16/2011 | N/A | CE | \$ 6,924.45 | | | | |
| CE;DES CES Mgmt Fees July | 9/16/2011 | N/A | CE | \$ 2,100.39 | | | | |
| DES R&I 8/28-10/1/11 | 10/6/2011 | N/A | TEG | \$ 1,858.63 | | | | |
| CE; Aug - Sept R&I | 10/28/11 | N/A | CE | \$ 4,688.03 | | | | |
| Sub-Total First Quarter | | | | \$ (31,248.65) | \$ 63,624.99 | \$ - | \$ 94,873.64 | \$ 94,873.64 |
| CE; Proj; DES-083 | 11/21/11 | N/A | CE | \$ 39,731.19 | | | | |
| CE; EMR-11-011 | 11/21/11 | N/A | CE | \$ 1,717.31 | | | | |
| DES CES Mgmt Fees | 11/21/11 | N/A | CE | \$ 3,612.25 | | | | |
| TEG; DES R&I OCT/NOV | 12/02/11 | N/A | TEG | \$ 15,116.22 | | | | |
| CE; OCT 2011 | 12/19/11 | N/A | CE | \$ 1,137.68 | | | | |
| Sub-Total Second Quarter | | | | \$ 61,314.65 | \$ 63,624.99 | \$ - | \$ 2,310.34 | \$ 2,310.34 |
| TEG; DEC 2011 | 1/10/2012 | N/A | TEG | \$ 7,391.19 | | | | |
| Sub-Total Third Quarter | | | | \$ 7,391.19 | \$ - | \$ - | \$ (7,391.19) | \$ (7,391.19) |
| Sub-Total Fourth Quarter | | | | \$ - | \$ - | \$ - | \$ - | \$ - |
| FY12 Year to Date | | | | \$37,457.19 | \$127,249.98 | \$ - | \$493,445.83 | \$ 493,445.83 |

B. Preventive Maintenance

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

1. EDS Tunnel and Manhole Inspections
 - a. MH-B2 continues to require frequent pumping due to the infiltration of water.
 - b. Minor repairs were made during the quarter.
2. State Tunnel Inspections
 - a. CNE continues to monitor some steam and condensate leaks within the tunnel.
 - b. Other minor repairs were made during the quarter.
3. Other EDS Inspections
 - a. The monthly thermographic analyses did not reveal any new hot spots.
 - b. Other minor items are included in the CNE monthly reports.

C. Emergencies

No emergencies were reported during the quarter.

D. EDS Walk-through

The primary EDS walkthrough was conducted on January 19 and 20, 2012, by Jon Belcher, PE with TEG. The structures visited included Manholes 12, 16A, 22B, C, U, Viridian, B2, B3, B4, B5, B6, B7, B8, B9 and B10. The following comments and observations are a result of these visits.

1. Manhole 12
 - a. There was no water in this manhole.
 - b. The trap in this manhole is “blowing through”. This trap needs to be replaced as soon as possible.

2. Manhole 16A
 - a. A safety rail with toe boards has been added to this manhole under DES080. This project is almost complete.
 - b. Minor debris (mostly from DES080) was found in the manhole and cleaned out by CNE personnel during the review – no further action is required.

3. Manhole 22B
 - a. Under DES080, grating has been added to the floor opening in this manhole. This project appears to be almost complete.
 - b. There is some minor mud and debris in this manhole. Some of this debris is related to DES080 that should be removed by the contractor upon completion of his work. The remaining debris should be cleaned by CNE.
 - c. There used to be a vent valve installed on the steam pre-insulated piping casing exiting the manhole to serve the Library. This vent valve is now absent. This vent valve needs to be re-installed.

4. Manhole C
 - a. There was water present in this manhole, and it required pumping before entry.
 - b. The link seal on both the northern and southern steam line penetrations are starting to “back out”. This link seal should be loosened, re-positioned in the wall sleeve and re-tightened.
 - c. The steam trap is “blowing through”. This trap needs to be replaced as soon as possible.

- d. There was a small “pin hole” leak on the trap piping just prior to the trap. This leak was repaired by CNE personnel during the manhole inspection – no further action is required.
5. Manhole U
 - a. The old access ladder wall brackets are still attached to the western wall. These brackets present a potential safety hazard to maintenance personnel and should be removed.
 - b. Steam is wafting from the lower portion of the north manhole wall. (This section of wall consists of stacked block and rock) It is believed that this steam is produced from groundwater contacting the buried steam piping north of the manhole. This piping needs to be excavated and the insulation inspected/replaced. These repairs are not currently budgeted.
 - c. The bottom rung on the access ladder is corroded badly and requires replacement.
 - d. This manhole contains a steam valve. If Manhole 13 has an isolation valve, this valve might be redundant and should be removed and replaced with a pipe spool. This manhole can be filled with sand or flowable fill and eliminated from the maintenance schedule. TEG will investigate the remaining need of this manhole with CNE personnel.
 6. Viridian Manhole
 - a. There was water present in this manhole, and it required pumping before entry.
 - b. No other deficiencies noted.
 7. Manhole B2
 - a. There was water present in this manhole, and it required pumping prior to entry.
 - b. The insulation jacketing on the lower portions of the chilled water supply and return piping has started to fall off due to the water infiltration into the manhole. This insulation should be repaired once the water infiltration problem is remedied.
 - c. Steam is being vented into the manhole from the eastern steam pipeline casing due to breaches in the casing crossing 1st Avenue. These casing breaches are scheduled to be repaired in the very near future.
 - d. Groundwater is leaking into the manhole from the western wall seam where the prefabricated vault sections join. In addition, groundwater is leaking into the manhole at the western chilled water piping wall penetrations. These leaks are scheduled to be repaired in the near future.

- e. There is some corrosion present on the support beam due to the groundwater infiltration. This manhole should be a “Moderate” priority on the “MH & Tunnel Structural Corrosion Prevention/Repair” project list.
 - f. There is some minor damage to the insulation/lagging on the trap piping. This damage should be repaired when the chilled water insulation is repaired and after the groundwater leak is remedied.
 - g. There is moisture on the chilled water supply and return piping near the eastern wall penetrations. It is difficult to discern whether this moisture is from the groundwater infiltration or a leak in the chilled water piping casing. This should be monitored.
 - h. There is some minor groundwater seepage around the eastern chilled water piping wall penetrations. The contractor that is used to make the other groundwater leak repairs should be asked to evaluate whether these penetrations should be repaired also.
 - i. There is condensate on the ceiling in several places; this should be monitored to see if the condensate goes away after the groundwater repairs are made.
 - j. There is some minor debris in the manhole due to the failure of the insulation/lagging. This should be cleaned when the insulation repairs are done.
8. Manhole B3
- a. There was not any standing water in the vault.
 - b. The steel structural components in this manhole need to be cleaned of all rust and painted to prevent further corrosion. This vault should be a “Low” priority on the “MH & Tunnel Structural Corrosion Prevention/Repair” project list.
9. Manhole B4
- a. There was standing water in the vault and it required pumping prior to entry.
 - b. There was some minor debris in the manhole; it appears most of the debris is the result of contractor work in the manhole related to DES 077. Removal of this debris is the responsibility of the MCCC contractor.
 - c. CNE personnel installed expanding foam in the annular space between the piping jacket and the wall sleeves to reduce the potential for ground water infiltration. At this point, it appears that the foam has decrease the amount of water leaking into the vault. These penetrations should be monitored and if leaks develop, reported to TEG.

10. Manhole B5
 - a. This manhole is an open “moat” along the southern side of the Symphony. Per the customer service agreement, the City is responsible for the maintenance of the piping in this “moat” up to the isolation valves after the metering devices. Therefore, this “manhole” should be inspected regularly by CNE.
 - b. There was a small steam leak on the steam strainer flange that houses the strainer basket. The bolts on this strainer flange were tightened by CNE personnel and the leak was stopped. This should be monitored.
 - c. The link seals at the chilled water piping penetrations in the “moat” wall do not seal against the pipe; it does not appear that these link seals were installed properly when the Symphony was constructed. There is not any indication that groundwater has leaked through this penetration. These penetrations should be monitored and any groundwater leakage reported to TEG.

11. Manholes B6 through B10
 - a. Manholes B6 through B9 were reviewed, however since the installing contractor has not completed his work, comments regarding maintenance needs are premature as they pertain to CNE.
 - b. Manhole B10 was not reviewed as it was not accessible due to construction equipment on the MCCC site obstructing access.

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 CNE 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). TEG is actively working on the service contract with the MCCC.

DES has been in contact with two additional entities requesting information on connecting to the system. These potential customers are proposed hotels to be located on Molloy St. TEG has been in communication with these entities to address both technical and economic concerns they have.

B. Customer Interaction

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

- Several customers requested changes in their chilled water setpoint temperature during the quarter. This change is typical during non-cooling load months.
- Steam service was restored to several buildings during the quarter in preparation for the upcoming heating season.
- CNE personnel investigated a failure of the CX metering panel at the Metro Courthouse in October. Once on-site, they discovered that a water leak had damaged the panel. Repairs were made on October 7.
- The Metro Public Library sent their TCV out for repairs during the quarter.
- TEG and CNE reviewed the chilled water system modifications to the Wildhorse Saloon in December. These modifications were found to be acceptable and should assist the customer in reducing their chilled water and electric consumption.
- A new DES policy regarding TIFs has been implemented that allows customers to avoid paying this surcharge if their average monthly chilled water demand is less than or equal to 3% of their current contract demand. Customers are not charged TIFs if they have no chilled water consumption for the month. These changes are primarily due to the inability of the delta T controls at customer buildings to adequately control the return temperature at very low loads.
- Other minor issues and customer interactions are noted in the monthly CNE reports.

VII. Recommendations

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

- 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, have been addressed. No additional work is required at this time.
- Chilled water customer should be notified not to use DES chilled water to re-fill their buildings after draining.
- Steam traps noted as not functioning should be repaired or replaced as soon as possible.
- Leaks noted in the EDS walk through should be repaired.
- Structural components requiring cleaning and painting noted in the EDS walk through should be addressed.

- Insulation which is absent, or in disrepair, in the manholes should be addressed through either additional capital projects, which include work within these manholes, or through DES090.
- An exploratory dig on 3rd Ave north of James Robertson Parkway and near the Criminal Justice Center will be required during the Third Quarter FY12 in order to find the suspected chilled water leak in the area.