

Operations Monitoring Report

First Quarter FY25

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I. Executive Summary

A review of the fiscal year 2025 (FY25) First Quarter performance and contract obligations between DE Asset Operations, LLC (DEAO) (formerly known as Constellation Energy Solutions, LLC.) 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 is also presented.

During the Fourth Quarter FY24, Constellation Energy Solutions, LLC changed the name of the operating group for the DES to DE Asset Operations, LLC and entered into revised agreements with Metro known as Amendment 3 to the Amended and Restated DES Management Agreement (ARMA) and the Amended and Restated DES Fuel Purchase Agreement (ARFA). These agreements became effective July 1, 2024, and extend the operating and fuel management contracts for DEAO past the end of the Amendment 2 agreement (June 30, 2025) to June 30, 2028. Although most of the provisions of Amendment 2 and the ARMA remain in force, several of the performance metrics changed to more stringent values which may result in increased efficiency and improved energy usage for the DES and its customers. The specific changes in these metrics are explained in the appropriate sections of this report. Amendment 3 did not include any changes to the management fee paid to DEAO for either the ARMA or the ARFA.

During the First Quarter FY25, DEAO continued to improve the performance of the EGF resulting in consistently meeting the chilled water-electric, the steam-fuel, and the steam-electric guarantees for the quarter. DEAO is required to meet this performance criteria each month in accordance with Paragraph 8.d of Amendment 2 of the Amended and Restated DES Management Agreement (ARMA) between Metro and DEAO and Section 18 of the ARMA. The requirement for meeting these provisions was not changed with Amendment 3, but the values and equations governing the metrics did change with Amendment 3. DEAO has made operational changes and other improvements to the DES over the past few years which have resulted in improvements to the facility and increased efficiencies. DEAO and TEG continue to monitor the efficiency and performance of the DES looking for means of improving the system.

The First Quarter FY25 chilled water sales remained approximately the same compared to the previous First Quarter (FY24). The chilled water sendout decreased 1.3% over the previous First Quarter resulting in a decrease in the system losses. The number of cooling degree days increased 7.7% driven by a warm, dry summer. The peak chilled water demand for the current quarter is 17,845 tons, which is 7.9% lower than the previous First Quarter.

Steam sendout for the current quarter increased 4.7% over the previous First Quarter with steam sales increasing 3.4%. Total steam system losses increased 8.2% from the previous First Quarter, which is not unusual when steam sales are low. The peak steam demand for the current quarter is 52,072 pounds per hour, which represents an increase in the previous First Quarter demand of approximately 13.4%. The First Quarters of FY24 and FY25 saw no heating degree days.

Work continued with the DES Capital and Repair & Improvement Projects during the Fourth Quarter. Repair and Improvements to the EDS continued as scheduled. Of the seventeen open

projects, DEAO currently is only involved in eight. Of these eight projects, three include DEAO's active involvement, four include DEAO's sporadic involvement and the last project is awaiting DEAO to initiate. As noted in prior quarterly monitoring reports, the postponement or deferral of some of these items will result in an increase in maintenance costs to the DES and could impact the delivery of steam and chilled water. Projects DES224, DES225, DES226, DES227 and DES228 have been added. Projects DES196, DES211 and DES212 were closed.

The current fiscal year system operating costs to date are \$5,606,733. This value represents approximately 24.9% of the total budgeted operating cost for FY25. The total system revenues from the sales of steam and chilled water for FY25 are \$5,647,765 (25.5% of budgeted amount) which includes the annual true-up amount for FY24 and other miscellaneous revenue sources. Metro has reported the First Quarter Metro Funding Amount (MFA) transfer of \$96,250 (25.0% of budget) has been made. The actual MFA can only be estimated due to outstanding invoices as of the date of this report.

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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 First Quarter chilled water sales is shown in Figure 1. This data reflects only a slight change in sales for the current quarter over the same quarter of the previous fiscal year. With an increase of 7.7% in the number of cooling degree days, the change in chilled water sales may be attributable to unusually dry summer. Lower relative humidities will decrease the amount of latent cooling necessary at customer buildings, decreasing the monthly usage of cooling required.

The peak chilled water demand for the current quarter is 17,845 tons, which represents a 7.9% decrease over the previous First Quarter.

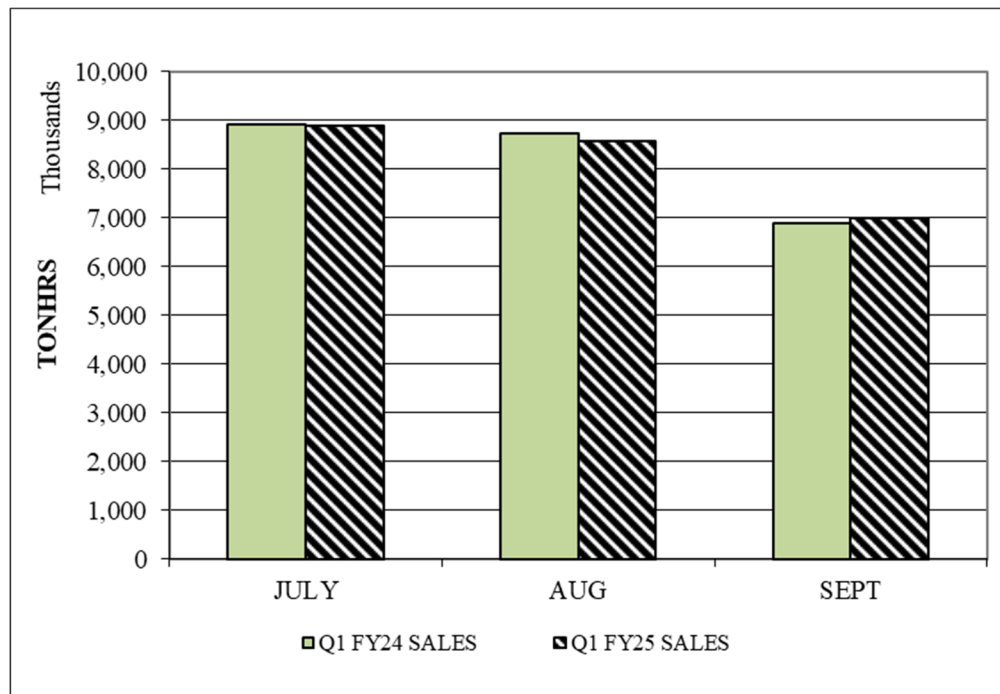


Figure 1. Chilled Water Sales Comparison

Figure 2 shows the chilled water sales, sendout and losses for the previous twelve months. The losses in 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.

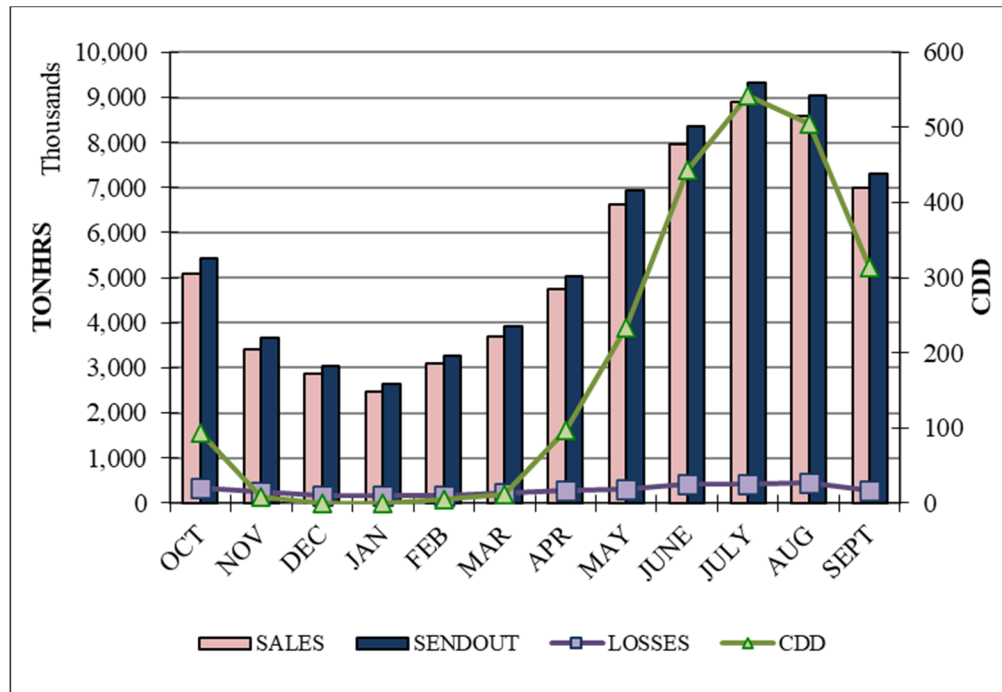


Figure 2. Chilled Water Sales, Sendout, Losses and CDD for the Previous Twelve Months

2. Losses

A comparison of the total chilled water energy losses in the EDS for the First Quarter FY25 is shown in Figure 3. These losses are the difference in chilled water sendout and sales and may reflect differences in the meter accuracy between the EGF sendout meter and the customer meters. The losses decreased 18.9% over the previous First Quarter.

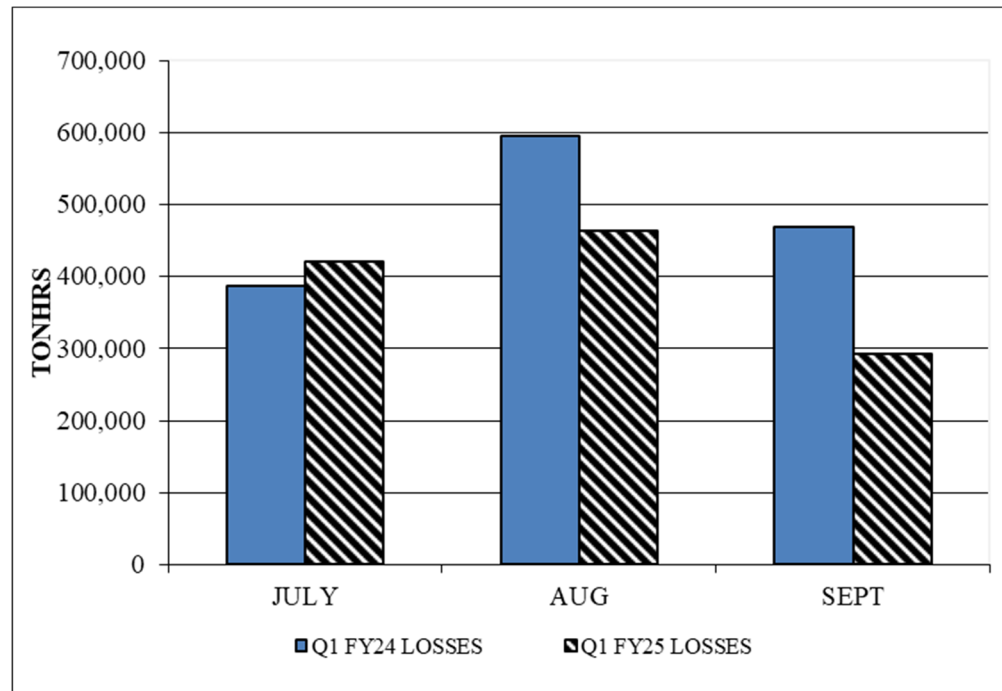


Figure 3. Chilled Water System Loss Comparison

The EDS make-up decreased 40.9% over the previous First Quarter. A portion of this decrease may be due to a customer unknowingly adding city water make-up to the EDS. Although the exact customer has not been located, the EDS make-up from the EGF began to return to “normal” daily averages during the quarter TEG and DEAO are continuing to monitor the EDS make-up to locate any additional leaks within the EDS. If additional leaks are discovered, DES will address the issue promptly. However, the make-up to EDS remains relatively low.

The make-up to the cooling towers increased 1.6% over the previous First Quarter. The water usage in the cooling towers is typically proportional to the production of chilled water and should vary with chilled water sales. The total chiller plant water use decreased marginally over the First Quarter. The overall city water make-up comparison for the chilled water system First Quarter is shown in Figure 4.

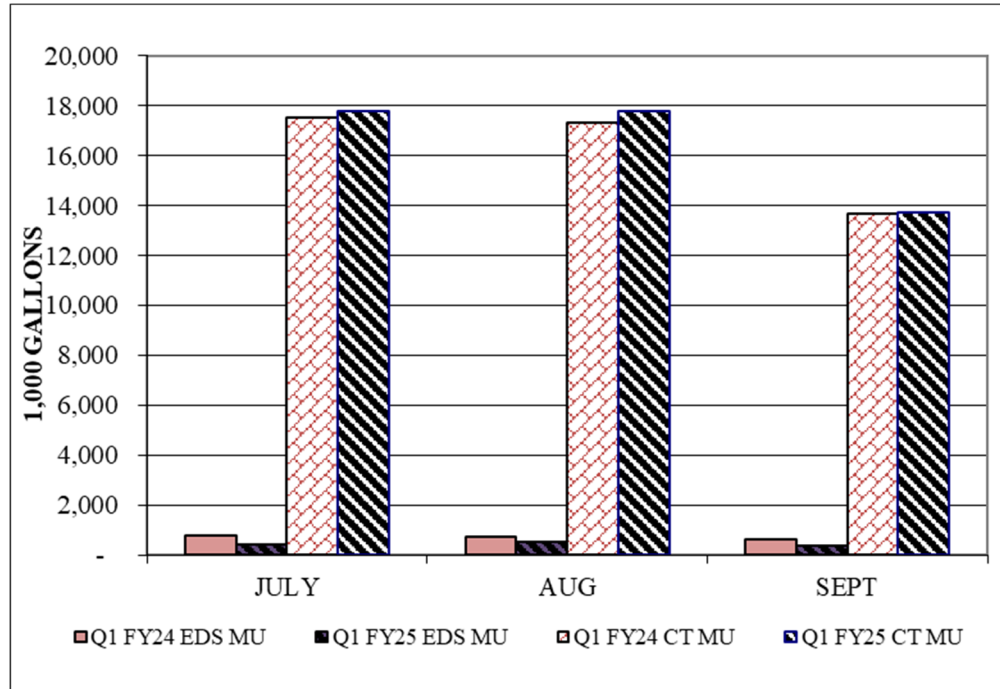


Figure 4. Chilled Water System City Water Usage Comparison

With the implementation of the revised performance guarantee with Amendment 2 for the chilled water-water, DEAO began less frequently achieving the required performance. Beginning in March 2023, DEAO and TEG began monitoring the cooling tower blowdown more closely with the intent on reducing the water usage for the chilled water system. The blowdown is monitored and controlled to maintain the conductivity of the condensing water within a range of 1,000 to 1,150 micromhos. The relationship between the cooling tower blowdown and the chilled water production should be consistent and tracking this relationship may prove helpful in reducing the chiller plant water usage. DEAO has made operational changes with respect to the ratio of the cooling tower blowdown to the chilled water production with the expectation of reducing the water usage and improving their performance relative to the chilled water-water guarantee. A comparison of the First Quarter values between FY24 and FY25 are shown in Figure 5.

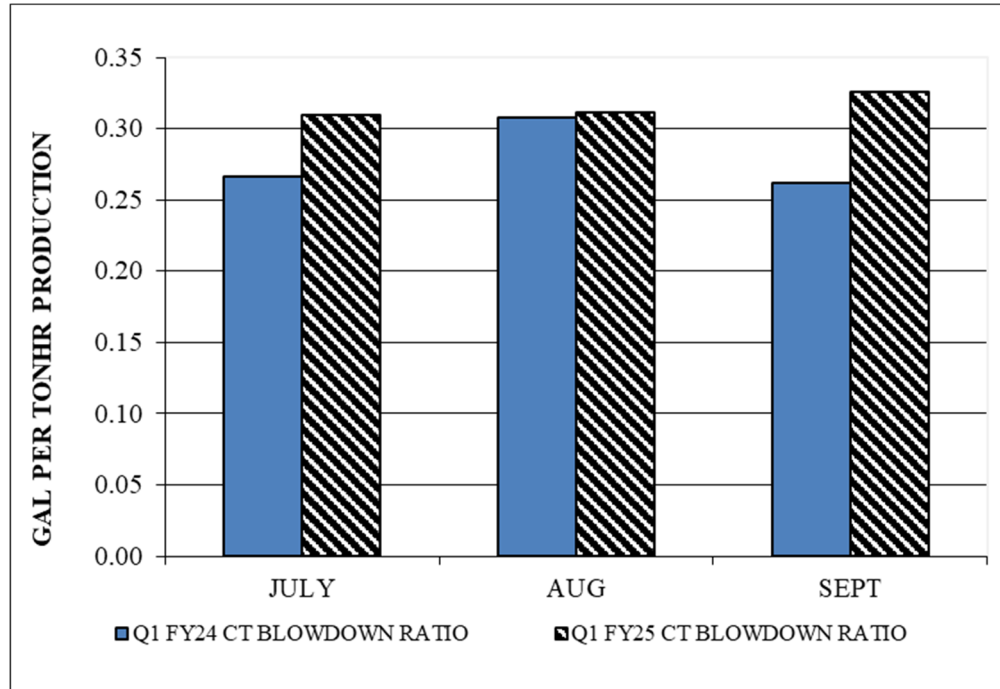


Figure 5. Cooling Tower Blowdown Ratio Comparison

When a comparison is made between the First Quarter FY25 and FY24, the average cooling tower blowdown ratio increased 12.4%. This metric will continue to be tracked and monitored to verify operational changes made by DEAO at the EGF have resulted in a decrease in chiller plant water usage

3. Performance

The performance of the chilled water portion of the EGF is presented in the following two charts, Figures 6 and 7, for the previous twelve months. The System Performance Guarantee for both metrics changed with Amendment 3 beginning with July 2024. The chilled water-electric metric decreased from 0.93 kWhrs per tonhr of sales to 0.92 kWhrs per tonhr of sales, thus increasing the GMQ efficiency which should result in an actual improvement in the chiller plant efficiency. The GMQ level prior to July 2024 is shown at the Amendment 2 level of 0.93 kWhrs per tonhr of sales. Even with the change in the metric, DEAO met the guaranteed performance metric each month of the First Quarter.

The electricity usage per unit of sales decreased 1.5% over the previous First Quarter indicating an increase in efficiency. DEAO and TEG continue to monitor the improvements created by DEAO’s operational changes.

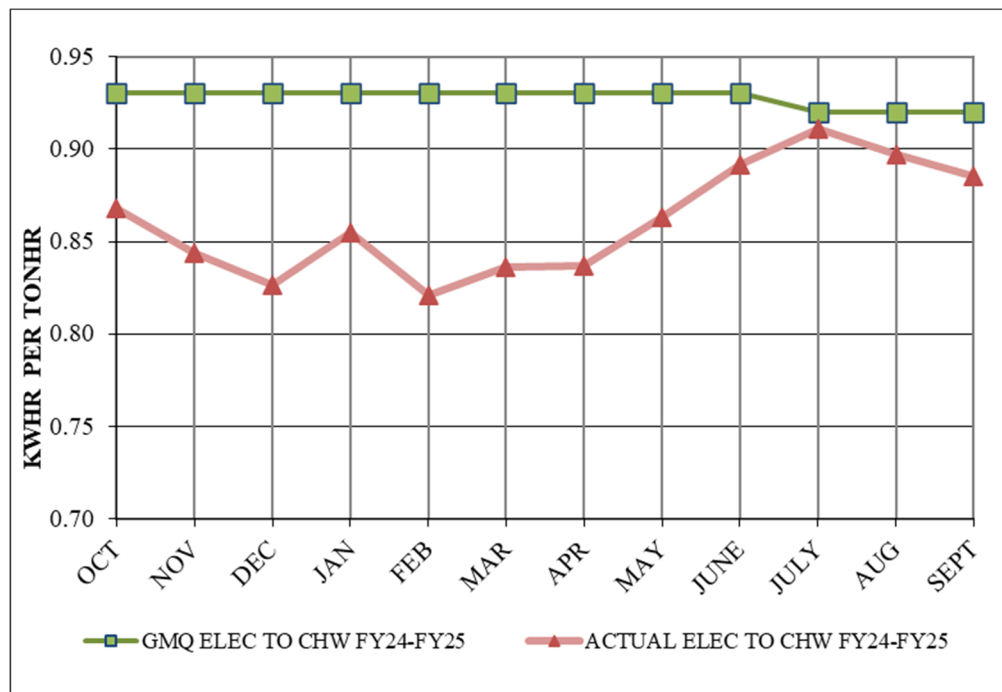


Figure 6. Chiller Plant Electric Performance Guarantee Comparison for the Previous Twelve Months

The chilled water-water metric likewise changed with Amendment 3. Although the guarantee (GMQ) remains 2.0 gallons per tonhr of sales, the equation determining the “actual” water usage upon which the comparison is made has changed. The new value reduces the limit for EDS make-up from 30,000 gallons per day to 20,000 gallons per day and memorializes the exclusion of the side stream filter backwash. This latter addendum had been agreed upon between DEAO, Metro, and TEG after acceptance of the side stream filter installation.

The equation for the calculation of “actual” chilled water-water comparison is as follows:

If the actual, metered EDS make-up is less than 20,000 gallons per day, the EDS make-up used in the calculation below is zero (i.e. the make-up is not excluded from the total chiller plant city water make-up). If the actual, metered EDS make-up is greater than 20,000 gallons per day for the month, the EDS make-up used in the calculation below is capped at 20,000 gallons per day multiplied by the days in the month.

“actual” = total chiller plant city water make-up
– side stream filter backwash
– EDS make-up

The total consumption of city water for the chiller plant for the current quarter decreased marginally over the previous First Quarter. The EDS make-up decreased 40.9%, but the cooling tower blowdown increased 11.0%. The side stream filter backwash decreased 23.2%. However, DEAO did not meet the new metric any month during the quarter. Figure 7 shows the chilled water-water metric for the previous twelve months. The calculation for the “actual” water metric for months prior to July 2024 uses the methodology from Amendment 2. The First Quarter FY25 data uses the Amendment 3 methodology. TEG and DEAO continue to monitor the water usage and chiller plant performance with the goal of decreasing the energy and water usage for the system.

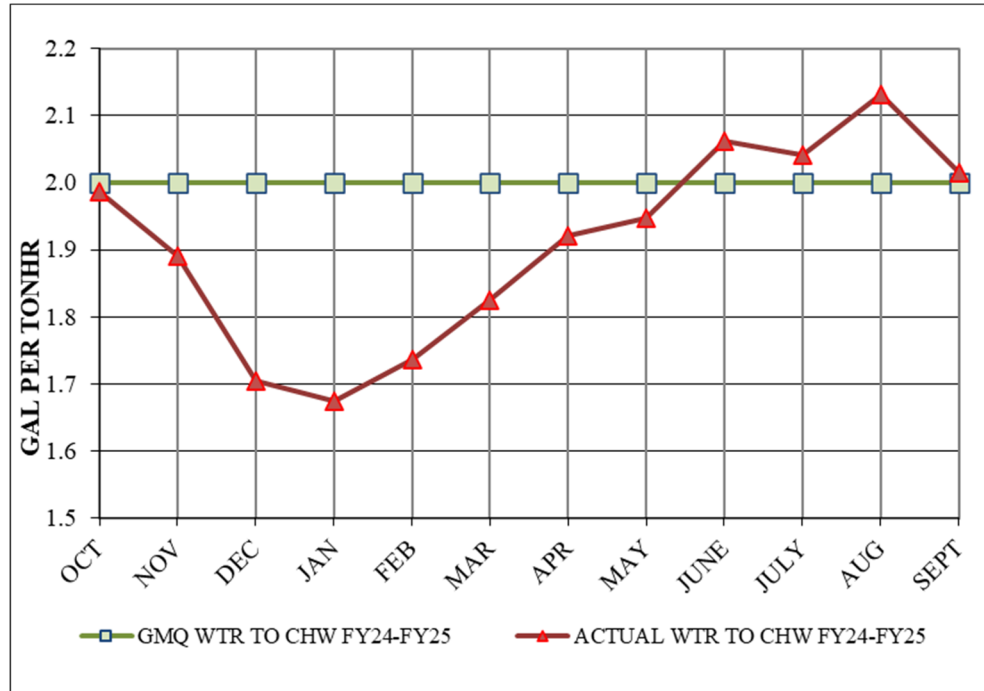


Figure 7. Chiller Plant Water Consumption Performance Guarantee Comparison for the Previous Twelve Months

B. Steam

1. Sales and Sendout

The steam sendout increased 4.7% over the previous First Quarter (FY24), and the sales increased 3.4%. No heating degree days are reported for the First Quarter FY24 or FY25. The steam system losses increased 8.2%. The relative amount of condensate return increased 11.4% during the quarter. The peak steam demand for the current quarter is 52,072 pph, which reflects a 13.4% increase in the peak steam production over the previous First Quarter. A comparison for the First Quarter steam sales is shown in Figure 8.

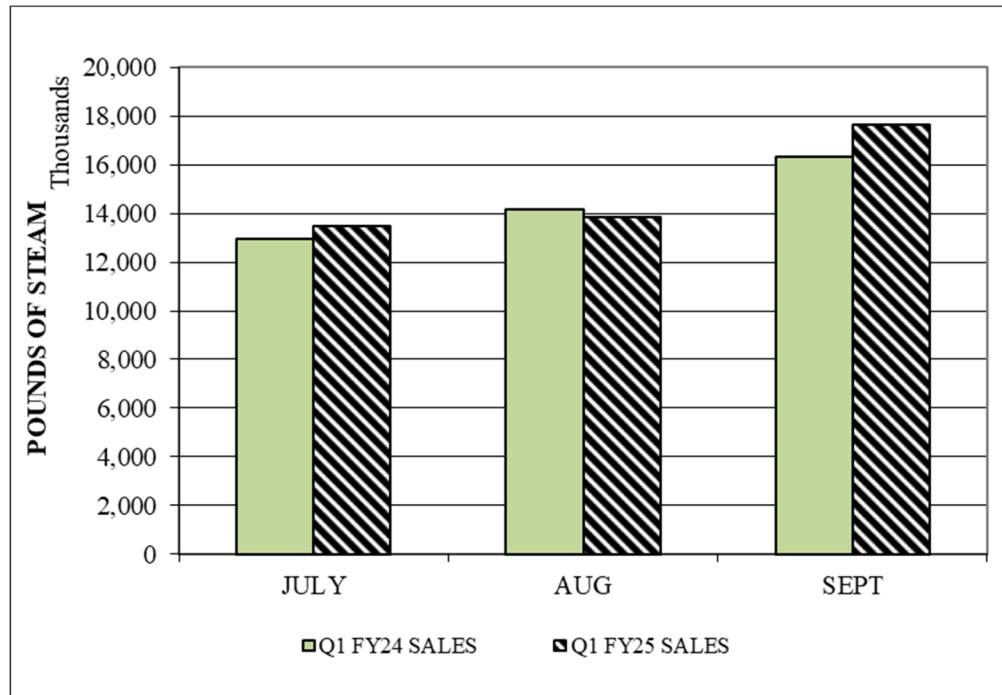


Figure 8. Steam Sales Comparison

Figure 9 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.

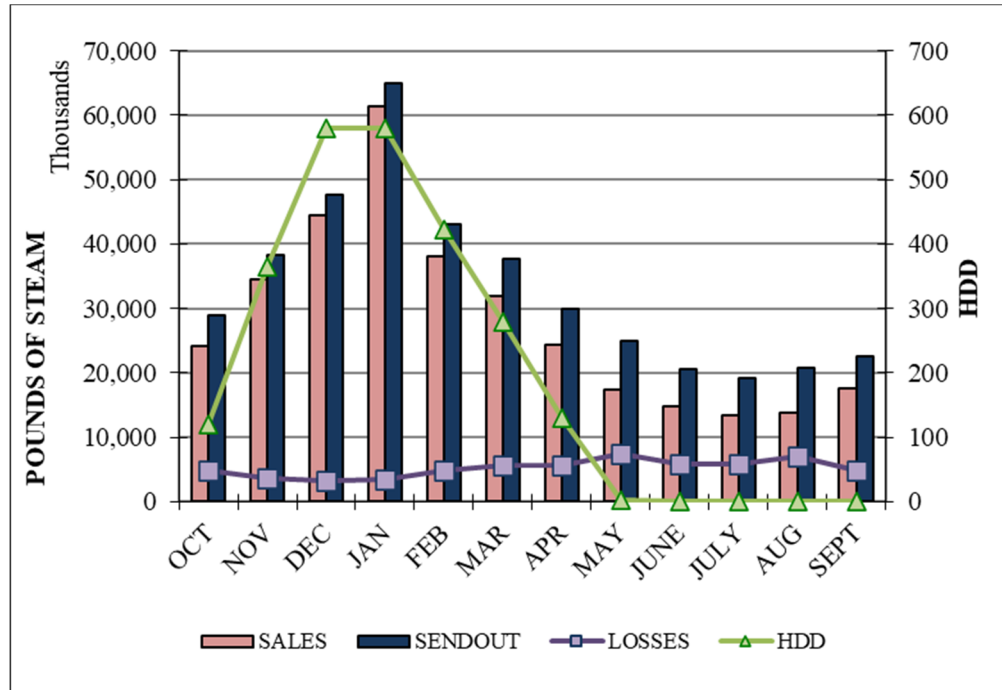


Figure 9. Steam Sales, Sendout, Losses and HDD for the Previous Twelve Months

2. Losses

A comparison of the total steam mass losses in the EDS for the First Quarter is shown in Figure 10. 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.

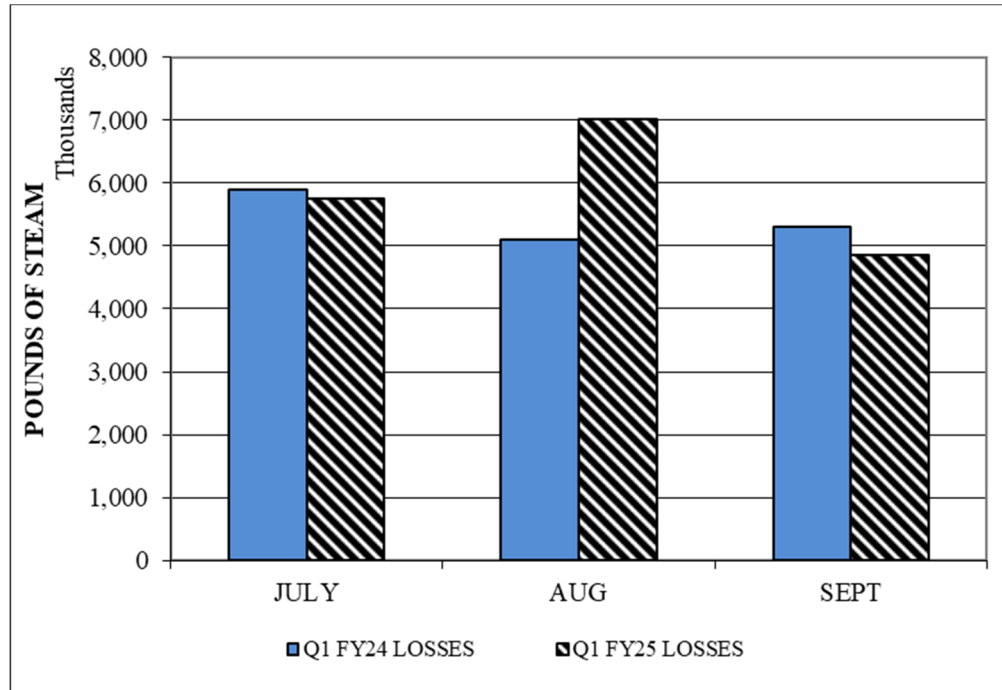


Figure 10. Steam System Losses

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. The amount of make-up to the steam system decreased 31.3% over the First Quarter FY24. The corresponding data for steam system make-up is shown in the comparison of First Quarter data in Figure 11.

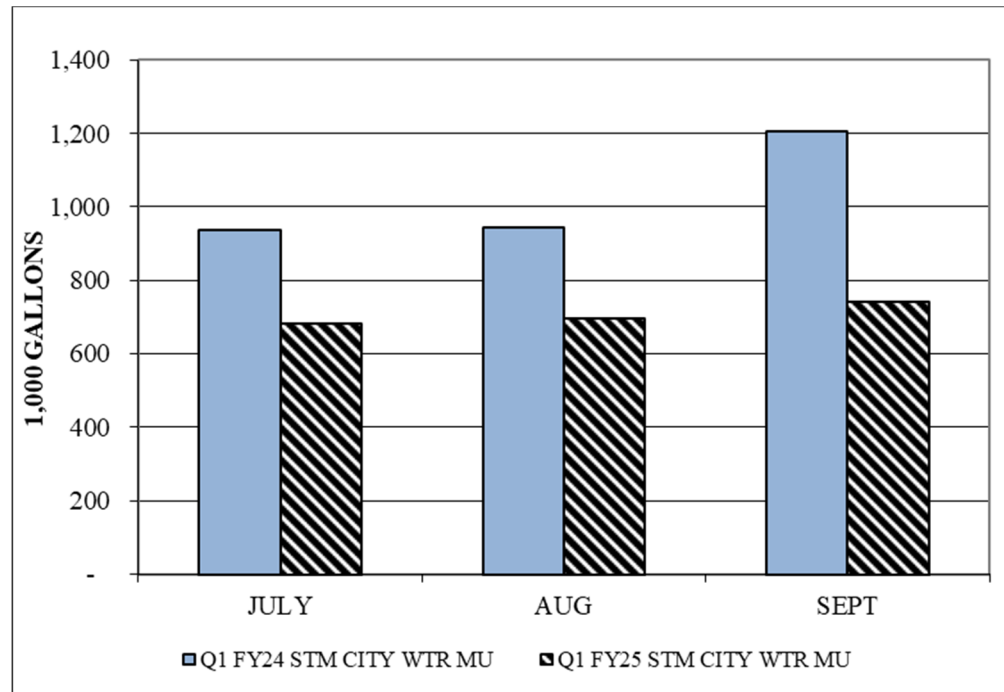


Figure 11. Steam System City Water Make-up Comparison

3. Performance

The performance of the steam system of the EGF is presented in the following three charts, Figures 12, 13A, 13B, and 14. With Amendment 3, the steam-electric and steam-fuel metrics and their calculation methodology remain unchanged except that the amount of condensate return is now calculated using the real time density correction. However, the change in the steam-water metric changed significantly.

The steam electric conversion factor was met each month of the quarter. The steam plant electric consumption for the current quarter was 10.7% higher in FY25 than in FY24. The steam-electric metric increased 7.7% over the previous First Quarter. The monthly steam-electric conversion factors, along with the guaranteed values, are shown in Figure 12.

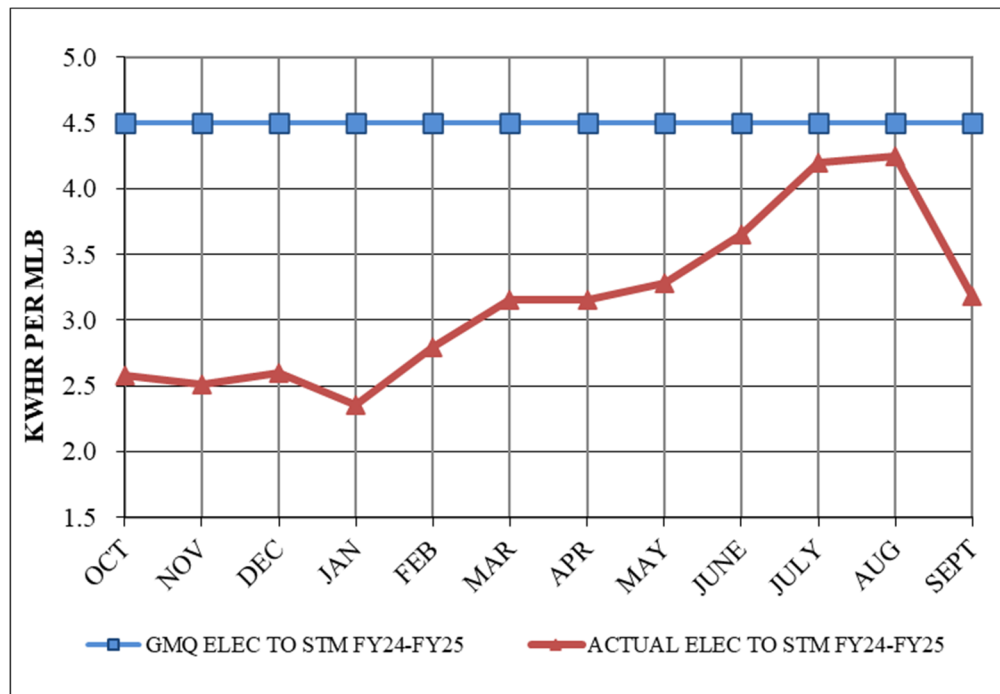


Figure 12. Steam Plant Electric Performance Guarantee for the Previous Twelve Months

No changes were made with the steam-water metric from the original ARMA to Amendment 2. In the autumn of 2022, DEAO replaced the condensate return meter at the EGF with a more accurate and reliable version. The subsequent data from this meter revealed a more significant difference in the boiler plant water usage relative to the steam-water metric. DEAO struggled to achieve the GMQ with a more accurate condensate return meter. After further review of the boiler performance, water chemistry, and historic data, TEG determined the steam-water metric should be based on mass flow (pounds) and a density correction for condensate return based on the return water temperature to capture the relationship

between the condensate return and steam sendout (also measured in pounds). The density correction should also be made in real time to match the previously established density correction for the steam sendout.

Likewise, the measured volumetric flow (gallons) of city water make-up should be converted to pounds so that all components may be more accurately and appropriately compared. This revised methodology is significantly different from that described in Amendment 2 but more accurately and fairly represents the boiler water usage at the EGF since the Amendment 2 metric included a constant and arbitrary density applied to volumetric flow rates and a factor of 1.15 applied differently than with TEG’s recommended equation for Amendment 3.

The result of TEG’s analysis included performing heat and mass balances of the boiler plant using both historic and theoretical data. This analysis indicated the steam-water metric should be 120% of the difference in mass flow between the steam sendout and condensate return. A similar relationship was shown by comparing the conductivity within the boiler blowdown with the recommended level for boilers of the type at the EGF. This latter comparison would be difficult to implement due to the frequency and types of regular measurements required with the existing instrumentation. The new metric using a comparison of the mass flows, agreed upon by Metro and DEAO, has been incorporated into Amendment 3.

The Guaranteed Maximum Quantity (GMQ) is defined as the following in Amendment 3:

$$GMQ = 1.2 * (\text{steam sendout in pounds per month} - \text{condensate return in pounds per month})$$

Where both the steam sendout and the condensate return are density corrected in real time resulting in units of pounds.

The “actual” value (reported with units of pounds) used for comparison is defined as the following in Amendment 3:

$$\begin{aligned} \text{Actual Usage} \\ &= \text{metered boiler plant city water makeup in gallons} \\ &* \text{the standard density of 8.342 pounds per gallon} \end{aligned}$$

Since the Amendment 3 metric is based on pounds of water and the Amendment 2 metric is based on gallons using a different equation to determine both the GMQ and “actual” values, a comparison is difficult to make between the historic values and the Amendment 3 equation. Therefore, the performance for the previous twelve months is represented by the following two graphs. Figure 13A using pounds and Figure 13B using gallons. The guaranteed and actual volumes (gallons) prior to July 2024 use the Amendment 2 methodology. However, the GMQ

volumes shown for July, August, and September 2024 convert the pounds values to gallons assuming a density based on the average condensate return temperature. Similarly, the mass values shown for data prior to July 2024 assume a constant density over the month based on the recorded average monthly condensate return temperature and converting the volumetric data to mass (pounds). These conversions will need to be made for FY25 and until enough historic data using the Amendment 3 methodology has been collected such that the real time density correction will be recorded.

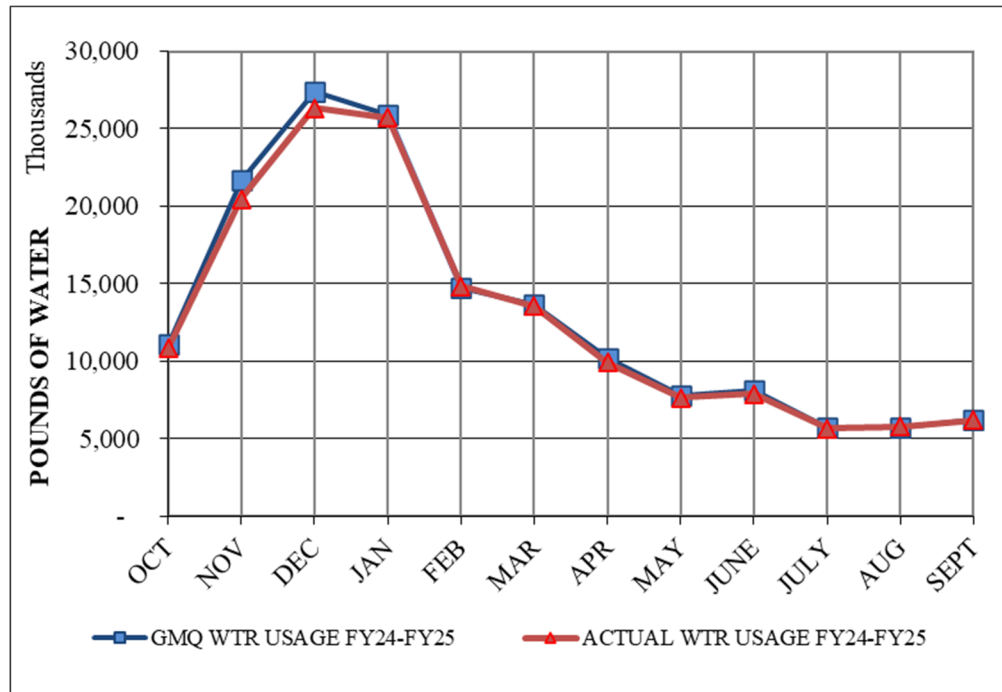


Figure 13A. Steam Plant Water Performance Guarantee for the Previous Twelve Months Using a Mass Comparison

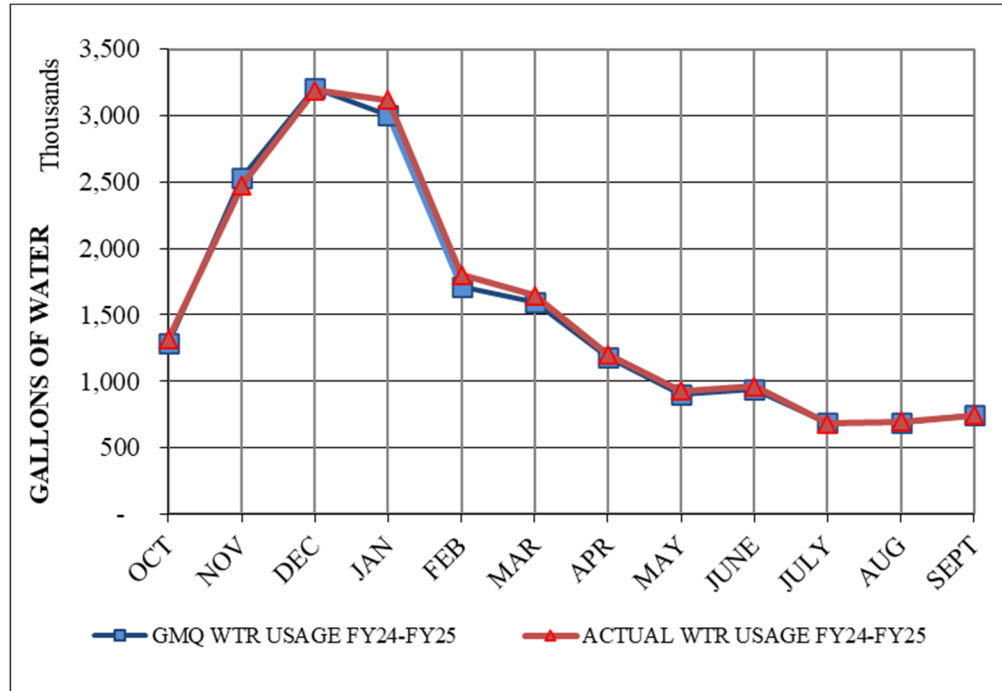


Figure 13B. Steam Plant Water Performance Guarantee for the Previous Twelve Months Using a Volumetric Comparison

For the First Quarter, the boiler plant water usage decreased 31.3%. This decrease resulted in a 32.0% decrease in the steam-water metric with the volumetric comparison methodology from Amendment 2 and a 31.3% decrease with the density correction formulation similar to Amendment 3. Using the Amendment 3 methodology, the metric was met in July and September 2024 but was not met during the First Quarter FY24 while applying the Amendment 3 methodology on the historic data. Please note the performance metric is based on the actual amount of condensate return each month resulting in a variation in the GMQ value.

It should be noted that the real time density correction for the condensate return has not been implemented due to DEAO's inability to incorporate the necessary programming and instrumentation as of the date of this report. However, the density is corrected manually based on the average condensate return temperature which is based on a weighted average of the temperature using the uncorrected volumetric flow rate. This interim methodology has been agreed upon until DEAO has the proper instrumentation and data collection system implemented. The automation of the real time density correction is expected in the Second Quarter FY25.

The steam-fuel metric did not change in Amendment 3; however, the relative amount of condensate return will be reported using the mass flow values determined by the density corrected values used in the steam-water metric. The steam-fuel metric was met each month during the First Quarter. The fuel

consumption per unit of steam sendout decreased 2.7% over the previous First Quarter. The relative amount of condensate return is shown on this graph to reflect the influence the condensate return has on the plant efficiency.

Figure 14 shows the performance of the conversion factors for the previous twelve months.

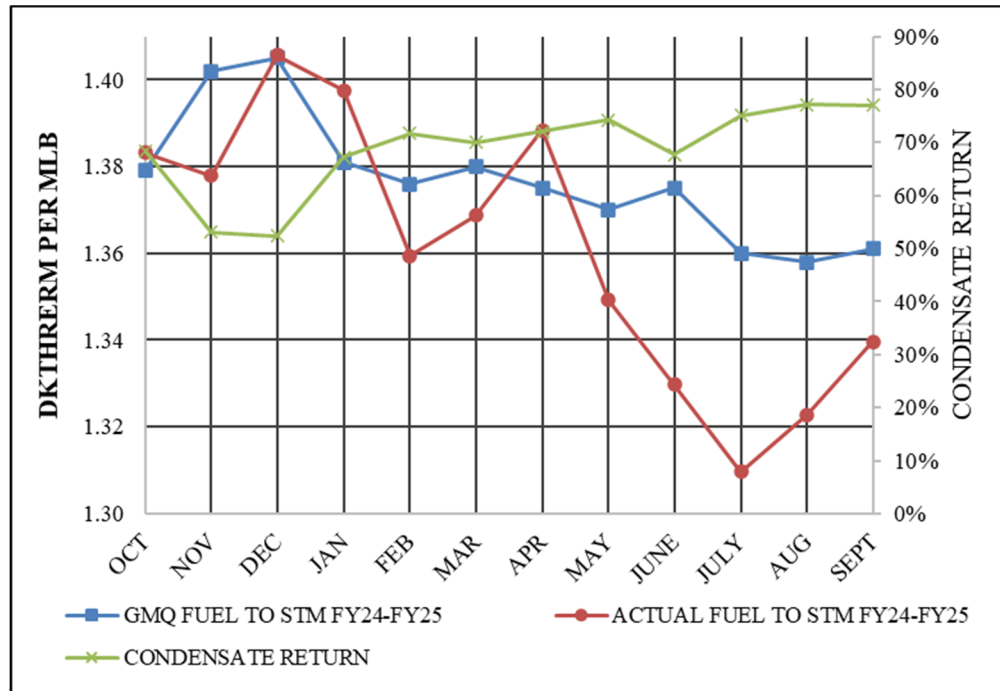


Figure 14. Steam Plant Fuel Performance Guarantee for the Previous Twelve Months

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 First Quarter comparisons of the Guaranteed Maximum Quantities (GMQ) or System Performance Guarantees of the criteria commodities (fuel, water, and electricity). Table 2 lists the steam-water conversions (GMQ and actual) based on the volumetric and mass flow comparisons.

Table 1. First Quarter Production, Sales, and Consumption Summary

Item	Unit	First Quarter FY25	First Quarter FY24	*Percent Difference
	days	92	92	0.00%
Total Electric Use	kWhrs	22,167,841	22,334,406	-0.75%
Chilled Water	kWhrs	21,996,148	22,179,242	-0.83%
Steam	kWhrs	171,693	155,164	10.65%
Total Water Use	kgal	52,702	53,777	-2.00%
Total Chilled Water	kgal	50,581	50,689	-0.21%
EDS Make-up	kgal	1,295	2,192	-40.92%
Cooling Towers	kgal	49,286	48,497	1.63%
Calc CT Evaporation	kgal	41,208	41,216	-0.02%
CT Blowdown	kgal	8,078	7,281	10.95%
Calc # Cycles		5.10	5.66	-9.88%
Sidestream Filter Backwash	gal	14,924	19,440	-23.23%
Steam	kgal	2,121	3,088	-31.32%
Total Fuel Use	mmBTU	82,954	81,329	2.00%
Natural Gas	mmBTU	82,954	81,329	2.00%
Propane	mmBTU	0	0	0.00%
Condensate Return	kgal	5,921	5,032	17.68%
	lbs	47,867,151	41,038,484	16.64%
Avg Temp	°F	185.0	185.3	-0.18%
Sendout				
Chilled Water	tonhrs	25,653,400	25,994,100	-1.31%
Steam	lbs	62,616,000	59,785,000	4.74%
Peak CHW Demand	tons	17,845	19,372	-7.88%
Peak Steam Demand	lb/hr	52,072	45,937	13.36%
CHW LF		65.11%	60.77%	7.13%
Steam LF		54.46%	58.94%	-7.60%
Sales				
Chilled Water	tonhrs	24,475,958	24,542,981	-0.27%
Steam	lbs	44,984,654	43,492,152	3.43%
Losses				
Chilled Water	tonhrs	1,177,442	1,451,119	-18.86%
Steam	lbs	17,631,346	16,292,848	8.22%
		28.16%	27.25%	3.32%
Degree Days				
CDD		1,361	1,264	7.67%
HDD		0	0	NA
Cooling Tower Blowdown Ratio				
Cooling Tower Blowdown	gal	8,078,050	7,281,000	10.95%
Chilled Water Production	tonhrs	25,653,400	25,994,100	-1.31%
Ratio	gal/tonhrs	0.315	0.280	12.42%

*positive percent difference values imply an increase from FY24 to FY25

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

GMQ Calculations	Unit	First Quarter FY25	First Quarter FY24	*Percent Difference
Steam				
GMQ Elec Conversion	kWhr/Mlb	4.50	4.50	
Electric Conversion	kWhr/Mlb	3.88	3.60	7.72%
GMQ Plant Efficiency	Dth/Mlb	1.360	1.372	
Plant Efficiency	Dth/Mlb	1.324	1.360	-2.67%
Actual %CR		76.45%	68.64%	11.37%
Avg CR Temp	°F	185	185	-0.18%
GMQ Water Conversion	gal	2,121,628	2,643,317	
Water Conversion	gal	2,120,950	3,118,880	-32.00%
GMQ Water Conversion	lbs	17,698,618	22,936,631	
Water Conversion	lbs	17,692,965	25,760,096	-31.32%
Chilled Water				
GMQ Elec Conversion	kWhr/tonhr	0.920	0.930	
Electric Conversion	kWhr/tonhr	0.898	0.904	-0.66%
GMQ Water Conversion	gal/tonhr	2.00	2.00	
Water Conversion	gal/tonhr	2.06	2.07	-0.10%

*positive percent difference values imply an increase from FY24 to FY25

D. Operating Costs

The fixed operating costs for the DES include the management fee to DEAO, debt service payments on the bonds and engineering and administration costs and are charged to the Initial System Customers (ISCs) relative to their contract demand. For all non-ISCs, their fixed costs are principally based on a value established by their contracts and are not tied directly to the actual costs of the debt service or DEAO's management fee.

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 and are passed onto the customers directly without mark-up. A summary of the total operating costs for the fiscal year-to-date is shown in Table 3.

The revenues shown in Tables 3 and 4 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 covered by Metro. The shortfall exists due to the remaining unsold capacity at the EGF and the debt service for bonds to which the customers do not directly contribute.

The current fiscal year system operating costs to date are \$5,606,733. This value represents approximately 24.9% of the total budgeted operating cost for FY25. The total system revenues from the sales of steam and chilled water for FY25 are \$5,647,765 (25.5% of budgeted amount) which includes the annual true-up amount for FY24 (\$128,967.46) and other miscellaneous revenue sources. Metro has reported the First Quarter Metro Funding Amount (MFA) transfer of \$96,250 (25.0% of budget) has been made. The actual MFA can only be estimated due to outstanding invoices as of the date of this report.

Table 3. DES Expenses and Revenues to Date

Item	FY25 Budget	First Quarter Expenses	Second Quarter Expenses	Third Quarter Expenses	Fourth Quarter Expenses	Total Spending to Date	% of Budget
Operating Management Fee							
FOC: Basic	\$ 4,250,800	\$ 1,062,708	\$ -	\$ -	\$ -	\$ 1,062,708	25.00%
9th Chiller	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
C/O 6A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
C/O 6B	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
C/O 7	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
C/O 8	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Pass-thru Charges: Chemical Treatment	\$ 379,300	\$ 83,309	\$ -	\$ -	\$ -	\$ 83,309	21.96%
Insurance	\$ 39,000	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Marketing: CNE Sales Activity	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Incentive Payments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
FEA: Steam	\$ 85,100	\$ 2,807	\$ -	\$ -	\$ -	\$ 2,807	3.30%
Chilled Water	\$ 138,700	\$ 5,068	\$ -	\$ -	\$ -	\$ 5,068	3.65%
Misc: Metro Credit	\$ -	\$ (435,450)	\$ -	\$ -	\$ -	\$ (435,450)	n.a.
ARFA	\$ 66,900	\$ 16,714	\$ -	\$ -	\$ -	\$ 16,714	24.98%
Deferral	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Subtotal - Man Fee =	\$ 4,959,800	\$ 1,170,606	\$ -	\$ -	\$ -	\$ 1,170,606	23.60%
Reimbursed Management Fee + Chem Treatment		\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Metro Costs							
Pass-thru Charges: Engineering	\$ 99,500	\$ 22,128	\$ -	\$ -	\$ -	\$ 22,128	22.24%
EDS R&I Transfers	\$ 322,200	\$ 80,550	\$ 26,850	\$ -	\$ -	\$ 107,400	33.33%
Metro Marketing	\$ 74,400	\$ 15,124	\$ -	\$ -	\$ -	\$ 15,124	20.33%
Project Administration	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Metro Incremental Cost	\$ 539,600	\$ 83,597	\$ -	\$ -	\$ -	\$ 83,597	15.49%
Utility Costs: Water/Sewer	\$ 1,165,600	\$ 414,723	\$ -	\$ -	\$ -	\$ 414,723	35.58%
EDS Water/Sewer	\$ -	\$ 50	\$ 17	\$ -	\$ -	\$ 66	n.a.
EDS Electricity	\$ 82,200	\$ 20,935	\$ -	\$ -	\$ -	\$ 20,935	25.47%
Electricity	\$ 6,572,600	\$ 2,012,996	\$ -	\$ -	\$ -	\$ 2,012,996	30.63%
Natural Gas Consultant	\$ 17,800	\$ 4,320	\$ -	\$ -	\$ -	\$ 4,320	24.27%
Natural Gas Transport	\$ -	\$ 70,450	\$ -	\$ -	\$ -	\$ 70,450	n.a.
Natural Gas Fuel	\$ 3,145,800	\$ 239,415	\$ -	\$ -	\$ -	\$ 239,415	7.61%
Propane	\$ 141,400	\$ 102,574	\$ -	\$ -	\$ -	\$ 102,574	72.54%
Subtotal - Metro Costs =	\$ 12,161,100	\$ 3,066,860	\$ 26,867	\$ -	\$ -	\$ 3,093,727	25.44%
Subtotal - Operations =	\$ 17,120,900	\$ 4,237,466	\$ 26,867	\$ -	\$ -	\$ 4,264,333	24.91%
Debt Service							
2012A Bonds	\$ 3,435,800	\$ 858,950	\$ -	\$ -	\$ -	\$ 858,950	25.00%
2005B Bonds	\$ 732,600	\$ 183,150	\$ -	\$ -	\$ -	\$ 183,150	25.00%
Series 2018	\$ 117,200	\$ 29,300	\$ -	\$ -	\$ -	\$ 29,300	25.00%
Series 2015C	\$ 71,500	\$ 17,875	\$ -	\$ -	\$ -	\$ 17,875	25.00%
Series 2017	\$ 41,800	\$ 10,450	\$ -	\$ -	\$ -	\$ 10,450	25.00%
Series 2013A	\$ 673,000	\$ 168,250	\$ -	\$ -	\$ -	\$ 168,250	25.00%
Series 2021C	\$ 122,000	\$ 30,500	\$ -	\$ -	\$ -	\$ 30,500	25.00%
Series 2022A	\$ 149,400	\$ 37,350	\$ -	\$ -	\$ -	\$ 37,350	25.00%
Series 2022B	\$ 26,300	\$ 6,575	\$ -	\$ -	\$ -	\$ 6,575	25.00%
FY25 Addition	\$ 15,700	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
MIP	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Oper. Reserve Fund	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Subtotal - Capital =	\$ 5,385,300	\$ 1,342,400	\$ -	\$ -	\$ -	\$ 1,342,400	24.93%
Total =	\$ 22,506,200	\$ 5,579,866	\$ 26,867	\$ -	\$ -	\$ 5,606,733	24.91%
Customer Revenues							
Taxes Collected		\$ 123,869	\$ -	\$ -	\$ -	\$ 123,869	n.a.
Taxes Paid		\$ 84,573	\$ -	\$ -	\$ -	\$ 84,573	n.a.
Interest & Misc Revenue	\$ 490,900	\$ 195,130	\$ -	\$ -	\$ -	\$ 195,130	39.75%
Penalty Revenues/Credits	\$ -	\$ 130,974	\$ -	\$ -	\$ -	\$ 130,974	n.a.
Energy Revenues Collected	\$ 21,630,300	\$ 5,282,366	\$ -	\$ -	\$ -	\$ 5,282,366	24.42%
Revenues =	\$ 22,121,200	\$ 5,647,765	\$ -	\$ -	\$ -	\$ 5,647,765	25.53%
Metro Funding Amount =	\$ 385,000	\$ (67,899)	\$ 26,867	\$ -	\$ -	\$ (41,033)	-10.66%

The DES serves 22 customers and 43 buildings in downtown Nashville (including the Auto Nashville Hotel). These customers are divided into three categories: 1) Privately-owned buildings, 2) State of TN-owned buildings and 3) Metro-owned buildings. The New Customers listed in Table 4 are non-Initial System private customers. A summary of the annual costs for each of these three categories is presented in Table 4. These values include late fees and penalties, the charges for the FY24 True-up, and any unpaid balances.

Table 4. Customer Revenue Summary to Date

Building	Chilled Water			Steam		
	Total Cost	Consumption (tonhrs/yr)	Unit Cost (\$/tonhr)	Total Cost	Consumption (Mlb/yr)	Unit Cost (\$/Mlb)
Private Customers	\$ 1,454,639	8,869,518	\$ 0.1640	\$ 320,033	11,690	\$ 27.3773
State Government	\$ 1,036,313	4,811,753	\$ 0.2154	\$ 414,859	14,682	\$ 28.2571
Metro Government	\$ 1,669,225	10,794,687	\$ 0.1546	\$ 387,297	18,613	\$ 20.8075
New Customers	\$ 1,032,501	6,078,465	\$ 0.1699	\$ 257,186	13,191	\$ 19.4975
Total	\$ 4,160,178	24,475,958	\$ 0.1700	\$ 1,122,189	44,985	\$ 24.9460

Total Revenue \$ 5,282,366
 True-up and Adjustments (Net) \$ 365,399
 Net Revenue \$ 5,647,765

III. EGF Operations

Items relating to the facility operations presented herein are derived from the monthly reports issued by DEAO for FY25. TEG continues to provide oversight of the System Operator (DEAO) and continues to meet regularly to communicate about important issues and on-going projects. DEAO has reported and managed EGF operations satisfactorily although improvements in addressing the items noted in the EGF Walkthrough reports are necessary.

A. Reliability

The principal issues surrounding the reliable operation of the EGF relate to the ability to operate without significant interruption, exclusive of planned outages, and disruption of service to the customers. Due to what TEG deemed to be an excessive number of boiler and chiller plant trips in FY24 and in previous years, TEG and DEAO discussed at length the need to address the operational or maintenance issues causing such trips during the quarter. As a result, August and September did not experience any thirty-minute period where the steam sendout pressure was less than 150 psig. Also, there were no chiller plant trips where the chilled water sendout temperature exceeded 43.3°F during the quarter. The reduction in trips is a significant improvement by DEAO for reliability of the system. However, the following disruption in service occurred during the quarter:

- Boiler 4 tripped on July 6 and would not restart. Boiler 2 was started in its place. DEAO investigated but the cause of the trip could not be replicated. The steam sendout pressure was below 150 psig for sixty minutes reaching a low pressure of 122.5 psig.
- There were no other reported issues during the quarter.

B. Efficiency

The operation of the EGF did not satisfy the chilled water-water guaranteed level for each month during the quarter and the steam-water guaranteed level during August. However, all other performance guarantees were met for the 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.

DEAO has implemented and requires regular attendance of online and in-person safety courses for their employees. For the First Quarter, the courses included. Accident and Injury Reporting, AED and CPR Training, Fire Extinguisher Use, and Fire Safety.

D. Personnel

As of the end of the quarter, DEAO has reported they are currently staffed with nineteen full-time employees, one remote part-time employee and two shared employees. DEAO reports to be actively pursuing an additional maintenance employee capable of performing the necessary welding duties. Although not specifically included in Amendment 3, DEAO agreed to this additional employee. Of the current number of employees, thirteen were previously employed by Nashville Thermal Transfer Corporation.

E. Training

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

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 and to aid in the prevention of corrosion. Remote testing of the condensate at the AA Birch, Tennessee Tower and the Andrew Jackson buildings also occurs regularly to monitor the concentration and distribution of the steam system chemicals.

- Steam System
 - The condensate return averaged approximately 76.5% of the steam sendout during the quarter, which represents an 11.4% increase over the previous First Quarter.
 - Feedwater iron, pH, and hardness (for the portion of the condensate returned) remained within their acceptable ranges during the quarter and the fiscal year.
- Condensing Water System
 - The conductivity of the condensing water continues to be normal with only a few excursions.
 - The presence of algae in the cooling tower basins in September was noted in the EGF Walkthrough Report. The water treatment report for the week corresponding to the Walkthrough indicated the free chlorine amounts were below the allowable range. DEAO has since made adjustments to their water treatment program, and the values appeared within the acceptable range in October.
 - The cooling tower blowdown increased 11.0% over the previous First Quarter. This increase resulted in an average decrease in the cycles of concentration in the cooling towers of 9.9%.
 - DEAO began monitoring and tracking the ratio of the cooling tower blowdown to the chilled water production. The average value for the quarter increased 12.4% over the previous First Quarter. TEG and DEAO

continue to monitor various performance metrics within the EGF and EDS to look for ways to improve system efficiency.

- Chilled Water System
 - DEAO continues to monitor and test for the presence of bacteria in the system. The biological growth in the system, as measured at the EGF and at the customer buildings, has become non-existent. Chem-Aqua’s proprietary biological treatment system continues to function properly.
 - The side stream filter has significantly reduced the amount of suspended solids in the chilled water and improved the turbidity of the system except the turbidity and iron levels increased slightly in March and April. These results may be indicative of customers re-opening portions of their in-building systems which have been isolated during the winter months.
 - Values shown in Figure 15 at or near zero may be at or below the detectable limit and are represented by “zero”.
 - Figure 15 shows the results of several measured metrics within the chilled water system which may be affected by the side stream filter.

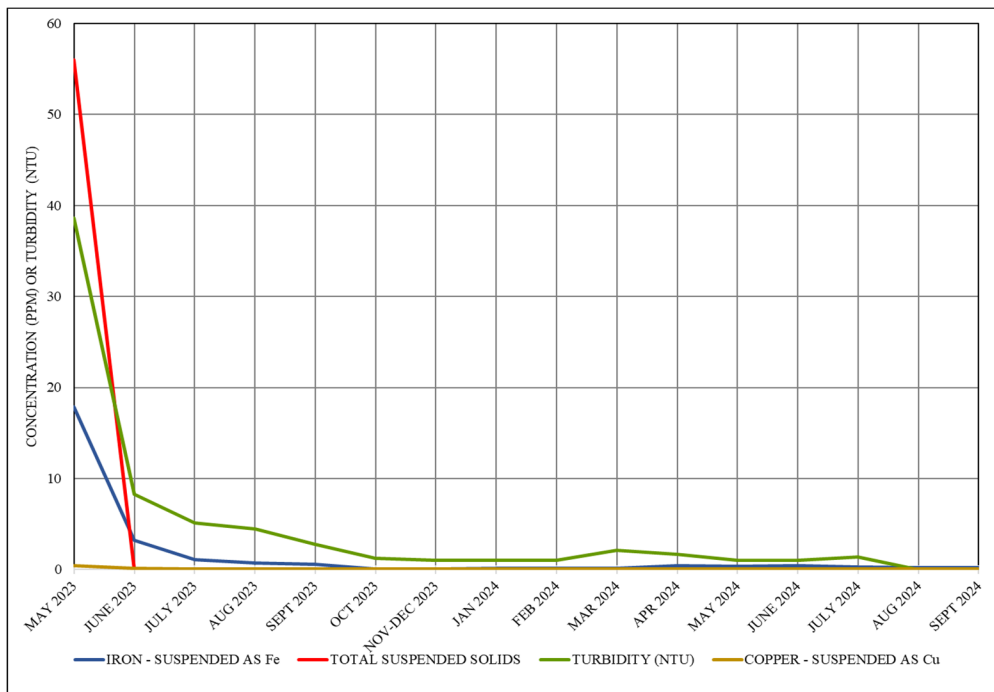


Figure 15. Chilled Water Composition Downstream of Side Stream Filter

G. Maintenance and EGF Repairs

DEAO continues to report on the routine and preventative maintenance activities performed on the EGF primary and ancillary equipment. The principal 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 and are not the responsibility of Metro or the DES customers.

Repairs and As Needed Maintenance

- Office Janitorial Services, equipment room cleanup and pest control;
- Checked, updated, and backed up plant computers and servers;
- Assisted with data acquisition for Plant Efficiency (Skyspark);

Repairs or Replacement

- Repaired de-aerator 2;
- Repaired and replaced insulation on the chillers;
- Repacked condensing water pump 5 and boiler feedwater pump 1;
- Replaced conductivity probe on boiler 4;
- Replaced solenoid valve on the air dryer;
- Rebuilt de-aerator 2 controller;
- Repaired leak on boiler 3 feedwater line;
- Replaced chiller control panel 4;
- Installed new control air dryer;
- Replaced piping on the blowdown recovery system;
- Replaced chiller 4 purge unit;
- Repaired air curtain steam control valve;
- Other repairs, maintenance and preventative maintenance were made during the quarter and are listed in the monthly reports issued by DEAO.

H. EGF Walkthrough

The EGF Walkthrough was conducted on September 24, 2024, by Kevin L. Jacobs, P.E. Based on the review of the EGF, the following comments and observations are presented. The following items were observed during this Walkthrough which require attention.

- The louvers and portions of the fill at cooling towers 1, 6 and 15 appear to have been damaged. Towers 5 and 15 have been repaired. The louvers on the east side of cooling tower 1 have been replaced. **Additional work is required on the balance of cooling tower 1 and all of cooling tower 6. This item has been reported for several years.**
 - Water appears to be leaking from or around a roof drain or sanitary vent onto the main operating floor near boiler 3. Water was found pooling on the floor next to the switchgear panel. DEAO has addressed the leak and cleaned up the area on the floor. **DEAO has made the necessary repairs, and the water was not leaking at this location during the Walkthrough. However, the hood over motor control center 3 has rusted or is stained by the rust and leaking water and needs to be cleaned.**
-

- A new water leak was observed south of the boiler 3 stack along the east wall in the basement during the Walkthrough. This leak appears to originate near the eye-wash fountain near the loading dock. **DEAO needs to address this issue.**
- The control valve on the city water makeup was not insulated and was sweating during the Walkthrough. **DEAO reported during the previous Walkthrough that their insulator was onsite and would make the repairs. However, the control valve insulation was not repaired as of the First Quarter FY25 Walkthrough. During the Walkthrough it was observed that a bucket with a drain hose had been installed beneath the valve, presumably to collect the condensation from the valve; a photograph of the bucket is shown on the cover page. DEAO needs to remove the bucket and insulate the valve and adjoining areas. – After following up with DEAO after the Walkthrough, the bucket was reported to be installed to collect and drain water from a leaking flange in addition to the sweating. Since this repair requires a shutdown of the entire chilled water system, DEAO intends to make the flange repairs after the cooling season.**
- Although DEAO reported they had cleaned the cooling towers this spring, the salt and/calcium build-up on the louvers to several cooling towers was noted. These towers were the east sides of 11, 12, 13, 14, and 15, and the west side of 8. **DEAO needs to remove the presence of this residue build-up as soon as possible since it reduces the airflow across the cooling towers. DEAO reported during the First Quarter FY25 Walkthrough that they were in the process of cleaning the towers. However, the buildup noted in the Fourth Quarter Walkthrough remained noticeably present. DEAO needs to clean the cooling towers.**
- The fan for cooling tower 15 was squeaking during the Walkthrough. **DEAO addressed this issue. This item will be removed from future reports.**
- Boiler feedwater pump 1 appeared noisier than normal and the packing was leaking. **DEAO needs to adjust the packing and address any other issue creating excessive noise.**
- The isolation steam valve for boiler 3 was leaking. **DEAO needs to address this issue.**
- Algae was observed at the bottom of each of the cooling tower basins (i.e. for each tower). In addition, silt, dirt, etc. were present in each of the basins. **DEAO needs to investigate the biocide dosage in the condensing water and complete the cleaning of the cooling towers.**
- Insulation was damaged or missing on several of the chilled water drain lines near the chilled water pumps causing the pipes to sweat and water to pool nearby. **DEAO needs to repair or install the insulation on these sweating pipes.**
- The electric conduits for several of the damper actuators for the refrigerant evacuation system have loosened and are hanging by the wires. These conduits, actuators and dampers are accessible from the catwalk near the expansion tanks. **DEAO needs to repair these conduits and connections. They should also inspect the wiring to ensure the actuators are properly wired and operational.**

- Water was pooling around several of the chillers and the chilled water pumps. **DEAO needs to address these issues.**
- Recognizing that much work has been performed along the west side of the plant which has resulted in the removal of the trees and destruction of the lawn, the tall grass and weeds growing in this area need to be cut. **DEAO needs to address this issue.**
- The customer building and EGF meter and instrumentation calibrations need to be updated. The newest entries are from 2022.
- Other action items previously noted to be addressed by DEAO have been completed. (See also the “Quarterly EGF Walkthrough Report,” dated September 25, 2024, by TEG for additional information.)

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

A. First Quarter FY25 Open Projects

The following projects remained open at the end of the First Quarter FY25.

1. DES163 – New Service to MDHA Parcel K (Peabody Union)

The Peabody Union development includes the construction of Guthrie St that will require modification to the east retaining wall along the EGF property. The installation of this new road may affect the entrance and exit to the EGF site and result in the loss of DES property. This project number is used to track costs and activities associated with the new road, the on-site construction activities, and their impact on DES.

DES remains in contact with the contractor and the developer regarding construction at this site. Revised submittals for the new fence were issued by Peabody Union during the quarter. TEG and DES reviewed these documents and provided comments back to the contractor and owner.

Demolition of the east wall was completed, and the new portions of the wall constructed during the quarter. Additional repairs to the parking lot will be made by the contractor near the end of the project.

Due to the disruption to the DES parking lot, MDHA has made provisions for DEAO personnel to park in adjacent parking garages. TEG and DEAO remain in contact with the Peabody Union personnel and their contractor regarding the scheduling of activities affecting DES and its operation.

2. DES192 – Peabody Street Development

This project number is used to track expenses with the proposed expansion of the EDS along Peabody Street and into the Rolling Mill Hill area. This project is on hold pending confirmation of additional customers along the proposed route.

3. DES195 – DES Parking Area

This project is on hold pending the completion of the Guthrie Street construction.

4. DES196 – Exploratory Excavation and Condensate Leak Repair at MH-9

This project is now closed.

5. DES201 – East Bank Development

There were no other activities for this project during the quarter.

6. DES202 – 7th and Commerce Hotel

The developer for the new hotel has reported their project is progressing with financing and should be re-starting in the coming quarters.

7. DES203 – Printers and Bankers Alley Building

The engineers for the developer reported the project is moving forward and that chilled water service from DES is included in the design.

8. DES211 – AA Birch Tunnel and MH D Repairs

This project is now closed.

9. DES212 – MH 2 End Can Replacement

This project is now closed.

10. DES213 – 4th Ave, 7th Ave and Broadway Tunnel Piping Support Slide Repairs

The piping supports in the three main tunnels (4th Ave, 7th Ave, and Broadway) include slides and guides to allow the piping to move freely due to thermal expansion and contraction in a linear direction with little resistance. The slides include Teflon coatings which have been damaged or have become unattached over the years of service. These slides and guides need to be replaced to maintain a low resistance to expansion and contraction movements. This project addresses the replacement or repair of these supports.

TEG conducted a site review to confirm the extent of the work needed; 208 supports were found to be worn or damaged. TEG has modeled these supports to determine the resulting forces on the supports based on varying friction factors. Due to the high number of worn or damaged supports, TEG is initially concentrating on the repair design for the highest priority supports. The design documents for these higher priority supports were completed during the Fourth Quarter FY24. Due to other project schedules, the bidding of this work has been delayed and will bid during the Second Quarter FY25.

11. DES217 – Auto Nashville Hotel, LLC DES Service Connection

TEG issued an RFP for a surveyor during the quarter and expect to have the survey work along Demonbreun St completed prior to the end of the Second Quarter. Design of the new routing is anticipated during the Third Quarter with construction on the service connection occurring during the summer of 2025. Service during construction is not planned until 2026.

12. DES219 – 7th Ave Tunnel Shotcrete Expansion

There is an area in the 7th Ave Tunnel that is about 100 feet in length that has experienced water infiltration for several years due to a city water leak. (This is in the same area as Manhole 22B – project DES218.) Metro Water Services has investigated the area for piping leaks but has been unsuccessful in identifying the leak location.

DES has completed projects to protect and preserve the DES piping and pipe supports in this area, but the water inflow has increased in recent months, and it is apparent that action needs to be taken before major damage to DES piping and piping supports occurs.

This project involves the extension of the existing shotcrete and drainage wicks in this 100-foot-long tunnel section to contain and direct the water inflow to the tunnel floor and prevent it from impacting the pipe and piping supports. With DEAO assistance, TEG met with a specialty contractor to review the work scope in the 7th Ave Tunnel. The work scope area is impeded by the steam and condensate return service piping to the Metro Library. Upon evaluation of the options, the relocation of the piping to facilitate the shotcrete work will be the most cost-effective solution. In addition, the relocation of the piping eliminated obstructions in the tunnel pathway and improved safety.

TEG prepared drawings and specifications for the relocation of this service piping and this work scope was bid during the Fourth Quarter FY24, TEG reviewed the bids and made an award recommendation to DEAO. The work will require an isolation of the service to the Metro Library and Hume Fogg High School. The piping work was executed in late September and the isolated portion of the system was successfully re-energized. The insulation and punch list work will be completed during the Second Quarter FY2025.

TEG has contacted the shotcrete contractor to initialize the scheduling of the second phase of this work with DEAO.

13. DES221 – War Memorial Service Modifications

DEAO has purchased all the new instrumentation for the War Memorial Auditorium and Legislative Plaza. TEG anticipates the building’s contractor to install these devices during the Second Quarter, but the scheduling of the onsite work is the contractor’s responsibility.

The renovations continue, with intermittent participation on the part of TEG and DEAO. This project will remain open for the duration of the renovations and as long as DES may be required to participate.

14. DES222 – Valve Tagging

To facilitate identification of the valves in the EDS, and more efficient tracking of their maintenance, TEG recommended the development of manhole and tunnel drawings to identify all EDS valves and their locations. After discussions with DEAO and the DES liaison, this project was established.

TEG began and completed the development of these drawings during the Fourth Quarter FY24, and they were transmitted to DEAO. DEAO is waiting for cooler weather to begin tagging the valves. This process will be done over several months. This project will remain open until the valves have been tagged.

15. DES223 – Manhole 18 Electrical Repair

Several electrical components in Manhole 18 are corroded and requirement replacement. DEAO and TEG met with an electrical contractor and reviewed the Manhole 18 components needing replacement. This contractor developed an estimate to complete the needed work, and TEG has followed up with several questions regarding the scope and options. An acceptable cost was negotiated with the contractor during the First Quarter FY25.

Several pieces of equipment have extended delivery times. This work is anticipated to begin during the Second Quarter FY25.

16. DES224 – EGF Optimization

After investigating the options and through consultation with Metro, TEG retained the services of Optimum Energy to evaluate the EGF chiller plant with the goal of evaluating alternatives to improve the efficiency of the plant resulting in potential energy savings. A preliminary draft report was issued by Optimum Energy during the quarter and discussed with TEG. An official draft is anticipated in the Second Quarter FY24 with a final report and presentation to follow.

17. DES225 – 1st and Molloy Hot Spot Investigation

During its monthly thermograph review of the EDS, DEAO discovered a significant “hot spot” in the northwest sidewalk area of the 1st Ave North and Molloy St intersection. (A “hot spot” is an area in the EDS which displays an elevated surface or ground temperature which is normally the result of either a condensate return system leak or accumulated water around the DES steam piping.) A portion of DES’s steam piping is buried at this location, however the condensate return piping is several feet away from this location. TEG directed DEAO to engage a local excavating contractor to perform an exploratory excavation at this location to determine the source of the accumulated water resulting in an elevated surface temperature.

The exploratory excavation discovered that there is an accumulation of groundwater at this location which resulted in a section of the steam piping becoming immersed. To prevent this, TEG determined that a sump pump manhole needed to be constructed at this location to control the water accumulation. The use of a precast sewer manhole was investigated, however due to the proximity of the steam piping and other underground utilities and structures, a precast manhole of the size needed could not be safely placed. TEG provided a design for a cast-in-place manhole in lieu of the precast manhole. These drawings were given to the contractor and a new manhole was constructed. Currently, the contractor is in the process of installing the needed discharge piping and electrical wiring and components to complete this project.

The piping and electrical scopes are anticipated to be completed during the Second Quarter FY25.

18. DES226 – State PRV Replacement

In the Second Quarter FY24, DEAO reported to TEG the air compressor at the Andrew Jackson building failed again. This air compressor provides the control and motive air supply for the pressure regulating valve for the steam system for the State buildings receiving steam from the State Tunnel. The Andrew Jackson and Rachel Jackson office buildings also receive steam downstream of this valve.

After subsequent investigation, DEAO determined the diaphragm on the existing valve appeared to be leaking air. This air leak has most likely contributed to the premature failure of the air compressor and its components due to frequent cycling. TEG began an investigation into the possible replacement alternatives for the valve which included both pneumatic and electric actuated valves. During the First Quarter FY25, TEG provided specifications and obtained quotations for a replacement valve. TEG forwarded the selected valve quotation to DEAO to purchase. This replacement pneumatic actuated valve is anticipated to be delivered and installed during the Second Quarter FY25.

19. DES227 – Manhole 16 Condensate Return Piping Replacement

Manhole 16 is a vertical shaft which connects with the 4th Avenue Tunnel. Due to the surface water entering the manway at the top of this shaft, the condensate return piping in Manhole 16 is corroded and in need of replacement. Because of the field conditions, the replacement of this piping would be difficult, so TEG has directed the contractor to replace this piping with a high temperature hose.

This work is underway and is expected to be completed during the Second Quarter FY25.

20. DES228 – Manholes B2 and B3 Dripleg Modification

Manholes B2 and B3 were designed and installed in 2003 to serve the Schermerhorn Symphony. The elevation of the driplegs resulted in the drain piping and dripleg cap being very close to the manhole floor. Water infiltration has caused the lower piping elements to corrode. TEG recommended the “shortening” of these driplegs to reduce their exposure to accumulated groundwater. The modification of these driplegs will take place during a planned outage sometime in calendar year 2025. However, portions of the dripleg modifications are being prefabricated to have on hand in case an emergency outage is needed due to a steam leak resulting from corrosion.

This project will remain open until the driplegs are modified.

B. First Quarter FY25 Closed Projects

DES196, DES211, and DES212 were closed during the First Quarter.

C. Capital Projects Budget

The following table summarizes the costs and remaining balance of the DES capital projects based on reported expenditures to date. Open projects or completed projects that require some additional management efforts are shown. Projects discussed in this report that are not listed did not have any expenses during the quarter. Total costs for projects that are closed are shown with a gray highlight. Only the funds currently available are shown. All the projects closed during FY24 and FY25 may not be noted due to outstanding invoices from the contractors.

Table 5. Capital Projects Expense Summary

DES Project #	Description	Total Budget	FY25 Spending to Date	Total Spent to Date	Remaining Balance
Fund-49116					
DES163	Parcel K Service	\$ 1,018,802	\$ 4,626	\$ 104,078	\$ 914,724
DES192	Peabody Developments	\$ 40,000	\$ -	\$ 28,803	\$ 11,197
DES195	DES Parking Lot	\$ 275,000	\$ -	\$ 12,688	\$ 262,312
DES196	Condensate Line Leak Repair at MH9	\$ 715,000	\$ 57	\$ 728,728	\$ (13,728)
DES201	East Bank and Oracle Development	\$ 110,000	\$ 493	\$ 42,201	\$ 67,799
DES202	Service to 7th and Commerce	\$ 1,630,000	\$ 415	\$ 28,943	\$ 1,601,057
DES203	Service to Printer's Alley Residential	\$ 850,000	\$ -	\$ 1,564	\$ 848,436
DES211	MHD and AA Birch Tunnel	\$ 141,500	\$ 61,761	\$ 77,661	\$ 63,839
DES213	Tunnel Support Repair	\$ 321,500	\$ 7,081	\$ 36,058	\$ 285,442
DES214	Chiller 2 R'newel	\$ 330,000	\$ -	\$ 220,313	\$ 109,687
DES216	MH6, 11 and 12 Coating	\$ 37,400	\$ -	\$ 3,572	\$ 33,828
DES217	DES Service to AutoNashville Hotel, LLC	\$ 3,079,000	\$ 2,693	\$ 9,220	\$ 3,069,780
DES218	MH B2,B6,B7,B8,B9 and 23B Cleanout/Coatings/Repairs	\$ 60,500	\$ -	\$ 6,903	\$ 53,597
DES219	7th Ave Tunnel Repairs	\$ 391,600	\$ 28,700	\$ 62,531	\$ 329,069
DES220	MH20 Cond Repair & Grating	\$ 51,700	\$ 12,489	\$ 20,663	\$ 31,037
DES221	WM/LP Service Modifications	\$ 100,000	\$ 22,580	\$ 40,951	\$ 59,049
DES222	EDS Tagging Program	\$ 44,000	\$ 4,400	\$ 31,606	\$ 12,394
DES223	MH-18 Electrical Repair	\$ 121,000	\$ 957	\$ 4,322	\$ 116,678
DES224	EGF Optimization Evlauation	\$ 120,000	\$ 13,340	\$ 15,948	\$ 104,052
DES225	1st Ave and Molloy Hot Spot	\$ 165,000	\$ 51,070	\$ 51,070	\$ 113,930
DES226	State PRV Replacement	\$ 110,000	\$ 25,787	\$ 25,787	\$ 84,213
DES227	MH-16 CND Line	\$ 55,000	\$ 618	\$ 618	\$ 54,382
DES228	MH-B2 & B3 Dripleg Mod	\$ 82,500	\$ 60	\$ 60	\$ 82,440
Total Closed Projects		\$ 5,144,600	\$ -	\$ 5,144,600	\$ -
Metro Project Admin		\$ -	\$ -	\$ -	\$ -
Project Man, Development, etc		\$ 11,005,898	\$ -	\$ -	\$ 11,005,898
Fund Total		\$ 26,000,000	\$ 237,128	\$ 6,698,888	\$ 19,301,112

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

Several EDS repairs and improvements were made during the First Quarter. The principal 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 account to date is \$134,875. Table 6 provides a summary of the FY25 expenditures and revenues to date associated with the R&I budget.

Table 6. FY25 Repair and Improvement Expenditure and Revenue Summary

Description	Date	Tracking #	Vendor	Expenditure	Transfers	Balance
Value at end of FY24				\$ 513,650.54		\$ 77,523.53
Interest	7/1/2024	-	-	\$ 1,904.08		
Interest	7/1/2024	-	-	\$ (1,904.08)		
DEAO July 2024 R&I	8/23/2024	-	DEAO	\$ 48,510.21		
Interest	8/1/2024	-	-	\$ 1,985.76		
Interest	8/1/2024	-	-	\$ (1,985.76)		
DEAO Aug 2024 R&I	9/20/2024	-	DEAO	\$ 1,538.28		
Interest	9/1/2024	-	-	\$ 2,078.16		
Interest	9/1/2024	-	-	\$ (2,078.16)		
DEAO Sept 2024 R&I	10/23/2024	-	DEAO	\$ 5,769.61		
DEAO Sept 2024 R&I	10/23/2024	-	DEAO	\$ (5,769.61)		
Sub-Total First Quarter				\$ 50,048.49	\$ 80,550.00	\$ 108,025.04
Sub-Total Second Quarter				\$ -	\$ 26,850.00	\$ 134,875.04
Sub-Total Third Quarter				\$ -	\$ -	\$ 134,875.04
Sub-Total Fourth Quarter				\$ -	\$ -	\$ 134,875.04
FY25 Year to Date				\$ 50,048.49	\$ 107,400.00	\$ 134,875.04

B. Preventive Maintenance

Preventive maintenance, tunnel and manhole inspections and reviews of customers' mechanical rooms were performed during the quarter. The principal items for discussion are presented.

1. EDS Manhole/Tunnel Inspections

- a. The monthly vault and tunnel reviews were conducted as scheduled.
- b. DEAO continues to replace trap assemblies within the EDS as needed and any removed or damaged insulation should be repaired

or replaced after the successful trap replacement. This insulation repair or replacement has not been taking place in some instances, so DEAO needs to improve on this follow-up.

- c. DEAO should continue to clean areas of minor corrosion and then paint those areas with cold galvanizing paint. If maintained, this should help reduce or slow down the progression of some areas of corrosion.
 - d. Additional action items and maintenance issues are discussed in the EDS Walkthrough section of this report.
2. Water chemistry samples at customer buildings were taken as scheduled.
 3. DEAO performs thermographic surveys of the EDS each month. In July, they noted a new hotspot near the intersection of 1st Ave South and Molloy St. A subsequent investigation led to project DES225 as discussed previously.

C. Emergencies

There were no emergencies during the quarter.

D. EDS Walkthrough

The First Quarter FY24 walkthrough was conducted on July 31 and August 1, 2024. The manholes that were visited included Manholes 2, 3, 4, 5, 6, 6A, 9, 10, 11, 12, 13, 15, 20, 22B, C, D, D1 and U.

Like the manholes reviewed last quarter, many of these manholes have steel piping supports which have been part of our ongoing effort to remediate, repair and prevent corrosion and have recently been cleaned and coated as a part of this effort. The coating appears to be performing relatively well however it is important that these supports be monitored closely by DEAO, and any degradation observed be reported immediately to TEG and repairs made quickly. This should result in instances of corrosion being addressed at minimal cost to Metro.

1. Manhole 2
 - a. There was water present in this manhole, and it required pumping prior to entry.
 - b. There was some mud in this manhole. DEAO should remove the mud as soon as possible.
 - c. Concrete patching material was applied to several small areas on the walls and ceiling in September 2013. Some of these patches are beginning to experience flaking. DEAO personnel should monitor these patched areas and notify TEG if the deterioration progresses.
 - d. The concrete patch material on one of the areas in the ceiling (mentioned in item 1.c. above) has failed. DEAO should have Enecon chip away the concrete around the exposed rebar to 1” below the surface, clean the rebar,

- coat the rebar with Enecon Chemclad GP and patch the area with Enecon Duraquartz.
- e. The grout that Enecon installed around the perimeter of the new steam end can wall penetration has cracked and fallen away, probably due to thermal movement of the end can. DEAO should chip away the remaining grout on the end can perimeter and install high temperature caulk (RectorSeal Red Silicone Caulk available at Home Depot) around the perimeter of the end can.
 - f. The steam and condensate return piping originally passed through this vault going east to Manhole 1 (abandoned) and there were service lines going south to the Washington Square area. All these wall penetrations are capped. These capped penetrations (wall sleeve and link seals) are deteriorating, and it is likely that groundwater will start seeping through them in the future. These penetrations should be sealed with concrete. TEG will prioritize this with other EDS projects and develop drawings to seal these openings. Meanwhile, DEAO should continue to monitor these penetrations and report any changes to TEG.
 - g. The high temperature caulking of the lip of the manhole frame to reduce the amount of surface water infiltration was not successful. TEG has asked DEAO to purchase and install O-ring gasketing around the manway lids to determine if this is a viable method to reduce the amount of surface water infiltration into this manhole. DEAO should report to TEG the successful installation of this O-ring gasket and then monitor and report its performance to TEG.
2. Manhole 3
- a. There was water in this manhole, and it required pumping prior to entry.
 - b. The hairline cracks in the concrete walls noted in prior reports do not appear to be propagating. TEG will continue to review these cracks during its quarterly review.
 - c. The steel piping supports, and the entry ladder were cleaned and coated recently and appear to be in generally good condition. There was one small spot on the kicker to the northern wall where the Enecon coating had flaked off. This spot was wire brushed and coated with cold galvanizing paint during the visit. DEAO should have Enecon make more permanent repairs to this area.
 - d. The steam service valve for the Bobby Hotel in this manhole was inoperable and was replaced during the planned steam outage in late September 2023 under DES208.
3. Manhole 4
- a. There was water in this manhole, and it required pumping before entry.
 - b. The steel piping supports, and entry ladder were recently cleaned and coated by Enecon and are in good condition except for the entry ladder, this coating
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- is failing in several locations. On August 22, 2024, Enecon made the needed repairs to the ladder.
- c. The abandoned condensate trap piping from Manhole 4 to 401 Union is stubbed into Manhole 4 and is open ended. Steam is entering Manhole 4 through this abandoned trap piping from the vent line from the flash tank in the basement of 401 Union St. DEAO should contact a representative with 401 Union St. and set-up a time for DEAO and TEG to review the basement piping and discuss potentially cutting and capping this vent piping within the building basement.
4. Manhole 5
 - a. There was water in this manhole, and it required pumping prior to entry.
 - b. The 6” condensate valve has an extremely small pin hole leak. The replacement of this valve will require the isolation of a small portion of the condensate return piping system. Because the leak is extremely small, it does not warrant the immediate scheduling of a repair. DEAO should notify TEG immediately if the magnitude of this leak increases. DEAO should add this valve replacement to their list for a near future repair.
 5. Manhole 6
 - a. There was water in this manhole, and it required pumping before entry.
 - b. There are some holes and cracks in the concrete surfaces in this manhole which DEAO should continue to monitor and report any deterioration to TEG.
 - c. The structural pipe supports were recently cleaned and coated by Enecon and are in good condition.
 - d. The condensate piping valve is located underneath the secondary manway, and therefore is exposed to incoming surface runoff. The yoke of the valve is badly corroded due to this water infiltration. TEG has reviewed the distribution piping and believes that this valve may not be needed, however some investigation needs to take place to verify this which is associated with the investigation cited in Manhole 6A’s discussion below.
 - e. A portion of the dripleg insulation is absent due to piping repairs. Additionally, the trap piping insulation is in disrepair. DEAO should have repairs made to the insulation in this manhole under R&I as soon as possible. **This item appeared in the last two reports.**
 6. Manhole 6A
 - a. Manhole 6A consists of two separate manholes that include the steam and condensate return piping in one manhole, and chilled water supply and return piping in the second manhole. All this piping serves the Hermitage Hotel. Each of these manholes have only one manway which is a potential safety hazard for personnel entry and maintenance. If maintenance access is required, the Hermitage Hotel steam service can be isolated at Manhole 6 and Manhole 23 without isolating other customers. Both manholes have
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dirt floors, and the steam and condensate manhole are extremely hot and frequently has secondary steaming. DEAO has reported that the steam valve is inoperable. TEG will perform a detailed investigation to determine a long-term plan for this manhole and the need for these valves. TEG has instructed DEAO to create a DES project for this investigation which will include:

- i. TEG has directed DEAO to confirm that the steam isolation valves in Manholes 6 and 23 are functioning adequately.
- ii. TEG will review the Hermitage Hotel in-building piping arrangement with DEAO.
- iii. TEG has directed DEAO to isolate the steam service to the Hermitage Hotel to permit the review of Manhole 6A's steam service manhole interior. **This item appeared in last year's report.**

7. Manhole 9

- a. This manhole has an electric sump pump. However, a small amount of water was present in this manhole because the existing sump/float combination will not allow the pump to remove all the water.
- b. The structural pipe supports/anchors in this manhole were cleaned and coated by Enecon. There were some failures in the coating which have been addressed by Enecon. The coatings are now in satisfactory condition.
- c. Some cracking has occurred in the underside of the concrete opening which was cut into the northern wall of the "old" manhole. This crack was sealed by a contractor in early 2018. DEAO should monitor these sealed cracks and report any degradation to TEG.
- d. The link seals around the city water line within this manhole seep groundwater. DEAO has tried tightening the link seals to no avail. DEAO should direct Enecon to seal these link seal/wall penetration locations with Enecon Encrete WP hydraulic cement. This will require the removal and re-installation of portions of the insulation on the water pipe to accomplish this work. **This item appeared in the previous 3 years' reports.**
- e. There is a small, spalled area in the north-east ceiling of the original manhole area. This includes a small portion of corroded rebar. DEAO should hire Enecon to chip away the concrete around this corroded rebar, clean the rebar of all corrosion, and then coat the rebar with Enecon Chemclad GP and patch the area with Enecon Duraquartz.

8. Manhole 10

- a. There was water present in this manhole which had to be swept into the sump for removal because the manhole floor slopes away from the sump.
- b. This manhole is always hot which is indicative of groundwater accumulation around the exterior of the manhole.
- c. The condensate anchor was recently cleaned and coated, but the coating was failing at the base of the anchor. Enecon has repaired the failed area, and now the anchor is in good condition.

- d. The insulation blanket on the condensate piping at the western wall is split and needs to be replaced. DEAO should have this blanket replaced prior to the next quarterly review of this manhole.
9. Manhole 11
 - a. There was water in this manhole, and it required pumping before entry.
 - b. The structural pipe supports were recently cleaned and coated and appear to be in good condition.
 - c. Spalling of the manhole roof was repaired in 2018 and appears to still be in satisfactory condition.
 - d. The wall penetration end cans were repaired/replaced under DES-179 and appear to be in good condition.
 - e. TEG instructed DEAO to purchase and install O-ring gasketing between the manway covers and frames to mitigate the inflow of surface water.
 - f. The sparge tube has an insulation blanket on its flanges. This blanket is loose and not properly positioned on the flanges. This blanket should be properly re-installed as soon as possible. DEAO should notify TEG if the blanket needs to be replaced.
 10. Manhole 12
 - a. No water was present in this manhole.
 - b. The structural steel within this manhole was recently cleaned and coated by Enecon and is in good condition.
 - c. The grout under the northern base plate on the east end of the manhole has some small cracks. DEAO should monitor this and report any significant changes to TEG.
 - d. The trap was replaced in this manhole and some of the piping insulation had to be removed. This insulation has not been repaired; this includes insulation on the dripleg. DEAO should have this insulation repaired as soon as possible. **This item appeared in the last report.**
 11. Manhole 13
 - a. No water was present in this manhole.
 - b. The steam piping at the western wall penetration includes an insulation blanket. This blanket has deteriorated. DEAO should remove this blanket and investigate if this section of piping can be successfully field insulated to eliminate the blanket. If not, this insulation blanket should be replaced. **This item appeared in the last two reports.**
 - c. There is some water on the manhole floor beneath the chilled water valves at the western wall. This may be condensation which indicates that the chilled water valve/pipe should be reinsulated. Or the water could be groundwater seepage from the western wall penetration(s) next to the valves. DEAO should remove the insulation at the western wall to determine the source of this water. If it is groundwater from the wall penetration(s), DEAO should have Enecon seal the penetration(s) with
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Encrete WP. If the water is the result of condensation on the chilled water piping and valve(s), DEAO should have the chilled water valves and piping reinsulated and sealed. This should be investigated prior to making the insulation repairs in item b. above. **This item appeared in the last two reports.**

- d. The structural steel within this manhole was recently cleaned and coated by Enecon and is in good condition.
- e. The eastern hanger rod for the condensate piping in the low ceiling area of the manhole is broken and needs to be replaced. It appears that this hanger rod may not have been plumb when it was installed, and the embedment position of this rod may need to be relocated. DEAO should replace this rod as soon as possible.
- f. There is some mud in the floor of this manhole that needs to be removed.

12. Manhole 15

- a. The banding on one of the aluminum grating sections that covers the sidewalk entrance to this manhole is loose. DEAO should investigate if this band can be welded in place. If it can't, DEAO should order and install a new grating section. (Subsequent to this review, DEAO successfully had this grating repaired by welding.)
- b. There is some flaking of the coating with some corrosion on the structural steel in the sidewalk entrance area of this manhole. DEAO should have Enecon clean and coat the steel in this entrance area. Until Enecon does this, DEAO should continue to wire brush and paint the corroded areas with cold galvanizing paint.
- c. There is a section of insulation jacketing missing on one of the chilled water lines in this manhole. Additionally, there is some missing insulation jacketing on the chilled water piping in the vertical shaft underneath Manhole 15. It appears that this damage occurred during the recent vacuum excavation/gutter installation work done in this manhole. DEAO should have the installing contractor make the needed repairs as soon as possible. (Note: one section of insulation jacketing in the vertical shaft was already absent. Therefore, the cost of this repair should be proportionately shared by the installing contractor and Metro.) This repair should be carried out as soon as possible.
- d. Groundwater is leaking into Manhole 15 and is flowing down the vertical shaft resulting in ponding water and mud in the floor of the northern section of the 4th Avenue Tunnel. The water is entering the vertical shaft just below Manhole 15's concrete floor. This area is extremely difficult to access. Samples of this water were analyzed by Chem Aqua and test results indicated that the source is city water. Metro Water Services (WS) requested a sample of this water to test to determine if it is city water. Subsequent to this review, DEAO provided a sample to WS, and the results indicated that it is NOT city water.

- e. Some of the “openings” in the grating at the top of the 4th Avenue Tunnel vertical shaft are clogged with debris and portions of the grating are corroded and need to be repaired or replaced. DEAO should clear these openings because this is an air intake for the 4th Avenue Tunnel. Meanwhile, TEG will develop a specification for the replacement of this grating for DEAO to execute.
13. Manhole 20
- a. DES220 was recently completed in this manhole which included the replacement of a portion of the condensate return piping, and the installation of grating over the vertical shaft opening.
 - b. There is water seeping into this manhole in the southwestern corner. DEAO should monitor this water and immediately report any significant changes to TEG.
14. Manhole 22B
- a. This manhole is at the top of a vertical shaft which connects to the 7th Ave Tunnel.
 - b. The thermal movement of the steam and condensate piping has created indentions in the insulation jacketing at the penetration of the piping through the floor grating. Most likely this is the result of the vertical shaft piping being in a slightly different position than what it was originally when the new piping was installed. DEAO should continue to monitor the piping/insulation at the grate penetration and report any significant changes to TEG.
 - c. Portions of the grating covering the vertical shaft opening is corroded. The removal and re-installation of this grating (for access into the 7th Ave Tunnel) is part of the scope of DES219. TEG has spoken with the DES219 installing contractor about mitigating this corrosion when this grating is re-installed.
 - d. DES218 included the placement of hydraulic cement in the piping wall penetrations of this manhole to stop the intrusion of water. Portions of the chilled water piping insulation were removed to accommodate this installation. This insulation has not been re-installed and should be part of DES218. DEAO should have this insulation re-installed as soon as possible.
15. Manhole C
- a. There was water present in this manhole, and it required pumping before entry.
 - b. The southern condensate return piping slip type expansion joint is located underneath the secondary manway. Surface water has flowed through this secondary manway and saturated the expansion joint’s insulation blanket. This has resulted in the corrosion of the expansion joint. TEG and DEAO removed the saturated and damaged insulation blanket in a prior review.
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This expansion joint is not being used because the condensate piping between Manhole C and Manhole 10 is damaged and out of service. This expansion joint needs to be removed and the piping capped and re-insulated. (Subsequent to this review, DEAO hired a contractor and had the joint removed. However, the work is not complete, and the capped piping needs to be reinsulated.)

- c. The entry ladder is corroded and should be replaced under DEAO's Amendment 3 obligations. (Subsequent to this review, DEAO has replaced the ladder under their Amendment 3 obligations.)

16. Manhole D

- a. Recently completed project DES211 included the cleaning and coating of all the support steel in this manhole, therefore the metal piping supports/anchors are in good condition.
- b. There is some insulation missing on the manhole piping that was the result of prior piping repairs. The absent insulation poses a safety hazard to maintenance personnel and should be replaced as soon as possible. **This item appeared in the last report.**
- c. A painted steel electrical enclosure mounted on the northern wall appears to house the sump pump level controller. This enclosure is badly corroded and requires replacement with a 316 stainless steel NEMA 4X enclosure. This enclosure should be replaced as soon as possible. **This item appeared in the last report.**
- d. The southern steam piping penetration end can is corroded and in poor condition. TEG will develop drawings to replace this end can assembly and provide them to DEAO for execution.

17. Manhole D1 (Sump)

- a. This manhole was extremely hot and humid and could not be entered (there is only one manway). There may be an underground condensate return piping leak that is the cause of the high temperature and humidity. DEAO should conduct a thorough thermographic review of this area to determine if there is a condensate leak nearby.

18. Manhole U

- a. There was a small amount of water present in this manhole, but it did not require pumping.
- b. Because of groundwater infiltration into this manhole, secondary steam results and the roadway area above this manhole remains warm. In the past, this heat has caused settlement and some depression of the asphalt above the manways and could result in damage to one, or both, of the manway lids and frames. DEAO should continue to monitor this condition and report any significant changes to TEG.
- c. The condensate return piping that passes through this manhole began leaking several years ago and a repair clamp was installed. This repair

clamp was not leaking during this review. DEAO should continue to monitor this and report any leaks or changes to TEG.

VI. Customer Relations

This section contains descriptions of the marketing efforts made by the DES Team during the quarter and prominent existing customer interactions. The topics of interactions, meetings and training seminars with the customers are also discussed. There are currently 22 customers, comprised of 43 different buildings (including the Auto Nashville Hotel) connected to the EDS. Service to each of these buildings continues to prove satisfactory, and the responsiveness to customer issues is managed by DEAO in an expeditious and professional manner.

A. Marketing

TEG continues reach out and investigate potential developments along the Peabody St corridor and the Rolling Mill Hill area. In addition, discussions with other buildings and developments north of KVB occurred during the quarter. Overall, TEG has contacted or discussed possible service to sixteen new developments within the past year and six existing buildings. Most of the new developments are in the preliminary phases of their projects which delay firm decisions in choosing DES.

Metro Water Services (MWS) participates on the East Bank staff, which consists of engineering consultants and representatives from Metro departments associated with development and infrastructure in the city. The Metro Liaison represents DES infrastructure. The Metro Liaison has been actively promoting the use of district energy in the East Bank planning process by identifying synergies with other utility, transportation, and public recreation agencies. DES continues to pursue options and potential customers on the East Bank. Activities are tracked under the project DES201.

B. Customer Interaction

The amount of interaction between DEAO's customer service representative (CSR) and the DES customers has greatly reduced in recent months. Much of the reporting included within the Customer Interaction of DEAO's monthly reports does not involve customer interaction but rather items related to EDS maintenance. If customers are not reporting issues to DEAO or there are no issues to report, such clarification should be stated.

TEG and DEAO have met with and discussed the control methodology and operation of the Music City Center with their staff during the quarter. These discussions have included the subject of operations which have adversely impacted other customers, cleaning their heat exchangers, and instrumentation maintenance.

TEG discussed with the Schermerhorn Symphony Center the impact the Music City Center has had on their operation during the summer.

TEG discussed with the appropriate building personnel the desire for both the Sheraton Hotel and the 4th and Church building to reduce their contract demands and, thereby, reduce

their capacity charges with DES. Further reporting on the part of these customers is necessary.

VII. Recommendations

DEAO is obligated to meet the standard of good utility practice and performance guarantees as outlined by the ARMA. DEAO continues to improve its operation and has succeeded in meeting several of the guaranteed metrics including improvements with the steam-water and steam-fuel. In TEG's opinion, DEAO needs to continue their efforts to improve the operations of the EGF to meet the remaining metrics more consistently. However, several outstanding and unaddressed issues noted in the EDS and EGF Walkthrough reports need to be addressed by DEAO, especially the long-outstanding items.

Based on the review of the First Quarter FY25 EGF and EDS operations, the following recommendations are made.

- DEAO needs to address the maintenance items included in the EGF and EDS Walkthrough sections of this report as soon as possible.
- DEAO needs to continue to address the cooling tower repairs and other maintenance items noted in the EGF Walkthrough reports. Based on operating data for the EGF, the cooling towers continue to underperform resulting in decreased chiller efficiency resulting in unnecessary CO2 emissions. Some of these issues could be addressed with additional repairs and maintenance to the towers.
- DEAO needs to continue their preventative maintenance program to decrease the number of equipment malfunctions and trips within the EGF or otherwise improve the operation of the system to prevent such frequent occurrences in the future. However, the number of trips and malfunctions was greatly reduced in the First Quarter.
- The structural steel within vaults and tunnels that has been professionally cleaned and coated should be closely monitored so that if deterioration occurs, it can be addressed quickly and cost effectively.
- Structural steel within the vaults and tunnels that have not been professionally cleaned and coated which exhibit evidence of corrosion should be cleaned and coated by DEAO using cold galvanizing paint to mitigate the progression of corrosion.
- Insulation that is absent or in disrepair in the vaults and tunnels should be repaired or replaced.
- Steam traps which need repair or replacement should be addressed immediately.
- Expansion joint leaks should be repaired by either re-packing the joint or injection of a sealant once the leak(s) is sufficient for the repair to be effective.
- DEAO should continue to remove debris and mud from manholes.