



Operations Monitoring Report

Fourth Quarter FY24

Prepared by:

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

July 31, 2024

I. Executive Summary

A review of the fiscal year 2024 (FY24) Fourth Quarter performance and contract obligations between Constellation Energy Solutions, LLC. (CES) 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, CES has continued to improve the performance of the EGF resulting in consistently meeting the chilled water-electric, and the steam-electric guarantees for the quarter. CES 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 CES and Section 18 of the ARMA. CES 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. These changes have resulted in CES more consistently meeting these metrics each month of the quarter. CES and TEG continue to monitor the efficiency and performance of the DES looking for means of improving the system.

For the Fourth Quarter FY24, the chilled water sales increased 16.6% over the previous Fourth Quarter (FY23). The chilled water sendout also increased 12.7% over the previous Fourth Quarter. A significant decrease in the system losses (31.2%) is attributable to a meter error at one of the customers in FY23. The number of cooling degree days increased 38.9% driven in part by a warmer than normal June. The peak chilled water demand for the current quarter was 16,833 tons, which is 5.4% lower than the previous Fourth Quarter.

FY24 saw a 2.8% increase in chilled water sales accompanied by a 2.1% increase in sendout. The losses decreased in FY24 8.5%. The number of cooling degree days increased in FY24 by 10.2%. The peak cooling demand for the year was 19,372 tons (an increase of 5.5% over FY23) which occurred in August 2023 and was coincident with an extended period of high outdoor air temperatures.

Steam sendout for the current quarter increased 1.7% over the previous Fourth Quarter with steam sales declining slightly at 1.0%. This decrease in steam sales correspond to a 28.7% decrease in the number of heating degree days. Total steam system losses increased 10.6% from the previous Fourth Quarter, which is not unusual when steam sales are low. The peak steam demand for the current quarter is 85,973 pounds per hour, which represents an increase in the previous Fourth Quarter demand of approximately 19.2%. This high demand occurred during April during a period of low outdoor air temperatures.

For FY24, the steam sendout decreased 0.7% while the steam sales decreased 2.2%. The number of heating degree days decreased 10.2%. The decrease in heating degree days and the increase in cooling degree days indicate a warmer than normal year. The peak steam demand for the year was 145,600 pounds per hour (6.8% increase). The system losses for the year increased by 8.0% due to low steam sales.

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 nineteen open projects, CES currently is only involved in seven. Of these seven projects, three involve issuance of final billings and one involves punch list management/close-out. Of the remaining three projects, the work scopes of two have not begun and the final project has CES sporadic involvement. 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 DES222, DES223, and DES224 have been added. Projects DES218 and DES220 were either closed or are now in close-out.

The current fiscal year system operating costs to date are \$19,735,800. This value represents approximately 89% of the total budgeted operating cost for FY24 and includes all Self-Funded Debt Service Payments. However, a few additional expenses internal to Metro are not included and will be added once the year-end accounting has been completed. The customer revenues from the sales of steam and chilled water for FY24 are \$19,767,000 (90.7% of budgeted amount) which includes the annual true-up amount for FY23 and other miscellaneous revenue sources. Although not confirmed at the time of this report, Metro has reported the transfers for the Metro Funding Amount (\$384,400; 100% of budget) has been made. The actual MFA can only be estimated due to outstanding invoices as of the date of this report.

Table of Contents

Section	Description	Page
I.	Executive Summary	i
II.	Energy Distribution System Sales and Performance	1
	A. Chilled Water	1
	1. Sales and Sendout	1
	2. Losses.....	3
	3. Performance	7
	B. Steam.....	9
	1. Sales and Sendout	9
	2. Losses.....	11
	3. Performance	13
	C. Contract Guarantee Performance	16
	D. Operating Costs.....	18
III.	EGF Operations	21
	A. Reliability.....	21
	B. Efficiency.....	22
	C. Environment, Health, and Safety	22
	D. Personnel.....	22
	E. Training.....	22
	F. Water Treatment	22
	G. Maintenance and EGF Repairs	24
	H. EGF Walkthrough.....	24
IV.	Capital Projects	27
	A. Fourth Quarter FY24 Open Projects	27
	B. Fourth Quarter FY24 Closed Projects.....	31
	C. Capital Projects Budget.....	33
V.	Energy Distribution System Repair, Improvements, PM, and Emergencies ...	34
	A. Repairs and Improvements	34
	B. Preventive Maintenance.....	36
	C. Emergencies.....	36
	D. EDS Walkthrough.....	36
VI.	Customer Relations.....	42
	A. Marketing.....	42
	B. Customer Interaction.....	42
VII.	Recommendations.....	44

II. Energy Distribution Sales and Performance

A. Chilled Water

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

1. Sales and Sendout

A comparison for the Fourth Quarter chilled water sales is shown in Figure 1. This data reflects a 16.6% increase in sales for the current quarter over the same quarter of the previous fiscal year. Sales likewise increased for FY24 compared to FY23 by 2.8%. These increases in chilled water sales follow an increase in the number of cooling degree days of 38.9% for the Fourth Quarter and 10.2% for the fiscal year.

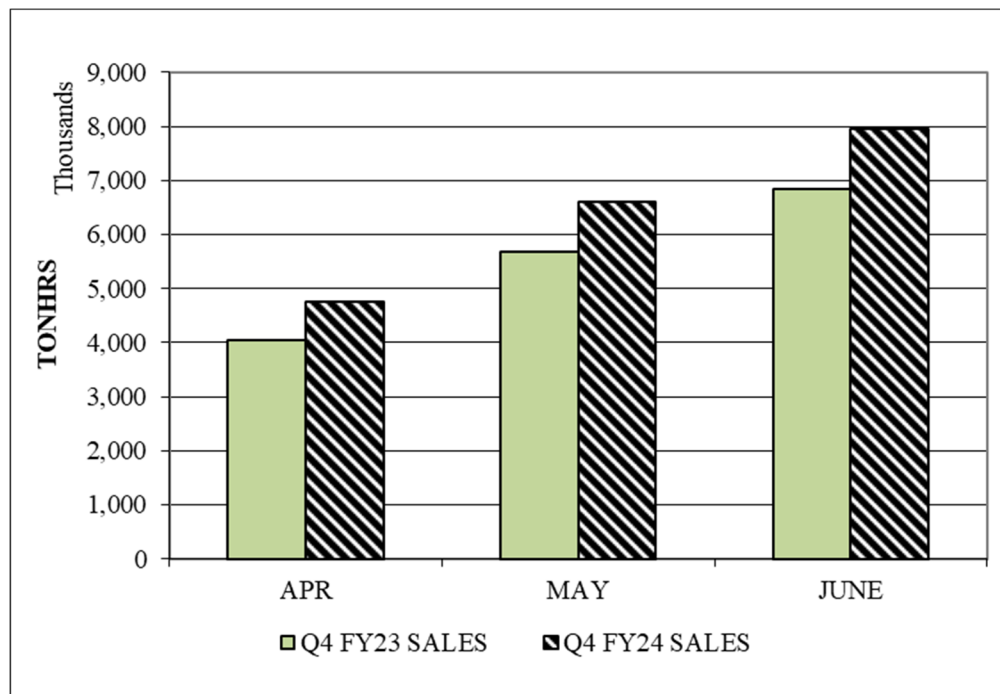


Figure 1. Chilled Water Sales Comparison

The peak chilled water demand for the current quarter was 16,833 tons, which represents a 5.4% increase over the previous Fourth Quarter. The peak demand for the fiscal year occurred in August 2023. This value, 19,372 tons, reflects a 5.5% increase over the peak cooling demand for FY23.

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.

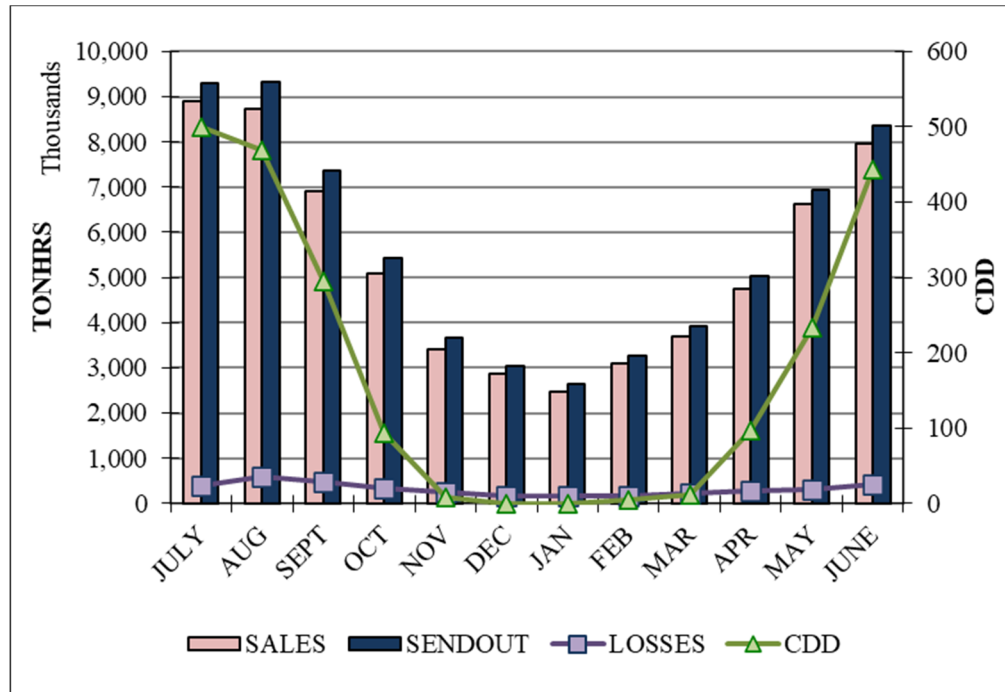


Figure 2. Chilled Water Sales, Sendout, Losses and CDD for the Previous Twelve Months

2. Losses

A comparison of the total chilled water energy losses in the EDS for the Fourth Quarter FY24 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. Losses are typically lower when chilled water sales are low. The losses decreased 31.2% over the previous Fourth Quarter due in part to a meter error at one of the customers in the Fourth Quarter FY23. For FY24, the total system losses decreased by 8.5%.

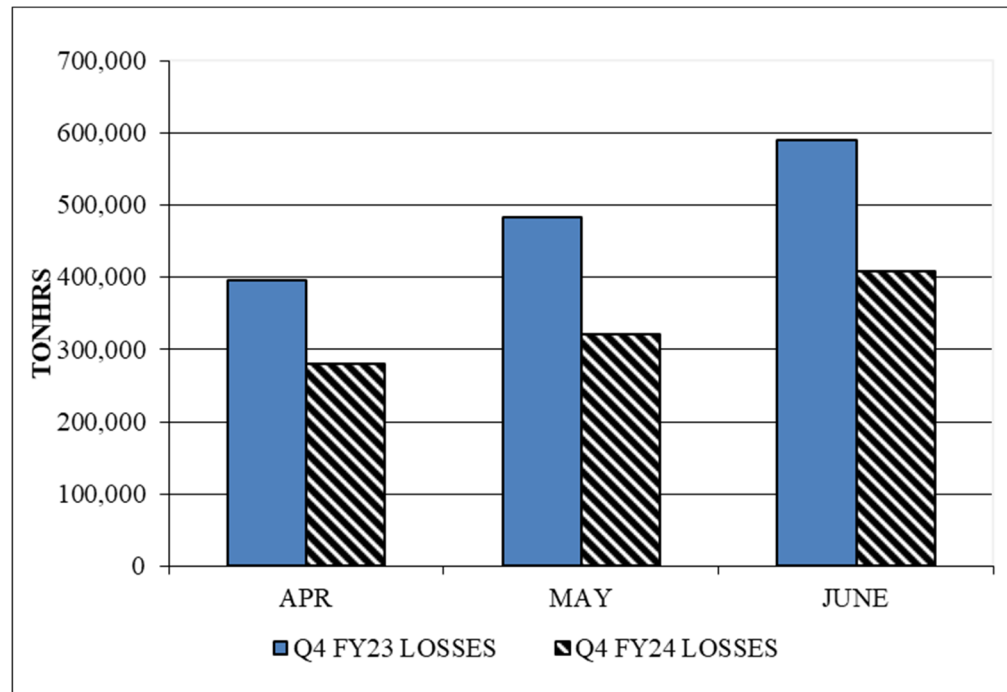


Figure 3. Chilled Water System Loss Comparison

The EDS make-up decreased 46.0% over the previous Fourth Quarter as the average daily make-up amounts continue to be near 9,000 gallons per day (on average for the quarter). However, during the quarter, the EDS make-up dropped to zero suggesting a customer supplied the EDS make-up for several days. CES investigated the issue and could not determine which customer. This phenomenon eventually stopped and the make-up source for the system returned to normal.

The EDS make-up decreased 6.8% from FY23 to FY24. This decrease may be reflective of CES's operation, but DES has made numerous repairs to the chilled water distribution system in recent years. Smaller leaks may be present within the system, but previous efforts to locate the actual source of the leak have been unsuccessful. TEG and CES are continuing to monitor the EDS make-up. If the location of an additional leak is discovered, DES will address the issue promptly. However, the make-up to EDS remains relatively low.

The make-up to the cooling towers increased 12.2% over the previous Fourth 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 increased 9.7% over the Fourth Quarter. The overall city water make-up comparison for the chilled water system Fourth Quarter is shown in Figure 4.

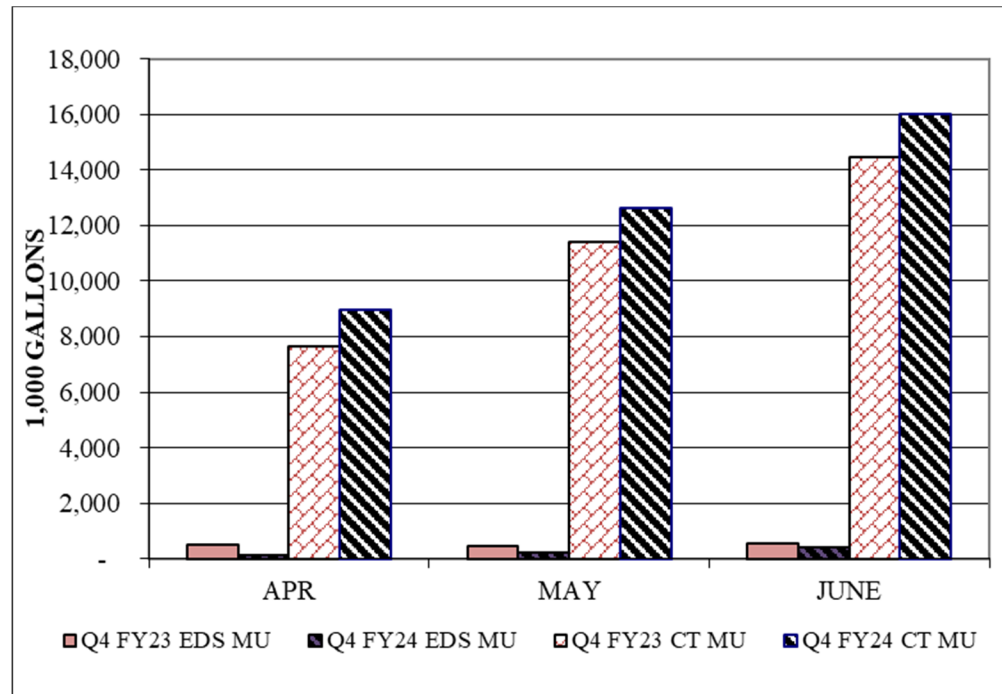


Figure 4. Chilled Water System City Water Usage Comparison

For FY24, the total water usage for the chilled water system decreased only slightly at 0.8%. The cooling tower water usage increased by only 1.2%. Since the DES experienced an increase in sales from FY23 to FY24 of 2.8%, the small incremental change in water usage may be reflective of improved water usage within the cooling towers in addition to the decrease in EDS make-up.

Beginning in March 2023, CES and TEG began monitoring the cooling tower blowdown ratio more closely. 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. CES has made operational changes with respect to this metric with the expectation of reducing the water usage and improving their performance relative to the chilled water-water guarantee. Improvements in this metric are shown in Figure 5.

When a comparison is made between the Fourth Quarter FY24 and FY23, the ratio increased 16.3%. This metric will continue to be tracked and monitored to verify operational changes made by CES at the EGF have resulted in a decrease in chiller

plant water usage. The data shown in Figure 5 indicates a more consistent ratio in the Fourth Quarter. However, Figure 7 shows the chilled water-water metric for June was not met.

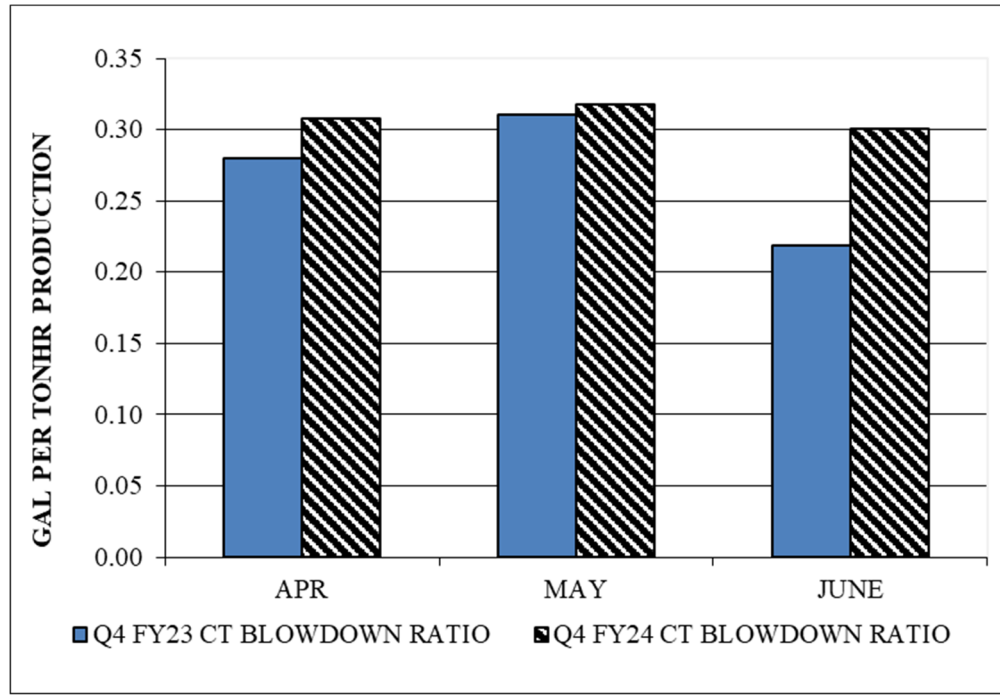


Figure 5. Cooling Tower Blowdown Ratio Comparison

For FY24, the metric decreased 2.5%. In addition, the amount of cooling tower blowdown decreased 1.4%. Figure 5A provides a graphical representation of the metric and chilled water sales for the fiscal year. A correlation between these two values should exist revealing some level of proportionality between the sales and the metric. Except for the potential anomaly in November, the blowdown ratio appears to qualitatively track the chilled water sales although a consistent proportionality is not defined. TEG and CES will continue to monitor this metric through FY25.

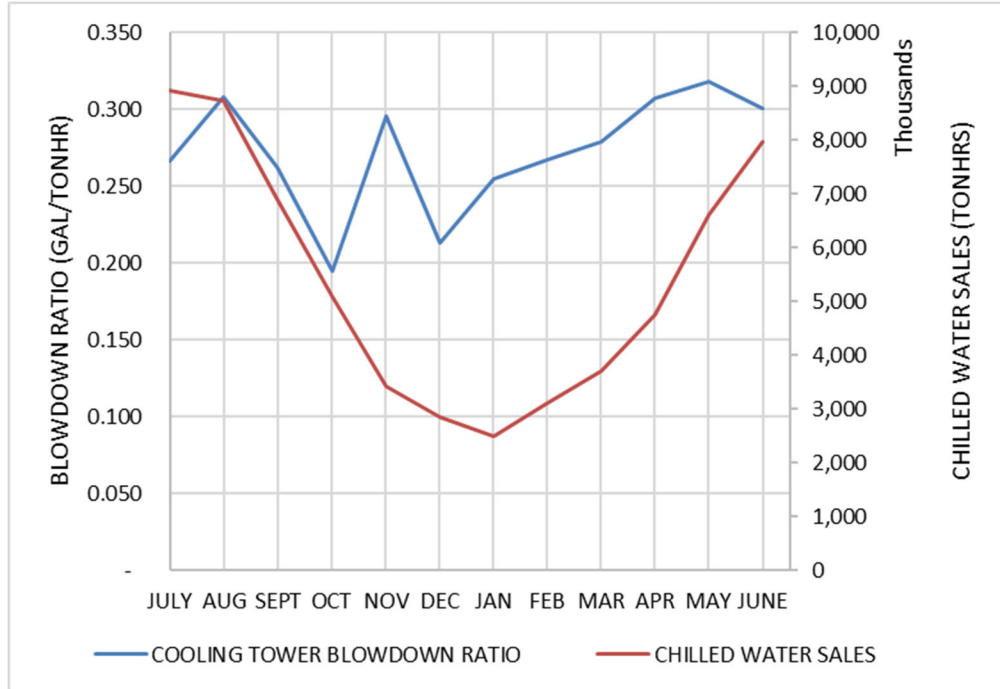


Figure 5A. Cooling Tower Blowdown Ratio for FY24

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 levels as described in Amendment 2 of the ARMA were consistently achieved for the chilled water-electric, but they failed to meet the chilled water-water metric in June. The chilled water-electric guarantee has also been met for the previous twelve months. The chilled water-water guarantee was met each month during the quarter.

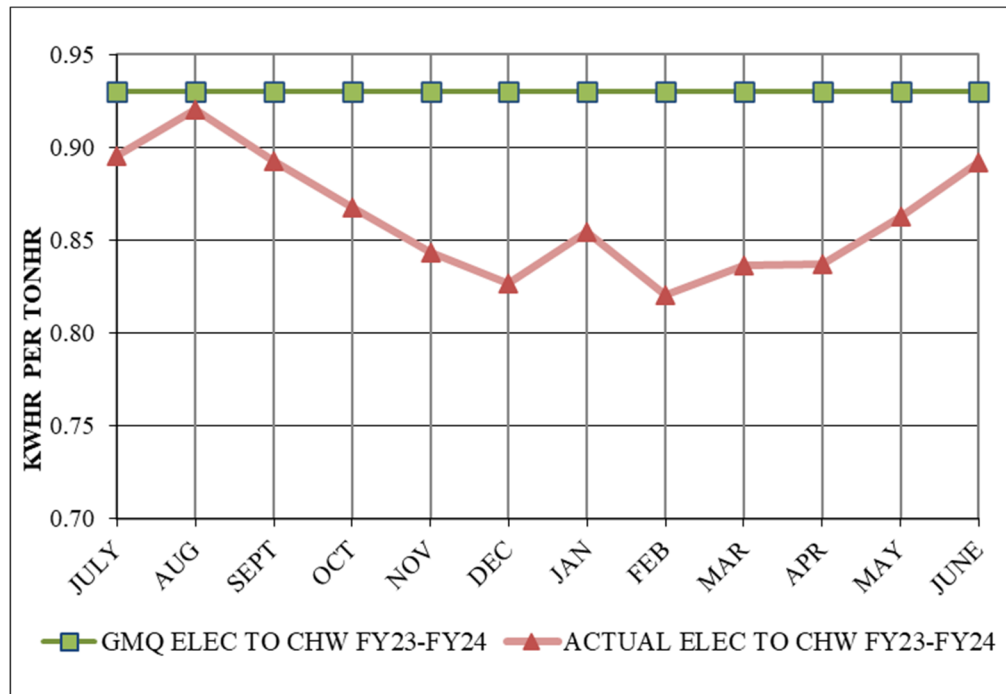


Figure 6. Chiller Plant Electric Performance Guarantee Comparison for the Previous Twelve Months

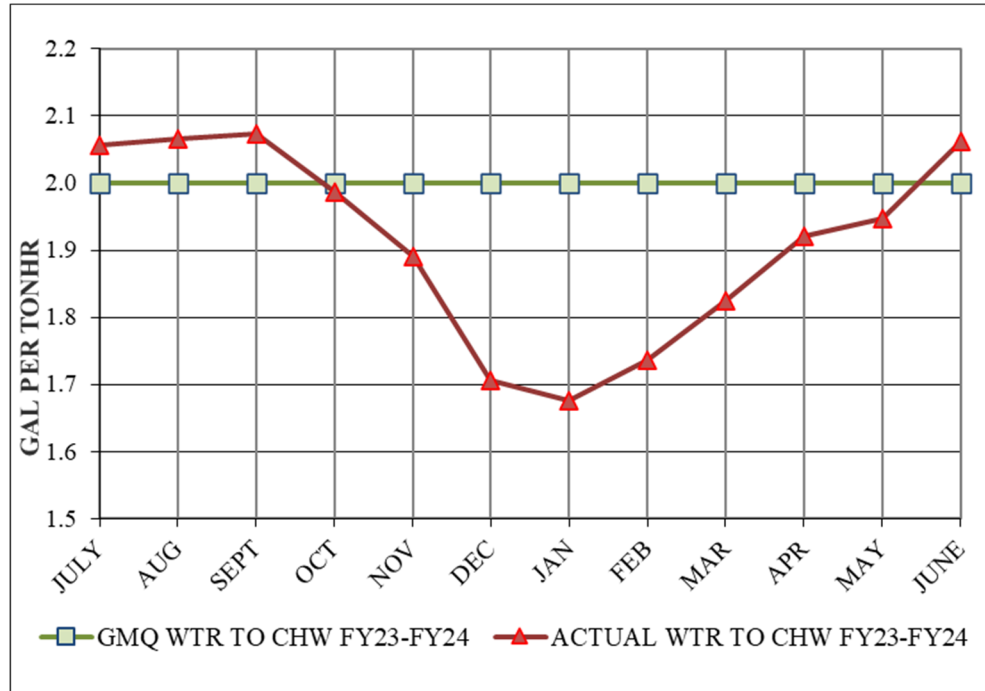


Figure 7. Chiller Plant Water Consumption Performance Guarantee Comparison for the Previous Twelve Months

The chilled water allocation of the electric consumption falls under the GMQ limit of 0.93 kWhr per tonhr for the current quarter on average with no excursions reported for the current fiscal year. The electric usage per unit of sales decreased 2.6% over the previous Fourth Quarter indicating an increase in efficiency. Compared to FY23, the metric has remained consistent with only a 0.5% improvement in efficiency. CES and TEG continue to monitor the improvements created by CES’s operational changes.

The total consumption of city water for the chiller plant for the current quarter increased over the previous Fourth Quarter due largely to an increase in chilled water sales. The water conversion factor for the chiller plant decreased 5.8% (on average) over the Fourth Quarter FY23. The guaranteed value was not met in June.

Although the average value of the chilled water-water metric decreased 4.7% from FY23 to FY24, reflecting an increased efficiency, Figure 7 indicates an inability to meet the value during the summer months. This phenomenon may be caused by the variation in cooling tower blowdown noted in Figure 5A. The remaining influences in the water usage are cooling tower evaporation and EDS make-up. The EDS make-up has been consistently low for the fiscal year, and the cooling tower evaporation should be proportional to the chilled water sales. Additional investigation into this issue is warranted.

B. Steam

1. Sales and Sendout

The steam sendout decreased 1.7% over the previous Fourth Quarter (FY23), and the decreased marginally. However, the heating degree days during the quarter decreased 8.8% due largely to a milder than normal quarter. The steam system losses increased 10.6% due largely to a decrease in sales. The relative amount of condensate return decreased 3.1% during the quarter. The peak steam demand for the current quarter was 85,937 pph, which reflects a 19.2% increase in the peak steam production over the previous Fourth Quarter. A comparison for the Fourth Quarter steam sales is shown in Figure 8.

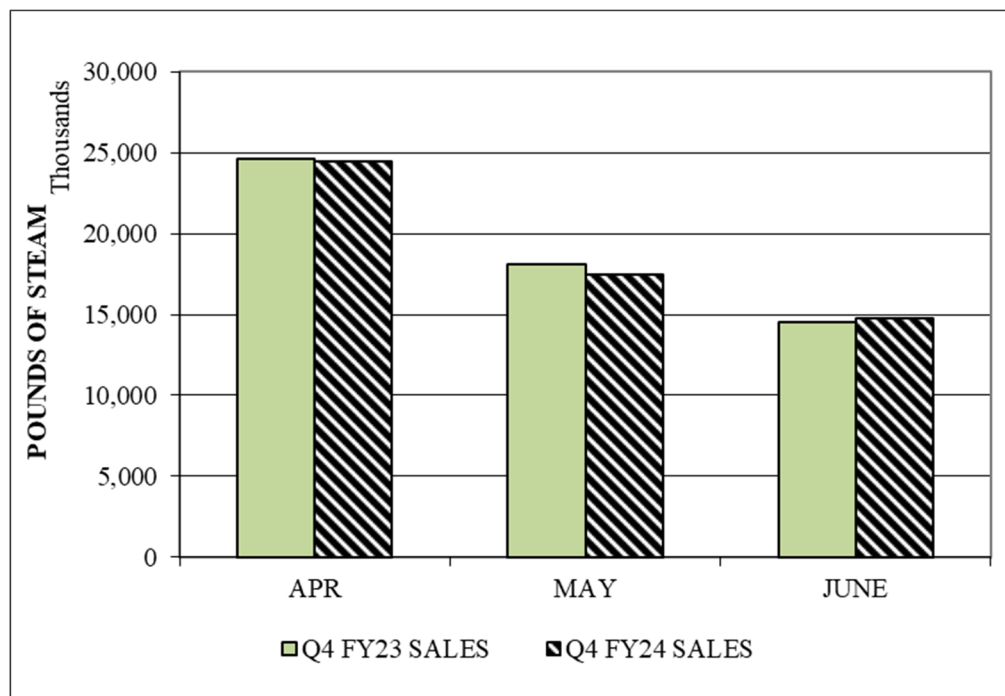


Figure 8. Steam Sales Comparison

Compared to FY23, steam sales decreased 2.2% while steam sendout decreased marginally. The number of heating degree days decreased 10.2% over FY23. The peak steam demand for the fiscal year was 145,600 pounds per hour which reflects a 6.8% increase over FY23.

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.

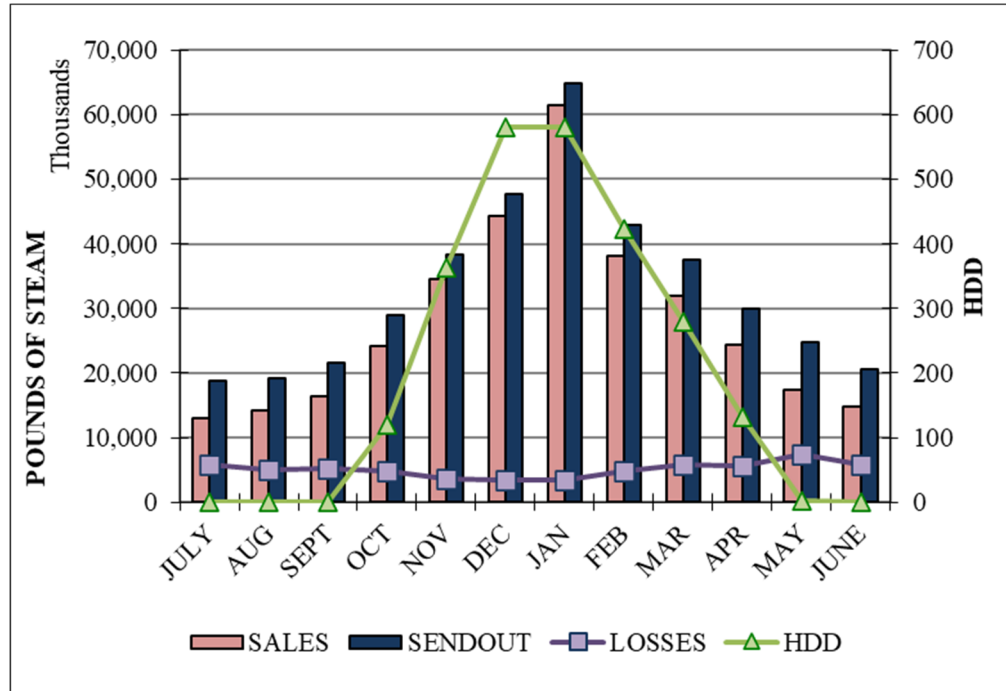


Figure 9. Steam Sales, Sendout, Losses and HDD for the Previous Twelve Months

2. Losses

A comparison of the total steam mass losses in the EDS for the Fourth 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. Whenever steam sales are low, steam losses are typically higher, which is reflected in the values in Figure 10.

The steam losses for FY24 were 8.0% higher than in FY23. This increase may be due to decrease in steam sales; however, the data for May (Figure 10) shows a significant increase in the losses compared to April and June. Further investigation into this phenomenon may be required.

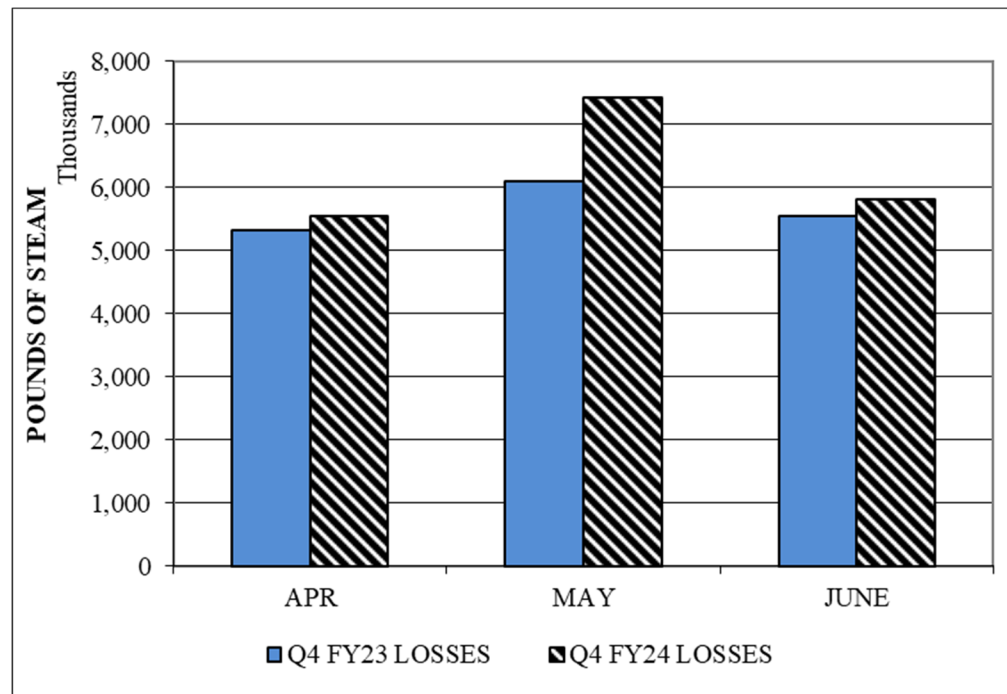


Figure 10. Steam System Losses

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 4.6% over the Fourth Quarter FY23. The corresponding data for steam system make-up is shown in the comparison of Fourth Quarter data in Figure 11.

The amount of make-up to the steam system increased 10.4% in FY24 as compared to FY23. This increase is due in part to the need to dump the condensate return during the fall and winter months to facilitate modifications and repairs to the

condensate distribution system. These repairs have increased the reliability and longevity of the system but reduced the amount of condensate return to the plant during the year resulting in a decrease in the relative amount of condensate return of 7.0%.

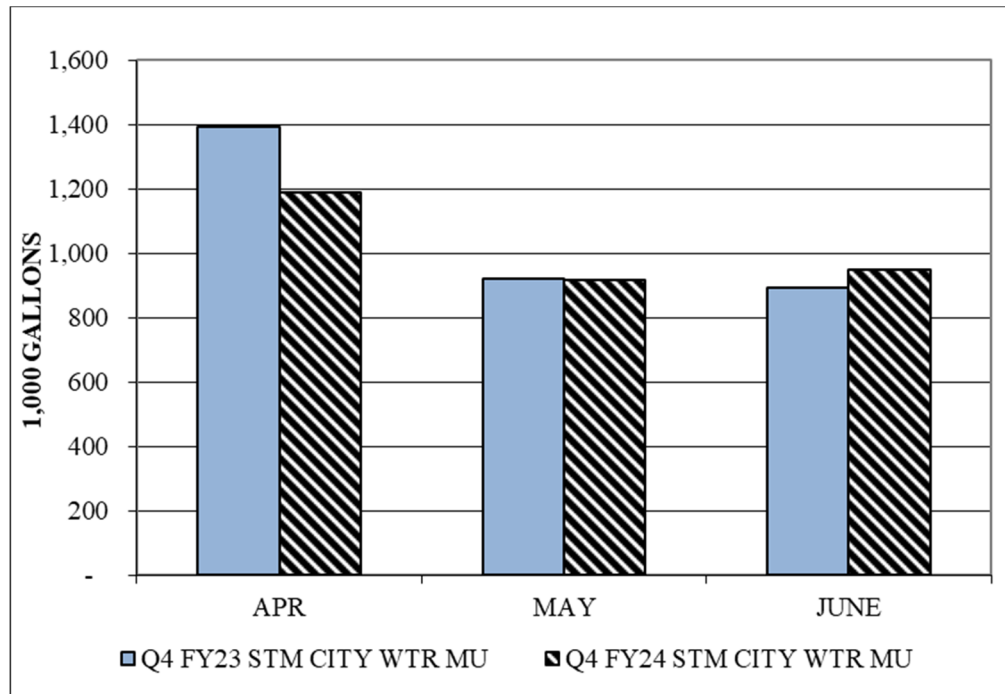


Figure 11. Steam System City Water Make-up Comparison

3. Performance

The performance of the steam system of the EGF is presented in the following three charts, Figures 12, 13 and 14. The steam electric conversion factor was met each month of the quarter. The steam plant electric consumption for the current quarter was 5.8% higher in FY24 than in FY23. The steam-electric metric increased 5.2% over the previous Fourth Quarter. The monthly steam-to-electric conversion factors, along with the guaranteed values, are shown in Figure 12.

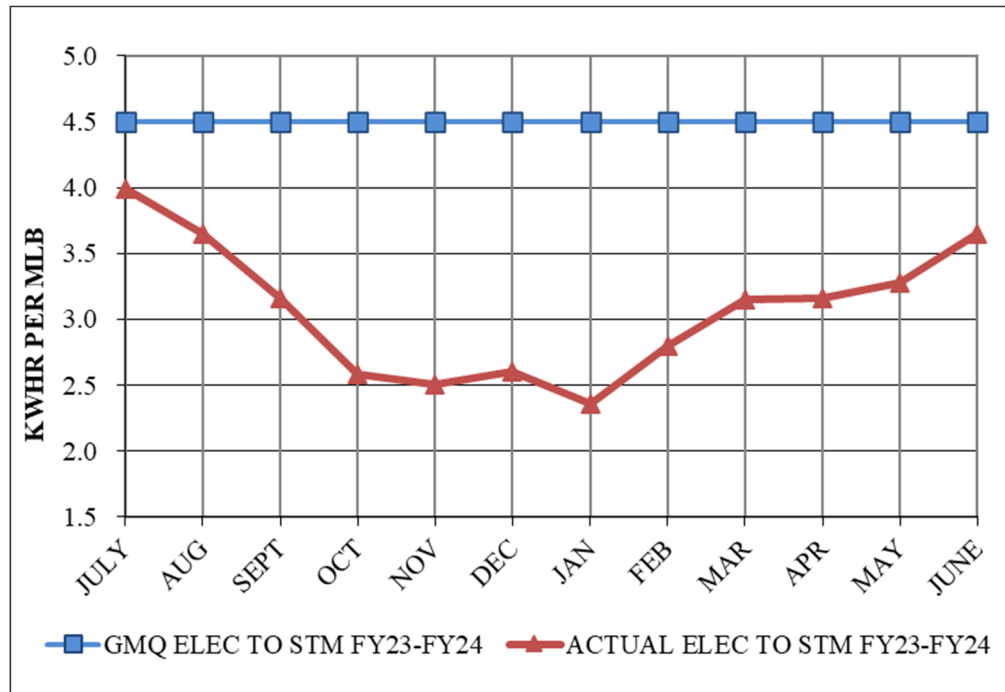


Figure 12. Steam Plant Electric Performance Guarantee for the Previous Twelve Months

However, the total electric usage for the steam plant only increased marginally in FY24 over FY23. The steam-electric metric increased 3.5% over the same period. This trend indicates an increase in the amount of electricity used to generate steam.

The steam water conversion factor exceeded the guaranteed values for each month during the quarter although the actual values were close in value to the actuals. CES and TEG continue to monitor the performance of the EGF as CES makes efforts to improve the DES performance. The guaranteed steam-water performance value is based on an equation which incorporates the amount of steam sendout and condensate return and did not change with the adoption of the new performance values in Amendment 2. CES has verified the accuracy of the meter readings and continues to review the operation. The steam water conversion factors are shown in Figure 13.

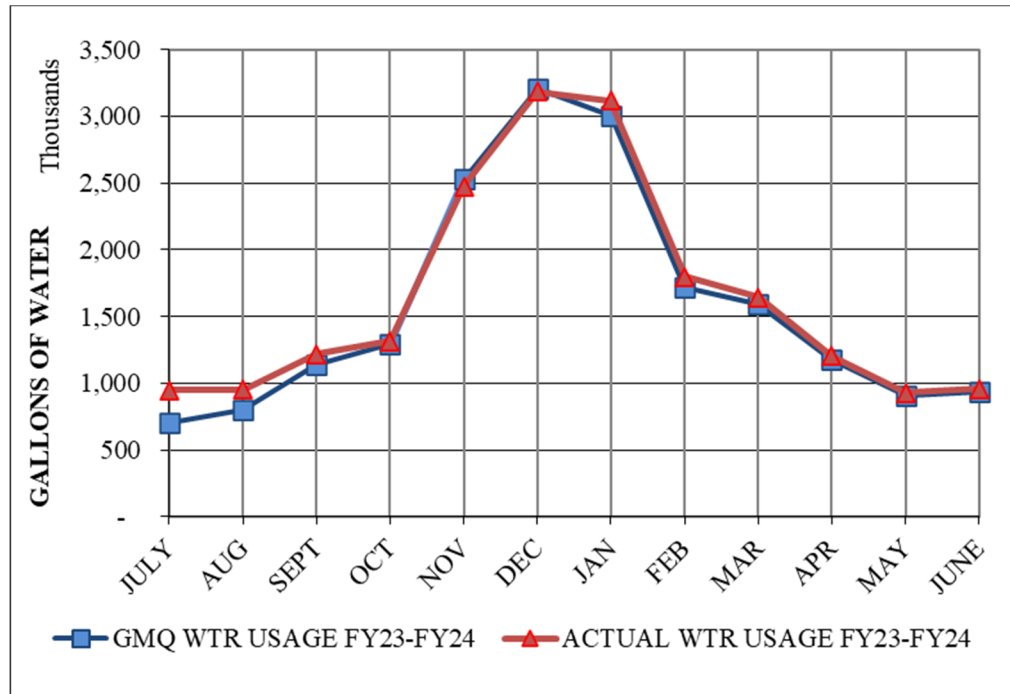


Figure 13. Steam Plant Water Performance Guarantee for the Previous Twelve Months

The steam-water metric decreased 4.6% in the Fourth Quarter while the metric increased 10.4% for the year in FY24. CES has made efforts to improve the operations of the plant resulting in a decrease in water usage over the past few months. Beginning in FY25, new equations for the guaranteed and actual calculations for the steam-water metric will be implemented along with the recently executed Amendment 3 to the CES Management Agreement.

The steam fuel conversion factor met the guaranteed values for May and June. The fuel consumption per unit of steam sendout decreased marginally over the previous Fourth Quarter and have remained consistent for the fiscal year. The relative amount of condensate return is shown on this graph to reflect the influence that the condensate return has on the plant efficiency. Although the performance level for this metric changed with the adoption of Amendment 2, the equation used to calculate the value relies heavily on readings from the condensate return and steam sendout meters. Figure 14 shows the performance of the conversion factors for the previous twelve months.

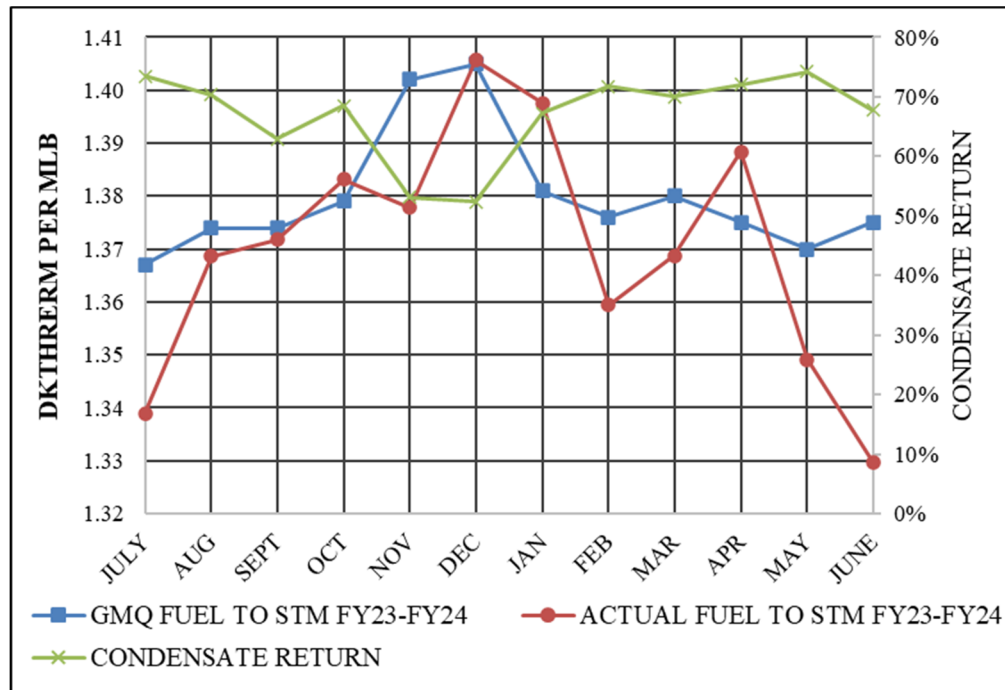


Figure 14. Steam Plant Fuel Performance Guarantee for the Previous Twelve Months

C. Contract Guarantee Performance

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

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

Item	Unit	Fourth Quarter FY24	Fourth Quarter FY23	*Percent Difference	Total Year FY24	Total Year FY23	*Percent Difference
	days	91	91	0.00%	366	365	0.27%
Total Electric Use	kWhrs	16,976,732	14,884,449	14.06%	57,356,275	55,322,049	3.68%
Chilled Water	kWhrs	16,788,435	14,706,079	14.16%	56,396,072	54,370,215	3.73%
Steam	kWhrs	188,297	178,370	5.57%	960,203	951,834	0.88%
Total Water Use	kgal	41,498	38,256	8.47%	146,459	143,631	1.97%
Total Chilled Water	kgal	38,441	35,051	9.67%	126,912	125,930	0.78%
EDS Make-up	kgal	832	1,541	-46.01%	4,949	5,312	-6.83%
Cooling Towers	kgal	37,609	33,510	12.23%	121,963	120,618	1.12%
Calc CT Evaporation	kgal	31,341	28,726	9.10%	102,990	101,384	1.58%
CT Blowdown	kgal	6,268	4,784	31.01%	18,973	19,234	-1.36%
Calc # Cycles		5.00	6.00	-16.72%	5.43	5.27	2.98%
Sidestream Filter Backwash	gal	31,421	0	0.00%	123,686	0	0.00%
Steam	kgal	3,057	3,205	-4.62%	19,547	17,701	10.43%
Total Fuel Use	mmBTU	102,560	101,157	1.39%	544,448	548,289	-0.70%
Natural Gas	mmBTU	102,560	101,157	1.39%	543,563	548,248	-0.85%
Propane	mmBTU	0	0	0.00%	885	41	2058.54%
Condensate Return	kgal	6,624	6,725	-1.51%	31,999	34,644	-7.63%
lbs		54,020,403	54,848,434	-1.51%	260,980,080	282,551,146	-7.63%
Avg Temp	°F	179.0	179.0	0.00%	179.0	176.5	1.42%
Sendout							
Chilled Water	tonhrs	20,340,000	18,052,600	12.67%	68,303,000	66,878,600	2.13%
Steam	lbs	75,444,000	74,212,000	1.66%	395,730,000	398,649,000	-0.73%
Peak CHW Demand	tons	16,833	15,972	5.39%	19,372	18,360	5.51%
Peak Steam Demand	lb/hr	85,937	72,100	19.19%	145,600	136,325	6.80%
CHW LF		55.33%	51.75%	6.91%	40.14%	41.58%	-3.47%
Steam LF		40.20%	47.13%	-14.71%	30.94%	33.38%	-7.31%
Sales							
Chilled Water	tonhrs	19,331,012	16,585,144	16.56%	64,526,548	62,752,210	2.83%
Steam	lbs	56,665,049	57,230,376	-0.99%	334,818,903	342,268,552	-2.18%
Losses							
Chilled Water	tonhrs	1,008,988	1,467,456	-31.24%	3,776,452	4,126,390	-8.48%
Steam	lbs	18,778,951	16,981,624	10.58%	60,911,097	56,380,448	8.04%
		24.89%	22.88%	8.78%			
Degree Days							
CDD		775	558	38.89%	2,158	1,958	10.21%
HDD		134	188	-28.72%	2,481	2,762	-10.17%
Cooling Tower Blowdown Ratio							
Cooling Tower Blowdown	gal	6,268,004	4,784,400	31.01%	18,973,160	19,234,400	-1.36%
Chilled Water Production	tonhrs	20,340,000	18,052,600	12.67%	68,303,000	67,483,200	1.21%
Ratio	gal/tonhrs	0.308	0.265	16.28%	0.278	0.285	-2.54%

*positive percent difference values imply an increase from FY23 to FY24

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

GMQ Calculations	Unit	Fourth Quarter FY24	Fourth Quarter FY23	*Percent Difference	Total Year FY24	Total Year FY23	*Percent Difference
Steam							
GMQ Elec Conversion	kWhr/Mlb	4.50	4.50		4.50	4.50	
Electric Conversion	kWhr/Mlb	3.36	3.20	5.15%	3.07	2.97	3.54%
GMQ Plant Efficiency	Dth/Mlb	1.373	1.369		1.380	1.375	
Plant Efficiency	Dth/Mlb	1.356	1.363	-0.54%	1.376	1.375	0.03%
Actual %CR		71.60%	73.91%	-3.12%	65.95%	70.88%	-6.95%
Avg CR Temp	°F	179	179	0.00%	179	177	1.42%
GMQ Water Conversion	gal	3,020,793	2,730,323		19,000,154	16,370,155	
Water Conversion	gal	3,087,570	3,237,050	-4.62%	19,742,470	17,878,010	10.43%
Chilled Water							
GMQ Elec Conversion	kWhr/tonhr	0.930	0.930		0.930	0.930	
Electric Conversion	kWhr/tonhr	0.864	0.887	-2.57%	0.863	0.866	-0.45%
GMQ Water Conversion	gal/tonhr	2.00	2.00		2.00	2.00	
Water Conversion	gal/tonhr	1.98	2.10	-5.79%	1.91	2.01	-4.71%

*positive percent difference values imply an increase from FY23 to FY24

D. Operating Costs

The fixed operating costs for the DES include the management fee to CES, 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 CES'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 \$19,735,800. This value represents approximately 89% of the total budgeted operating cost for FY24 and includes all Self-Funded Debt Service Payments. A few additional expenses related to Metro's internal cost allocations are not included in the total and will be added upon completion of the Metro's year-end accounting. The customer revenues from the sales of steam and chilled water for FY24 are \$19,767,000 (91% of budgeted amount) which includes the annual true-up amount for FY23 and other miscellaneous revenue sources. Although not confirmed at the time of this report, Metro has reported the transfers for the Metro Funding Amount (\$384,400; 100% 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	FY24 Budget	First Quarter Expenses	Second Quarter Expenses	Third Quarter Expenses	Fourth Quarter Expenses	Total Spending to Date	% of Budget
Operating Management Fee							
FOC: Basic	\$ 4,127,000	\$ 1,031,756	\$ 1,031,756	\$ 1,031,756	\$ 1,031,756	\$ 4,127,023	100.00%
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	\$ 331,200	\$ 82,934	\$ 73,069	\$ 73,022	\$ 81,860	\$ 310,886	93.87%
Insurance	\$ 30,400	\$ 33,584	\$ -	\$ -	\$ -	\$ 33,584	110.47%
Marketing:							
CNE Sales Activity	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Incentive Payments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
FEA:							
Steam	\$ 91,400	\$ 10,642	\$ 5,136	\$ 781	\$ 1,093	\$ 17,652	19.31%
Chilled Water	\$ 125,800	\$ (8,868)	\$ 22,361	\$ 23,939	\$ 24,180	\$ 61,612	48.98%
Misc:							
Metro Credit	\$ -	\$ (504,153)	\$ (236,242)	\$ (182,548)	\$ (269,012)	\$ (1,191,955)	n.a.
ARFA	\$ 64,900	\$ 16,227	\$ 16,227	\$ 16,227	\$ 16,227	\$ 64,908	100.01%
Deferral	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Subtotal - Man Fee =	\$ 4,770,700	\$ 1,166,275	\$ 1,148,549	\$ 1,145,725	\$ 1,155,115	\$ 4,615,664	96.75%
Reimbursed Management Fee + Chem Treatment		\$ 1,150,801	\$ 1,151,783	\$ 1,130,251	\$ 1,139,641	\$ 4,572,475	0.00%
Metro Costs							
Pass-thru Charges:							
Engineering	\$ 53,900	\$ 18,808	\$ 28,703	\$ 24,381	\$ 30,427	\$ 102,319	189.83%
EDS R&I Transfers	\$ 312,900	\$ 78,225	\$ 78,225	\$ 78,225	\$ 78,225	\$ 312,900	100.00%
Metro Marketing	\$ 62,700	\$ 15,296	\$ 20,241	\$ 23,018	\$ 17,767	\$ 76,322	121.73%
Project Administration	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Metro Incremental Cost	\$ 491,300	\$ 126,544	\$ 106,332	\$ 139,765	\$ 112,267	\$ 484,908	98.70%
Utility Costs:							
Water/Sewer	\$ 1,132,000	\$ 489,250	\$ 216,973	\$ 165,391	\$ 250,471	\$ 1,122,085	99.12%
EDS Water/Sewer	\$ -	\$ 48	\$ 184	\$ 227	\$ 50	\$ 508	n.a.
EDS Electricity	\$ 75,300	\$ 14,939	\$ 19,405	\$ 17,240	\$ 18,541	\$ 70,126	93.13%
Electricity	\$ 6,269,000	\$ 1,991,229	\$ 950,244	\$ 834,058	\$ 1,482,606	\$ 5,258,136	83.88%
Natural Gas Consultant	\$ 12,400	\$ 3,330	\$ 4,500	\$ 3,780	\$ 5,400	\$ 17,010	137.18%
Natural Gas Transport	\$ -	\$ 55,762	\$ 110,894	\$ 132,034	\$ 80,762	\$ 379,452	n.a.
Natural Gas Fuel	\$ 3,904,400	\$ 329,756	\$ 682,031	\$ 866,619	\$ 400,560	\$ 2,278,966	58.37%
Propane	\$ 140,400	\$ 82,366	\$ -	\$ (70,820)	\$ -	\$ 11,546	8.22%
Subtotal - Metro Costs =	\$ 12,454,300	\$ 3,205,553	\$ 2,217,733	\$ 2,213,917	\$ 2,477,075	\$ 10,114,279	81.21%
Subtotal - Operations =	\$ 17,225,000	\$ 4,371,828	\$ 3,366,282	\$ 3,359,642	\$ 3,632,191	\$ 14,729,943	85.51%
Debt Service							
2012A Bonds	\$ 3,035,500	\$ 769,787	\$ 769,787	\$ 769,787	\$ 769,787	\$ 3,079,150	101.44%
2005B Bonds	\$ 599,700	\$ 149,925	\$ 149,925	\$ 149,925	\$ 149,925	\$ 599,700	100.00%
Series 2018	\$ 117,200	\$ 29,300	\$ 29,300	\$ 29,300	\$ 29,300	\$ 117,200	100.00%
Series 2015C	\$ 68,500	\$ 17,125	\$ 17,125	\$ 17,125	\$ 17,125	\$ 68,500	100.00%
Series 2017	\$ 41,800	\$ 10,450	\$ 10,450	\$ 10,450	\$ 10,450	\$ 41,800	100.00%
Series 2013A	\$ 613,500	\$ 153,375	\$ 153,375	\$ 153,375	\$ 153,375	\$ 613,500	100.00%
Series 2021C	\$ 122,000	\$ 30,500	\$ 30,500	\$ 30,500	\$ 30,500	\$ 122,000	100.00%
Series 2022A	\$ 149,500	\$ 37,375	\$ 37,375	\$ 37,375	\$ 37,375	\$ 149,500	100.00%
Series 2022B	\$ 26,300	\$ 6,575	\$ 6,575	\$ 6,575	\$ 6,575	\$ 26,300	100.00%
MIP	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	n.a.
Oper. Reserve Fund	\$ 188,200	\$ 47,050	\$ 47,050	\$ 47,050	\$ 47,050	\$ 188,200	100.00%
Subtotal - Capital =	\$ 4,962,200	\$ 1,251,462	\$ 1,251,462	\$ 1,251,462	\$ 1,251,462	\$ 5,005,850	100.88%
Total =	\$ 22,187,200	\$ 5,623,291	\$ 4,617,745	\$ 4,611,105	\$ 4,883,653	\$ 19,735,793	88.95%
Customer Revenues							
Taxes Collected		\$ 125,583	\$ 100,032	\$ 99,371	\$ 107,126	\$ 432,112	n.a.
Taxes Paid		\$ 123,002	\$ 100,032	\$ 99,370	\$ 107,126	\$ 429,530	n.a.
Interest & Misc Revenue	\$ 333,300	\$ 181,927	\$ 169,516	\$ 160,245	\$ 173,641	\$ 685,329	205.62%
Penalty Revenues/Credits		\$ 31,029	\$ 2,212	\$ 4,915	\$ 4,806	\$ 42,961	n.a.
Energy Revenues Collected	\$ 21,469,500	\$ 5,344,278	\$ 4,466,591	\$ 4,509,870	\$ 4,715,418	\$ 19,036,156	88.67%
Revenues =	\$ 21,802,800	\$ 5,559,815	\$ 4,638,318	\$ 4,675,031	\$ 4,893,865	\$ 19,767,028	90.66%
Metro Funding Amount =	\$ 384,400	\$ 63,476	\$ (20,574)	\$ (63,926)	\$ (10,212)	\$ (31,235)	-8.13%

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 FY23 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	\$ 4,507,609	22,605,275	\$ 0.1994	\$ 1,678,075	95,838	\$ 17.5095
State Government	\$ 3,518,462	13,235,417	\$ 0.2658	\$ 2,071,302	105,059	\$ 19.7156
Metro Government	\$ 5,210,904	28,685,856	\$ 0.1817	\$ 2,050,010	133,922	\$ 15.3075
New Customers	\$ 3,298,702	16,420,042	\$ 0.2009	\$ 1,443,148	100,072	\$ 14.4211
Total	\$ 13,236,975	64,526,548	\$ 0.2051	\$ 5,799,387	334,819	\$ 17.3210

Total Revenue \$ 19,036,362
True-up and Adjustments (Net) \$ 730,666
Net Revenue \$ 19,767,028

III. EGF Operations

Items relating to the facility operations presented herein are derived from the monthly reports issued by CES for FY24. TEG and CES continue to meet monthly and regularly communicate about important issues and on-going projects. CES has reported and managed EGF operations satisfactorily which is reflected in the reduction in the items noted in the EGF Walkthrough reports and in the improvement in meeting the performance guarantees in Amendment 2 of the ARMA.

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. There were one (1) unscheduled chiller issue and two (2) boiler plant incidents during the quarter. CES experienced thirteen (13) boiler plant trips and unscheduled issues for the fiscal year resulting in 915 minutes of operation where the sendout pressure was less than 150 psig. The chiller plant experienced nine (9) trips and unscheduled issues for the fiscal year resulting in 670 minutes of operation where the sendout temperature was greater than 43°F. The following disruptions in service occurred during the quarter.

- While performing annual maintenance on May 29, boiler 3 tripped while swapping de-aerators due to low water level. CES restarted the boiler immediately restoring the system pressure. The steam sendout pressure was below 150 psig for approximately sixty (60) minutes reaching a low of 128 psig.
- The level controller for de-aerator 1 failed on June 16 causing the tank levels to fluctuate. This disruption caused CES to safely shut down all the boilers since de-aerator 2 was offline for annual maintenance. CES personnel began troubleshooting the situation and found a ruptured diaphragm in the level controller. Upon making the necessary repairs, the steam system returned to service. The sendout pressure was below 150 psig for approximately four (4) hours reaching a low pressure of 4 psig.
- Chiller 8 tripped on June 26, and CES could not restart the chiller after several attempts prompting them to place another chiller online. The chilled water temperature was above 43°F for approximately one (1) hour and thirty-two (32) minutes reaching a high of 44.4°F. CES, Trane and Shermco were unable to determine the cause of the trip.
- An emergency shut down of the steam system occurred on June 30 to repair a leak on the dripleg in MH-B discovered on June 28 by CES during their monthly manhole reviews. The steam sendout pressure was below 150 psig for approximately eleven and one-half (11.5) hours.
- There were no other reported issues during the quarter.

B. Efficiency

The operation of the EGF did not satisfy the steam-water, steam-fuel, or chilled water-water guaranteed levels for each month during the quarter. All other performance guarantees were met. 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.

CES has implemented and requires regular attendance of online and in-person safety courses for their employees. For the Fourth Quarter, the courses included: Slips, Trips and Falls, Housekeeping, Heat Stress, and Confined Space Safety.

D. Personnel

As of the end of the quarter, CES has reported they are currently staffed with nineteen full-time employees, one remote part-time employee and two shared employees. 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 71.6% of the steam sendout during the quarter, which represents a 3.1% decrease over the previous Fourth Quarter. For FY24, the relative amount of condensate return decreased 7.0% over FY23. The causes of these declines were discussed earlier in this report.
- 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 cooling tower blowdown increased 31.0% over the previous Fourth Quarter. This increase resulted in an average decrease in the cycles of concentration in the cooling towers of 16.7%.
 - CES began monitoring and tracking the ratio of the cooling tower blowdown to the chilled water production. The average value for the quarter increased 16.3% over the previous Fourth Quarter. TEG and CES continue to monitor various performance metrics within the EGF and EDS to look for ways to improve system efficiency.
- **Chilled Water System**
 - CES 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.
 - Although the side stream filter has significantly reduced the amount of suspended solids in the chilled water and improved the turbidity of the system, the turbidity and iron levels have 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.
 - Figure 15 shows the results of several measured metrics within the chilled water system which may be affected by the side stream filter.

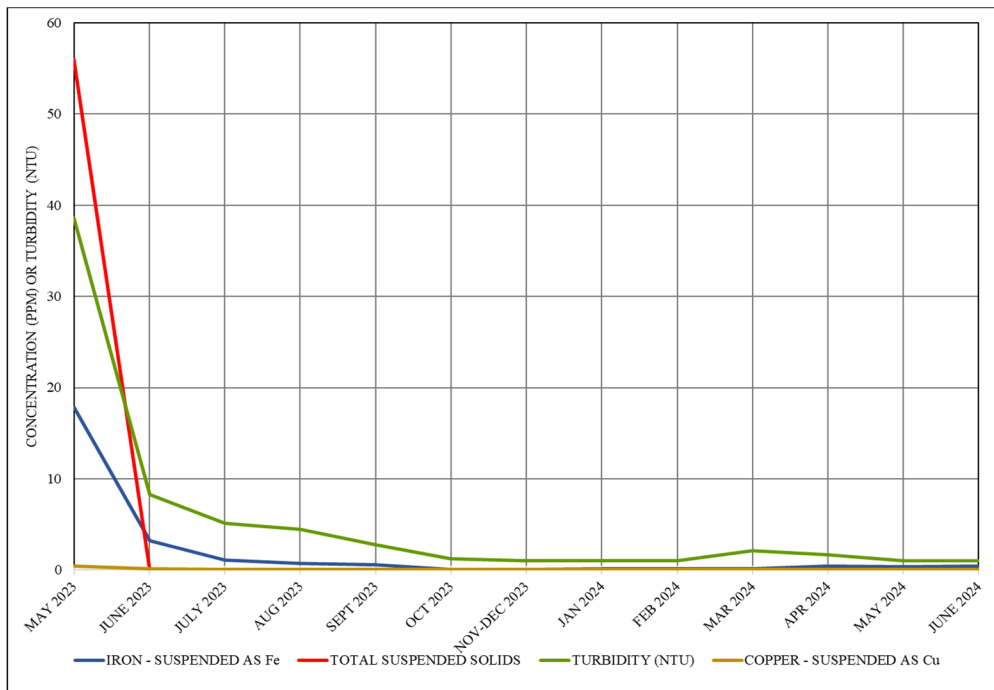


Figure 15. Chilled Water Composition Downstream of Side Stream Filter

G. Maintenance and EGF Repairs

CES 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;
- Checked and adjusted packing on all pumps;
- Assisted with data acquisition for Plant Efficiency (Skyspark);

Repairs or Replacement

- Repaired Genie Lift;
- Repaired low water cut off leak on boiler 2;
- Repaired softener 1 flow meter;
- Continued annual chiller tube cleaning;
- Replaced belt on cooling tower 15;
- Adjusted belts on cooling towers 10 and 12;
- Removed and replaced refrigerant in chillers 5A and 3B to replace flat gaskets;
- Painted chiller condenser heads;
- Replaced condensing water pump 5 electrical connector;
- Rebuilt pressure control valve on chilled water makeup pump 3;
- Replaced fan controller on switchgear 5A
- Replaced cooling tower 9 circuit breaker;
- Repaired chiller 5 condenser valve actuator 3;
- Replaced drive belt on cooling tower 12;
- Replaced check valve on de-aerator 2;
- Cleaned and prepped de-aerator 2 for magnetic particle and UT testing;
- Other repairs, maintenance and preventative maintenance were made during the quarter and are listed in the monthly reports issued by CES.

H. EGF Walkthrough

The EGF Walkthrough was conducted on June 25, 2024, by Kevin L. Jacobs, P.E. Based on the review of the EGF, the following comments and observations are presented. Constellation Energy Solutions, LLC (CES) has made a significant effort to improve the cleanliness and appearance of the EGF. However, 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.**
- The vacuum breaker check valve on DA 2 was venting steam. CES has purchased a replacement valve, bolts, nuts, and gasket and intends to replace the existing valve once DA 2 can be shut down. This valve has been installed. **This item will be removed from future reports.**
- Cooling Towers 14 and 15 have algae present on the louvers, fill, and/or basins. CES was in the process of cleaning the cooling towers at the time of the Walkthrough. At the time of the Fourth Quarter Walkthrough, no algae was present in cooling towers 14 and 15. **This item will be removed from future reports.**
- 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. CES has addressed the leak and cleaned up the area on the floor. However, corrosion on the ceiling paneling was observed. **CES was working on repairing and replacing the ceiling paneling during the Walkthrough. This item will be reviewed again in the First Quarter FY25 Walkthrough.**
- The control valve on the city water makeup was not insulated and was sweating during the Walkthrough. CES reported they will have the valve insulated. Their insulator was onsite during the Walkthrough making insulation repairs elsewhere in the EGF. **This item will be reviewed again in the First Quarter FY25 Walkthrough.**
- Although CES 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. CES needs to remove the presence of this residue build-up as soon as possible since it reduces the airflow across the cooling towers. **This item will be reviewed again in the First Quarter FY25 Walkthrough.**
- The fan for cooling tower 15 was squeaking during the Walkthrough. **CES needs to address this issue by adjusting or replacing the belt.**
- Trash was observed on the north and west exteriors of the EGF. Although the trash from the previous Walkthrough report has been removed, additional items were present during the Fourth Quarter Walkthrough. **CES stated they continue to have to address this issue due to the construction activities at Peabody Union.**
- The paper warning signs on the cooling tower access doors were either missing or in need of replacement. **CES replaced these signs. This item will be removed from future reports**
- Trash and other debris was observed in the floor near the side stream filter. CES removed these items. **This item will be removed from future reports.**
- The lamp above condensing water pump 5 was flickering during the Walkthrough and eventually stopped working. CES repaired this lamp. **All lamps were working**

properly during the Walkthrough. This item will be removed from future reports.

- Water was pooling around several of the chillers and the chilled water pumps. **CES needs to address these issues.**
- Other action items previously noted to be addressed by CES have been completed. (See also the “Quarterly EGF Walkthrough Report,” dated June 26, 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. Fourth Quarter FY24 Open Projects

The following projects remained open at the end of the Fourth Quarter FY24.

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. Demolition of the wall and fence by Peabody Union’s contractor (Turner) along the east side of the EGF property began in January 2024. In addition, Turner made modifications to the sewer and installed new curb inlets along the DES property line during the quarter.

DES remains in contact with the contractor and the developer regarding construction at this site. 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. As of the date of this report, the revised submittals have not been issued.

Demolition of the east wall progressed during the quarter to match the size and configuration necessary to accommodate Guthrie St and the new fencing. The wall was trimmed in height, and new rebar installed to receive the new concrete. When completed, the wall will be eight (8) feet tall and follow the contour of Guthrie St. The new fencing will be installed to secure the DES perimeter. A new eight (18) foot wide south gate and a new forty (40) foot east gate are planned to be installed. A new pedestrian gate on the north will be installed which will receive a card reader and have remote access for opening and closing.

TEG and CES 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

The condensate return piping was put back into service on January 10, 2024. A punch list review was conducted in late February. Punchlist items were addressed, and a final walkthrough was conducted in April 2024. Final paving, if required, will be addressed separately. Cost substantiation review has been completed for the base project and change order items. Awaiting final payment processing to close this project.

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 work on the site remains on hold.

7. DES203 – Printers and Bankers Alley Building

The engineers for the developer reported the project is on hold.

8. DES211 – AA Birch Tunnel and MH D Repairs

The AA Birch Tunnel and MH D include several metal piping and platform supports that are experiencing corrosion. This project addresses the cleaning, coating, and potential replacement of some of these components.

TEG developed a scope of work, drawings, and specifications for this project and presented the same to CES for pricing. Pricing was received from CES and was approved. The work took place during the Fourth Quarter FY24. There were some punch list items that are being addressed. It is anticipated that this project will be completed and closed out during the First Quarter FY25.

9. DES212 – MH 2 End Can Replacement

The existing western end can at the steam piping wall penetration was badly corroded and required replacement. TEG provided scope documents to CES and the installing contractor. Concrete damage to the interior wall of this manhole was discovered during the work and was addressed by Proshot under separate contract. Most of this work took place during the Second Quarter FY 24. All work is complete, and TEG is awaiting final payment processing to close this project.

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/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/guides need to be replaced to maintain a low resistance to expansion/contraction movements. This project addresses the replacement/repair of these supports.

TEG conducted a site review to confirm the extent of the work needed; 208 supports were found to be worn/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/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. TEG will coordinate with CES to bid this work during the First Quarter FY25.

11. DES214 – Trane “R’newal” of Chiller 2

The work on the chiller began in January 2024 with CES performing an initial startup on the chiller on March 15. TEG witnessed the startup and operation of the chiller until it achieved its leaving chilled water setpoint on March 19. Chiller 2 was observed to have satisfied its leaving chilled water set point temperature without fault.

Adequate documentation for the start date of the warranty was provided by Trane and CES during the Fourth Quarter. Final invoicing has been received. This project is now closed

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

TEG met with the customer’s contractor (DRP) during the quarter. They are coordinating their construction plan and schedule and will report back to TEG their timing for receiving chilled water during construction. At the time of this report, service is not anticipated until sometime in 2026.

13. DES218 – Manholes B2, B6, B7, B8, B9 and 22B Steel Cleaning/Coating

The piping support steel in manholes B2, B6, B7, B8 and B9 has areas of corrosion that need to be professionally cleaned and coated, this project addresses those needs.

The work was completed on this project during the Fourth Quarter FY24, and the project is now closed.

14. 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 above.) 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 CES 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.

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 CES. The work will require an isolation of the service to the Metro Library and Hume Fogg High School. It is anticipated that the work will begin during the First Quarter FY25.

Once the piping is successfully relocated, TEG will pursue the shotcrete expansion (the second phase of this work) with CES and the specialty contractor.

15. DES220 – MH 20 Condensate Return Repair and Grating Addition

The condensate return piping in the vertical shaft of Manhole 20 failed due to corrosion and required replacement. In addition, the vertical shaft opening in the floor of Manhole 20 presented a safety hazard to maintenance personnel, so a change order was issued to add grating over this shaft opening. The condensate piping work was completed during the Third Quarter FY24; the grating addition was completed during the Fourth Quarter FY24. This project is now in close-out

16. DES221 – War Memorial Service Modifications

The State of Tennessee is completely renovating the interior of the War Memorial Auditorium and portions of the Legislative Plaza. During the Fourth Quarter, DES coordinated with the building’s contractors for the replacement of the chilled water isolation valves to the building and the replacement of a steam valve within the EDS. Service to this building was completely isolated during the quarter.

TEG directed CES to order all the necessary metering equipment to accommodate the building’s revised piping configuration. Additional information on the DES instrumentation was provided to the building’s contractor for their installation.

The renovations will be ongoing for several months, with intermittent participation on the part of TEG and/or CES. This project will remain open for the duration of the renovations.

17. 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 CES and the DES liaison, this project was established.

TEG began and completed the development of these drawings during the Fourth Quarter FY24. This project is now in close-out.

18. DES223 – Manhole 18 Electrical Repair

Several electrical components in Manhole 18 are corroded and requirement replacement. CES and TEG met with an electrical contractor and reviewed the Manhole 18 components needing replacement. This contractor developed a price to complete the needed work and TEG has followed up with several questions regarding the scope and options. This scope may have to be bid depending upon the contractor’s responses and associated pricing.

It is anticipated that this work will begin during the First Quarter FY25.

B. Fourth Quarter FY24 Closed Projects

Projects which began prior to FY24 which were closed in FY24:

DES198

DES206

DES207

DES209

Projects which began in FY24 and were closed in FY24:

DES208

DES210

DES214

DES215

DES216

DES218

DES196 and DES220 are in close-out for the Fourth 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 may not be noted due to outstanding invoices from the contractors.

Table 5. Capital Projects Expense Summary

DES Project #	Description	Total Budget	FY24 Spending to Date	Total Spent to Date	Remaining Balance
Fund-49116					
DES163	Parcel K Service	\$ 1,018,802	\$ 15,233	\$ 99,452	\$ 919,350
DES178	MH-5 Repairs	\$ 97,500	\$ 21,385	\$ 53,182	\$ 44,318
DES191	MH 20 Repairs	\$ 94,875	\$ 47,453	\$ 116,508	\$ (21,633)
DES192	Peabody Developments	\$ 40,000	\$ 114	\$ 28,803	\$ 11,197
DES194	MH-B4 Repairs	\$ 80,000	\$ 888	\$ 31,129	\$ 48,872
DES195	DES Parking Lot	\$ 275,000	\$ -	\$ 12,688	\$ 262,312
DES196	Condensate Line Leak Repair at MH9	\$ 715,000	\$ 712,373	\$ 728,671	\$ (13,671)
DES198	MH18 Condensate Return Pump Replacement	\$ 175,000	\$ 181,248	\$ 228,468	\$ (53,468)
DES200	Sidestream Filter	\$ 330,000	\$ 396	\$ 5,597	\$ 324,403
DES201	East Bank and Oracle Development	\$ 110,000	\$ 8,575	\$ 41,708	\$ 68,292
DES202	Service to 7th and Commerce	\$ 1,630,000	\$ 14,486	\$ 28,528	\$ 1,601,472
DES203	Service to Printer's Alley Residential	\$ 850,000	\$ 57	\$ 1,564	\$ 848,436
DES206	7th Avenue Fan	\$ 110,000	\$ 41,439	\$ 65,842	\$ 44,158
DES207	MH N1 Insulation	\$ 25,300	\$ 5,128	\$ 8,103	\$ 17,197
DES208	2023 Stm Outage	\$ 33,000	\$ 2,360	\$ 4,611	\$ 28,389
DES209	MH B2 Pump Line Repair	\$ 44,000	\$ 3,355	\$ 3,469	\$ 40,532
DES210	MH C Sump Pump	\$ 125,000	\$ 13,321	\$ 13,321	\$ 111,679
DES211	MHD and AA Birch Tunnel	\$ 141,500	\$ 15,900	\$ 15,900	\$ 125,600
DES212	MH2 Repair	\$ 46,500	\$ 6,155	\$ 6,155	\$ 40,345
DES213	Tunnel Support Repair	\$ 321,500	\$ 28,976	\$ 28,976	\$ 292,524
DES214	Chiller 2 R'newel	\$ 330,000	\$ 220,313	\$ 220,313	\$ 109,687
DES215	State Utility Mapping	\$ 4,000	\$ 725	\$ 725	\$ 3,275
DES216	MH6, 11 and 12 Coating	\$ 37,400	\$ 3,572	\$ 3,572	\$ 33,828
DES217	DES Service to AutoNashville Hotel, LLC	\$ 3,079,000	\$ 6,527	\$ 6,527	\$ 3,072,473
DES218	MH B2,B6,B7,B8,B9 and 23B Cleanout/Coatings/Repairs	\$ 60,500	\$ 6,903	\$ 6,903	\$ 53,597
DES219	7th Ave Tunnel Repairs	\$ 391,600	\$ 33,831	\$ 33,831	\$ 357,769
DES220	MH20 Cond Repair & Grating	\$ 51,700	\$ 8,174	\$ 8,174	\$ 43,526
DES221	WM/LP Service Modifications	\$ 100,000	\$ 18,371	\$ 18,371	\$ 81,629
DES222	EDS Tagging Program	\$ 44,000	\$ 27,206	\$ 27,206	\$ 16,794
DES223	MH-18 Electrical Repair	\$ 121,000	\$ 3,365	\$ 3,365	\$ 117,635
DES224	EGF Optimization Evaluation	\$ 120,000	\$ 2,608	\$ 2,608	\$ 117,392
Total Closed Projects		\$ 4,607,490	\$ -	\$ 4,607,490	\$ -
Metro Project Admin		\$ -	\$ -	\$ -	\$ -
Project Man, Development, etc		\$ 10,790,333	\$ -	\$ -	\$ 10,790,333
Fund Total		\$ 26,000,000	\$ 1,450,436	\$ 6,461,760	\$ 19,538,240

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

Several EDS repairs and improvements were made during the Fourth 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 \$77,524. Table 6 provides a summary of the FY24 expenditures and revenues to date associated with the R&I budget.

Table 6. FY24 Repair and Improvement Expenditure and Revenue Summary

Description	Date	Tracking #	Vendor	Expenditure	Transfers	Balance
Value at end of FY23				\$ 285,919.91		\$ 278,274.07
Interest	7/3/2023	-	-	\$ 1,960.82		
Interest	7/3/2023	-	-	\$ (1,960.82)		
CES July 2023 R&I	8/24/2023	DES-2450	CES	\$ 1,793.89		
Interest	8/1/2023	-	-	\$ 2,182.76		
Interest	8/1/2023	-	-	\$ (2,182.76)		
CES Aug 2023 R&I	9/20/2023	DES-2448	CES	\$ 20,361.63		
DES-206 7th Ave Fan	9/20/2023	DES-2448	CES	\$ 23,182.35		
Interest	9/1/2023	-	-	\$ 2,360.98		
Interest	9/1/2023	-	-	\$ (2,360.98)		
DES-206 7th Ave Fan	10/18/2023	DES-2450	CES	\$ 34,376.27		
CES Sept 2023 R&I	10/18/2023	DES-2450	CES	\$ 5,403.74		
Sub-Total First Quarter				\$ 85,117.88	\$ 78,225.00	\$ 271,381.19
Interest	10/02/23	-	-	\$ 2,405.30		
Interest	10/02/23	-	-	\$ (2,405.30)		
CES Oct 2023 R&I	11/15/23	DES-2452	CES	\$ 1,703.69		
Interest	11/01/23	-	-	\$ 2,607.47		
Interest	11/01/23	-	-	\$ (2,607.47)		
CES Nov 2023 R&I	06/03/24	DES2458	CES	\$ 7,113.55		
DES-194 MHB4 Steel	06/03/24	DES2456	CES	\$ 46,170.00		
DES-198 MH18 Cond Pumps	06/03/24	DES2456	CES	\$ 1,400.26		
Interest	12/01/23	-	-	\$ 1,707.22		
Interest	12/01/23	-	-	\$ (1,707.22)		
CES Dec 2023 R&I	06/03/24	DES2458	CES	\$ 1,446.77		
Sub-Total Second Quarter				\$ 57,834.27	\$ 78,225.00	\$ 291,771.92
Interest	01/02/24	-	-	\$ 1,831.04		
Interest	01/02/24	-	-	\$ (1,831.04)		
DES-207 MH-N1 Insulation	02/21/24	-	CES	\$ 6,321.76		
DES-208 Steam Outage	02/21/24	-	CES	\$ 10,106.98		
DES-216 MH6,12, and 13	02/21/24	-	CES	\$ 20,501.25		
CES Jan 2024 R&I	02/21/24	-	CES	\$ 25,277.61		
Interest	02/01/24	-	-	\$ 1,925.65		
Interest	02/01/24	-	-	\$ (1,925.65)		
DES-163 Payment for Gate	03/14/24	-	-	\$ (2,534.00)		
CES Feb 2024 R&I	03/25/24	-	CES	\$ 32,237.45		
Interest	03/01/24	-	-	\$ 1,901.43		
Interest	03/01/24	-	-	\$ (1,901.43)		
CES Mar 2024 R&I	04/23/24	-	CES	\$ 28,473.25		
DES-206 7th Ave Fan	04/22/24	-	CES	\$ 2,860.45		
DES-209 MH-B2 Sump Pump Repair	04/22/24	-	CES	\$ 41,617.50		
DES-212 MH-B2 End Can Repair	04/23/24	-	CES	\$ 3,996.29		
Sub-Total Third Quarter				\$ 168,858.54	\$ 78,225.00	\$ 201,138.38
CES Apr 2024 R&I	05/17/24	-	CES	\$ 6,045.60		
Interest	04/01/24	-	-	\$ 2,086.23		
Interest	04/01/24	-	-	\$ (2,086.23)		
DES-218 MH-B Repairs	05/20/24	-	CES	\$ 49,224.76		
DES-220 MH-20 Condensate Piping	05/20/24	-	CES	\$ 19,466.73		
DES-221 War Memorial Renovation	05/20/24	-	CES	\$ 10,476.26		
DES-212 MH-2 End Can Repair	05/21/24	-	CES	\$ 11,748.85		
DES-189 MH-4 Coatings and Repair	06/20/24	-	CES	\$ 9,740.00		
DES-197 MH-3 Coatings and Repairs	06/20/24	-	CES	\$ 14,220.00		
DES-208 Steam Outage	06/20/24	-	CES	\$ 27,529.32		
DES-220 MH-20 Condensate Piping	06/20/24	-	CES	\$ 7,822.86		
DES-221 War Memorial Renovation	06/20/24	-	CES	\$ 14,588.27		
CES May 2024 R&I	06/21/24	-	CES	\$ 2,360.54		
Interest	05/01/24	-	-	\$ 1,832.07		
Interest	05/01/24	-	-	\$ (1,832.07)		
DES-216 MH-6, 12, and 13	02/20/24	-	CES	\$ 10,284.00		
Interest	06/01/24	-	-	\$ 2,009.01		
Interest	06/01/24	-	-	\$ (2,009.01)		
CES June 2024 R&I	07/22/24	-	CES	\$ 18,332.66		
Sub-Total Fourth Quarter				\$ 201,839.85	\$ 78,225.00	\$ 77,523.53
FY24 Year to Date				\$ 513,650.54	\$ 312,900.00	\$ 77,523.53

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. CES continues to replace trap assemblies within the EDS as needed.
 - c. CES should continue to clean areas of minor corrosion and then paint those areas with a cold galvanizing paint. If maintained, this should help reduce or slow down the progression of some areas of corrosion.
 - d. CES completed some insulation repairs in the tunnels; there are some insulation repairs still needed.
 - e. 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.

C. Emergencies

An emergency shutdown of the steam system occurred on June 30 to facilitate the repair of the drip leg in MH-B. The customers were notified prior to the beginning of the work, and the work was completed within the time frame allotted.

D. EDS Walkthrough

The Fourth Quarter FY 2024 walkthrough was conducted on May 6 and 8, 2024. The manholes that were visited included A, B, B1, G, K, L, M, N1, N2, S4A, S5, S6, MH 18A, and the chilled water piping suspended underneath the Woodland Street Bridge. The following comments and observations are a result of these visits.

Many of the manholes reviewed this quarter 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 CES, 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 A
 - a. There was water present in this manhole, and it required pumping prior to entry.
 - b. CES maintenance personnel mentioned that the central plant is once again experiencing hammering at the EGF in the condensate receiver/piping on a consistent basis. In 2017, this hammering occurred, and the source was
-

determined to be the trap in Manhole A because when this trap was isolated, the hammering ceased. Therefore, a sparge tube was added in Manhole A to address this problem. It was reported that the sparge tube solved the problem. TEG has asked CES to document/trend the occurrences including dates, time of day, plant load, condensate return flow and condensate return temperatures, etc. and report back to TEG. If the trap in Manhole A is the source of the hammering, TEG will provide specifications and drawings for the replacement of the internal assembly.

c. No deficiencies noted.

2. Manhole B

- a. There was a small amount of water in the floor of both sides of this manhole.
- b. The link seals at the southern and northern steam and condensate return wall penetrations are starting to become dislodged; the northern seal is more advanced. CES should attempt to push the links back in place and tighten them. However, from prior experience with similar situations, the link seal will not go back in place without the mud, dirt, etc. from the annular space being removed so that the linkseal can be inserted into the annular space. It is possible that the link seal cannot be positioned back in place. In this instance, the annular space may need to be packed with hydraulic cement or another material to keep the wall penetration sealed. **This item appeared on the last three years' reports.**
- c. The southern condensate slip joint support coating is cracking at the base. CES should have Enecon review this area to determine the cause of this cracking and make a recommendation for a repair. TEG has notified Enecon (copied CES) and Enecon has volunteered to repair these areas at no charge to Metro. CES needs to coordinate with Enecon to execute these repairs. **This item appeared in last year's report.**
- d. The southern steam slip joint support coating is cracking at the base. CES should have Enecon review this area to determine the cause of this cracking and make a recommendation for a repair. TEG has notified Enecon (copied CES) and Enecon has volunteered to repair these areas at no charge to Metro. CES needs to coordinate with Enecon to execute these repairs. **This item appeared in last year's report.**
- e. The end can of the steam penetration at the western wall on the chilled water side of the manhole was repaired with hydraulic cement by Enecon over a year ago. Water is infiltrating at this point, but it is only a consistent drip - which hasn't changed substantially since the last report. CES should continue to monitor this penetration and report any changes to TEG. TEG has included this section of piping in its "Comprehensive Repair and Replacement Plan."

3. Manhole B1
 - a. This is a sump pump manhole located in 1st Avenue South to the west of Manhole B. It was constructed to reduce/control the amount of groundwater entering Manhole B.
 - b. No deficiencies noted.

 4. Manhole G
 - a. This is an abandoned manhole located in a grass median near the intersection of 1st Avenue North and Union Street. It is reviewed to ensure its structural integrity is not compromised.
 - b. No issues were identified.

 5. Manhole K
 - a. There was an appreciable amount of water in this manhole, and it required pumping prior to entry.
 - b. Mud used to accumulate in the floor of this manhole. It was believed that the mud was originating from the joint between the walls and the floor or from the interface between the floor and the abandoned manhole below the floor. TEG directed CES to have Enecon seal the wall/floor joints and seal the manway areas of the abandoned manhole underneath the floor. This has solved the mud accumulation; however, ground/surface water is now accumulating in greater quantities in this manhole. During recent manhole inspections, CES discovered that water can leak into the manhole at the wall-to-ceiling joint where two roof slabs meet (a portion of this manhole is above ground). During this review, CES personnel exposed this joint on both the north and south sides of the manhole and installed some caulking in the vertical joint between these two slabs. The caulking is a bright red color so the joint where the two slabs meet on the top of the manhole was not filled with caulk. Since this review, CES has reported that less water was present in this manhole. CES needs to purchase a flexible, tan or dark brown colored caulk and fill the rooftop joint of this manhole. In addition, CES needs to expose and caulk the joint between the roof slabs and the manhole wall on the north side of the manhole (this will require some minor excavation of the soil next to the manhole). CES needs to accomplish this as soon as possible.
 - c. There are some hairline cracks in the concrete patching of the southern manhole wall. CES should monitor these cracks and notify TEG of any significant changes.
 - d. The trap piping was reconfigured over a year ago and a new trap was installed. CES needs to insulate the trap piping from the dripleg to just prior to the trap. **This item appeared in last year's report.**

 6. Manhole L
 - a. There was no water in this manhole.
-

- b. The west end of the horizontal anchor beam has some corrosion on the top edge of the northern flange, apparently this area was apparently overlooked when Enecon re-visited this manhole to repair other coating failure areas. CES should have Enecon re-visit this manhole, clean this area of the steel and re-coat it. CES should coordinate with Enecon to have this repair made as soon as possible.
 - c. The insulation jacketing end cap on the steam piping exiting the manhole to the north is has come loose and is hanging from the piping – it is in disrepair. CES should have this repaired as soon as possible.
 - d. As needed, remove mud and debris from the “trough” area.
7. Manhole M
- a. There was no water present in this manhole.
 - b. The link seal on the steam line penetration at the northern wall has dislodged from the top portion of the pipe. CES personnel have tried to re-position this linkseal without success. CES should remove the linkseal and then remove the dirt, mud, gravel, etc. from the annular space and try to re-install the linkseal and tighten it. (A similar situation exists in Manhole B, therefore CES should probably attempt this at one location to determine if it can be done successfully before attempting numerous locations.) It is possible that a link seal cannot be positioned back in place. In this instance, the annular space may need to be packed with hydraulic cement or another material to keep the wall penetration sealed. **This item appeared in the last three years’ reports.**
8. Manhole N1
- a. There was a small amount of water in the floor of this manhole, but not enough to require pumping.
 - b. The CHW piping in this manhole was recently insulated. To prevent condensation on the ceiling of the manhole, the ceiling was also insulated. CES should monitor the piping and ceiling insulation and report any deterioration to TEG.
9. Manhole N2
- a. This manhole is located on the Nissan Stadium campus. Metro is currently constructing a new stadium next to the existing stadium. Because of this, there is construction equipment and excavated piles of dirt on the site. This equipment and dirt made it difficult to access the manhole and the manhole was not pumped or entered. TEG contacted the DES liaison who was able to retrieve a contact with the construction company. This contact information was forwarded to CES to ensure access to this manhole during the construction.
 - b. There was a small amount of water in this manhole.
 - c. TEG reviewed the manhole interior from the surface.
-

- d. The CHW bypass piping and isolation valves in this manhole were never insulated. The surface condensation (“sweating”) is causing some corrosion to occur, therefore, the uninsulated piping in this manhole needs to be insulated. However, the new stadium will not be on the DES system. The uninsulated piping includes a bypass line from the chilled water supply to the chilled water return. If chilled water service is terminated from this manhole, the bypass piping will be opened to maintain circulation through this piping loop. Therefore, this piping should be insulated even though there will not be any service from this manhole. Once better access to this manhole is established, the uninsulated piping needs to be insulated.

 10. Manhole S4A
 - a. There was some water present in this manhole, and it required pumping prior to entering.
 - b. The trap piping between the dripleg and the trap needs to be insulated. CES should have this insulated as soon as possible.
 - c. There are hairline cracks in the walls of this manhole. CES should monitor these cracks and report any significant changes to TEG.
 - d. There is some minor spalling of the concrete walls in this manhole. CES should monitor this spalling and notify TEG of any significant changes.

 11. Manhole S5
 - a. Some leaves had accumulated in the ventilation “windows” of this manhole. CES should remove these leaves to allow as much cooling of this manhole as possible.
 - b. There are some cracks in the manhole interior wall surfaces. CES should monitor these cracks and report any degradation to TEG.
 - c. There is some minor insulation jacket damage in this manhole. This should be repaired the next time insulation work is done in this manhole.

 12. Manhole S6
 - a. No deficiencies noted.
 - b. CES should continue to monitor the structure, anchor and piping.

 13. Manhole 18A
 - a. The slip joint insulation blankets are deteriorating. CES should obtain quotes to replace these blankets.
 - b. The trap was not functioning during this review. In addition, one of the root valves upstream of the trap is reported to need replacement. Depending upon which root valve needs to be replaced, an outage of this portion of the system may be required to replace this valve.

 14. Chilled Water Piping Underneath Woodland Street Bridge
 - a. The homeless had accessed the area underneath the western end of the bridge. There were bad odors and substances on the concrete floor of the
-

gate entrance area. Therefore, a review was not conducted. TEG contacted the DES liaison to notify Metro about these conditions to have someone clean the area to allow access.

- b. There is a section of an angle siderail missing from the north side of the grated walkway underneath the bridge. This missing section was visible from outside the entry area. In addition, there was a missing bolt from a handrail section. CES contacted TDOT to ask about the repair responsibility for these items and they are TDOT's responsibility to repair. TEG will contact the TDOT representative to obtain a status for the repair schedule of these items.

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 CES in an expeditious and professional manner.

A. Marketing

TEG continues to have discussions with potential developments along the Peabody St corridor and the Rolling Mill Hill area. These potential sites include 1st Ave S and KVB, 4th and Lea, Peabody and Rutledge, and 2nd Ave S and Peabody. In addition to the Peabody St corridor, TEG continues to reach out to other developments within the service area for DES.

TEG continued their discussions with the Washington Square building during the quarter for potential chilled water service. This building was previously connected to the old system (Nashville Thermal Transfer Corporation). Washington Square continues to evaluate their options and the proposal from 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 CES 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 made repairs within their buildings during the Quarter and requested assistance from CES, which was provided. Some of these repairs involved isolating the steam or chilled water services to the building for the customers.
- CES contacted the Tennessee Tower facility manager to confirm the repairs to their PRV had been completed. CES proceeded to repair the damaged DES metering panel and instruments.

- CES met with personnel from the Music City Center to discuss issues with the chilled water flow at their building on June 24. Modifications to their controls were made. TEG and CES will continue to monitor the issue to ensure the operation at the building does not have an adverse effect on the system.
- Other minor issues and customer interactions are noted in the monthly reports from CES.

VII. Recommendations

CES is obligated to meet the standard of good utility practice and performance guarantees as outlined by the ARMA. CES continues to improve its operation and has succeeded in meeting several of the guaranteed metrics. In TEG's opinion, CES needs to continue their efforts to improve the operations of the EGF to meet the remaining metrics more consistently. In addition, CES has improved its maintenance practices and has reduced the number of previously unaddressed items included in TEG's quarterly walkthrough reports regarding the EDS and the EGF. However, there are several outstanding manhole items in this report which have appeared in previous reports. CES needs to expeditiously address the long-outstanding items.

Based on the review of the Fourth Quarter FY24 EGF and EDS operations, the following recommendations are made.

- CES needs to address the maintenance items included in the EGF and EDS Walkthrough sections of this report as soon as possible.
- CES 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. Some of these issues could be addressed with additional repairs and maintenance to the towers.
- CES needs to increase 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.
- 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 CES 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.
- CES should continue to remove debris and mud from manholes.