



Metro Nashville
DISTRICT ENERGY SYSTEM

DES Advisory Board Meeting
Second Quarter FY24
February 15, 2024

Agenda

1. Call to Order
2. Review & Approval of Previous Meeting Minutes
3. Metro Liaison Update
4. Customer Sales
5. Marketing
6. Review of DES Contractor Performance
7. Natural Gas Purchasing Update
8. FY24 Costs to Date and Budget
9. Review of EGF and EDS
10. Capital Projects Review & Status
11. System Operator Update
12. Other Board Member Items
13. Adjourn

1. Call to Order
2. Review & Approval of Previous Meeting Minutes
3. Metro Liaison Update

4. *Customer Sales*

- ❖ There is 1 customer in arrears more than 30 days
- ❖ Table 4: Customer Cost Comparison for the Previous 12 Months
- ❖ Figure 4A: Historic Chilled Water Sales
- ❖ Figure 4B: Historic Steam Sales

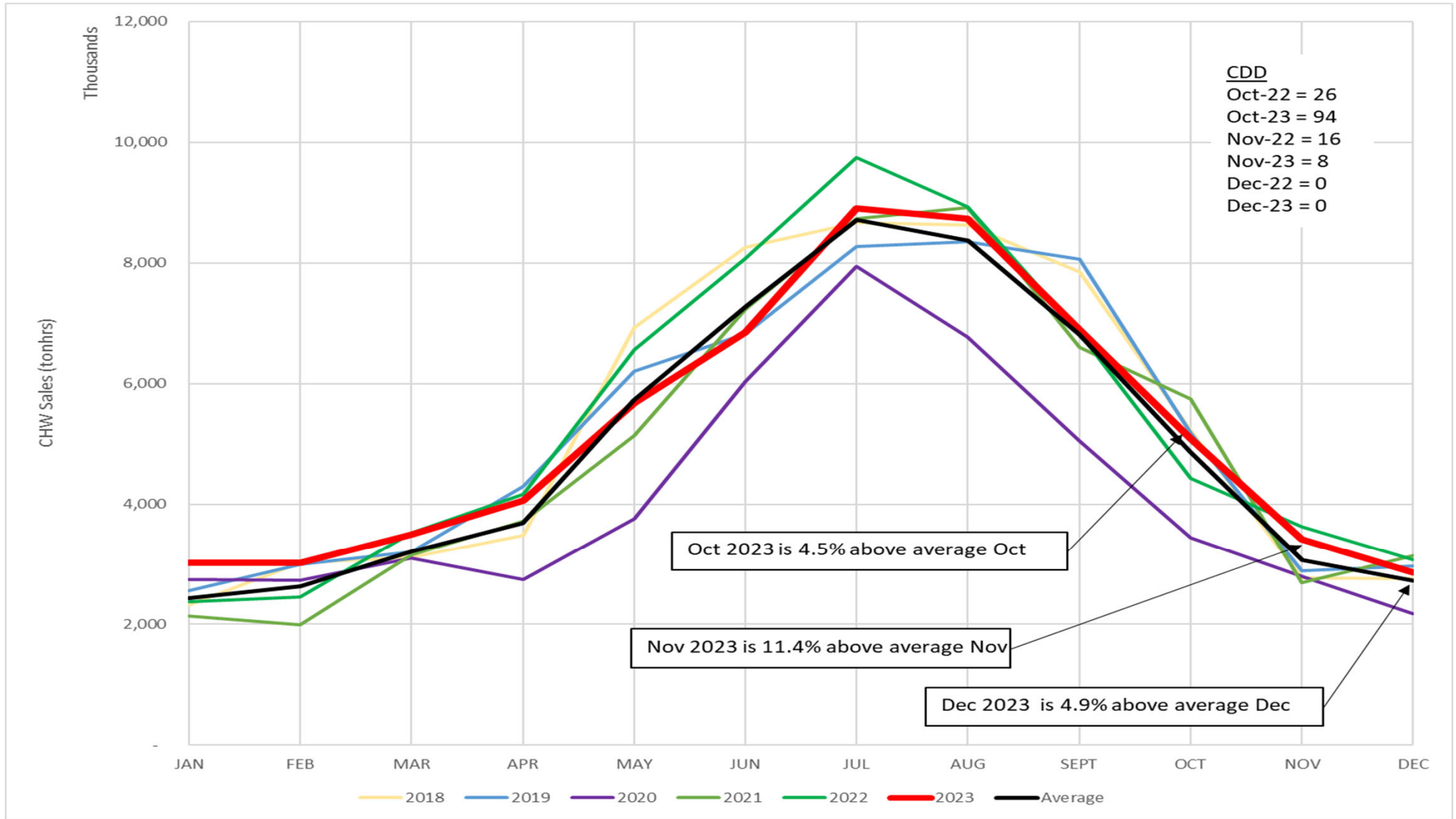


Summary Table 4: Customer Cost Comparison for the Previous 12 Months

	Steam - Rolling 12 Month			Chilled Water - Rolling 12 Month		
	Jan 2022-Dec 2022	Jan 2023-Dec 2023	% Diff.	Jan 2022-Dec 2022	Jan 2023-Dec 2023	% Diff.
Private Cost	\$ 1,801,681	\$ 1,670,285	-7.29%	\$ 4,546,444	\$ 4,516,096	-0.67%
Usage (lbs or tonhrs)	100,539,634	91,099,494	-9.39%	23,343,654	22,030,541	-5.63%
State Cost	\$ 2,275,825	\$ 2,115,188	-7.06%	\$ 3,483,701	\$ 3,524,600	1.17%
Usage (lbs or tonhrs)	118,089,798	105,943,615	-10.29%	14,026,782	13,612,493	-2.95%
Metro Cost	\$ 2,292,605	\$ 2,057,412	-10.26%	\$ 5,047,397	\$ 5,067,723	0.40%
Usage (lbs or tonhrs)	144,920,706	128,835,363	-11.10%	26,437,488	26,366,995	-0.27%
Aggregate Cost	\$ 6,370,111	\$ 5,842,885	-8.28%	\$13,077,542	\$13,108,419	0.24%
Usage (lbs or tonhrs)	363,550,138	325,878,472	-10.36%	63,807,924	62,010,029	-2.82%
Unit Cost	\$ 17.52	\$ 17.93	2.3%	\$ 0.205	\$ 0.211	3.14%

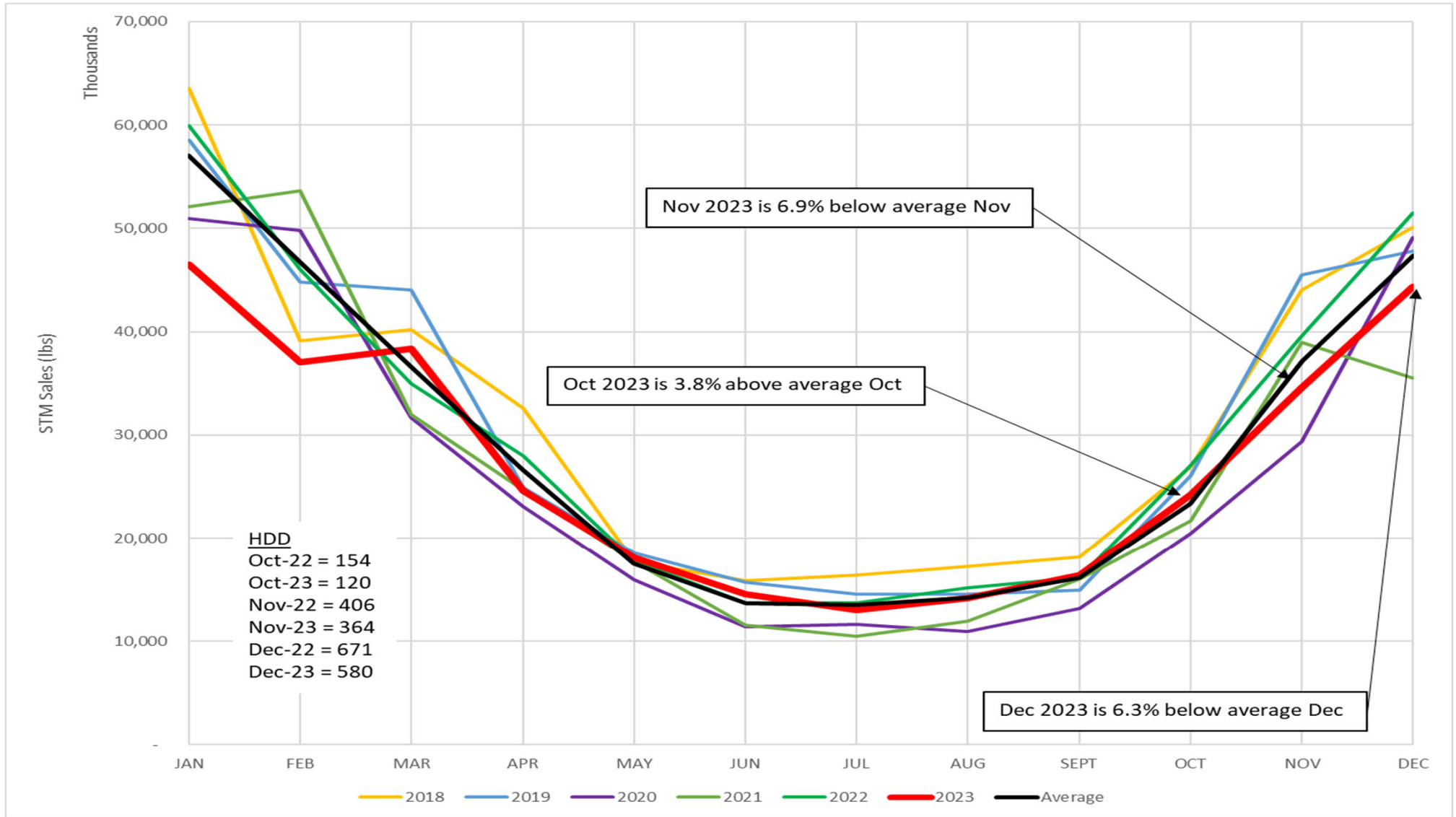
MFA, True-up, late fees and misc. are not included in values shown

Figure 4A. Historic Chilled Water Sales



Averages include the years 2018, 2019, 2020, 2021, 2022, and 2023.

Figure 4B. Historic Steam Sales



Averages include the years 2018, 2019, 2020, 2021, 2022, and 2023.

5. *Marketing*

- 8th and Demonbreun (Auto Nashville Hotel, LLC)
 - 1,300 tons and no steam
 - Executed CSA in January 2024 – expecting service in late 2025
- Remaining Capacity for Sale (approximate)
 - 1,400 tons of chilled water
 - 35,105 pph of steam
- Potential New Customer Interest
 - ~5,000 tons
 - ~87,000 pph (or equivalent)
- 20th Anniversary of DES Dec 20, 2023

Marketing (con't)

- Peabody St Development
 - 1st and KVB
 - Potential ~1,100 tons and ~17,000 MBTUH hot water
 - Development on hold
 - 4th and Lea Ave
 - Potential ~1,000 tons and no steam or hot water
 - Residential and retail
 - Re-evaluating development; on hold
- Peabody and Rutledge
 - Potential ~2,000 tons and ~36,000 MBTUH hot water
 - Residential and retail
 - Development on hold

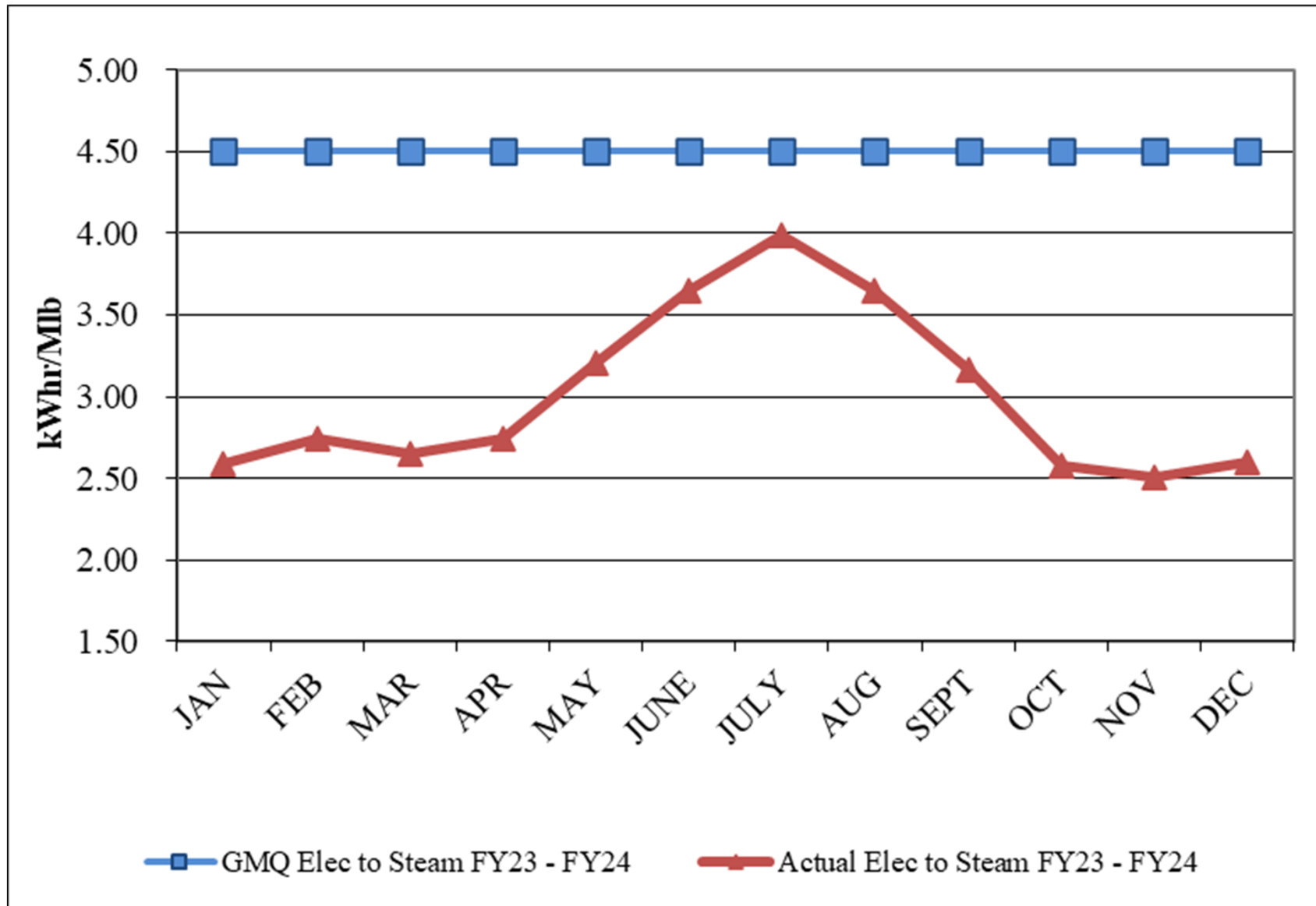
Marketing (con't)

- New Developments North of KVB
 - Printer's and Banker's Alley
 - ~450 tons and no steam
 - Apartment and retail development
 - Development on hold
 - 7th and Commerce
 - 660 tons and 14,500 pph steam
 - Hotel, restaurants and retail
 - Development on hold; awaiting executed CSA
- US Courthouse (Estes Kefauver Bldg)
 - Ex boiler and chiller plant need significant improvements
 - Interested in steam and chilled water from DES

6. Review of DES Contractor Performance

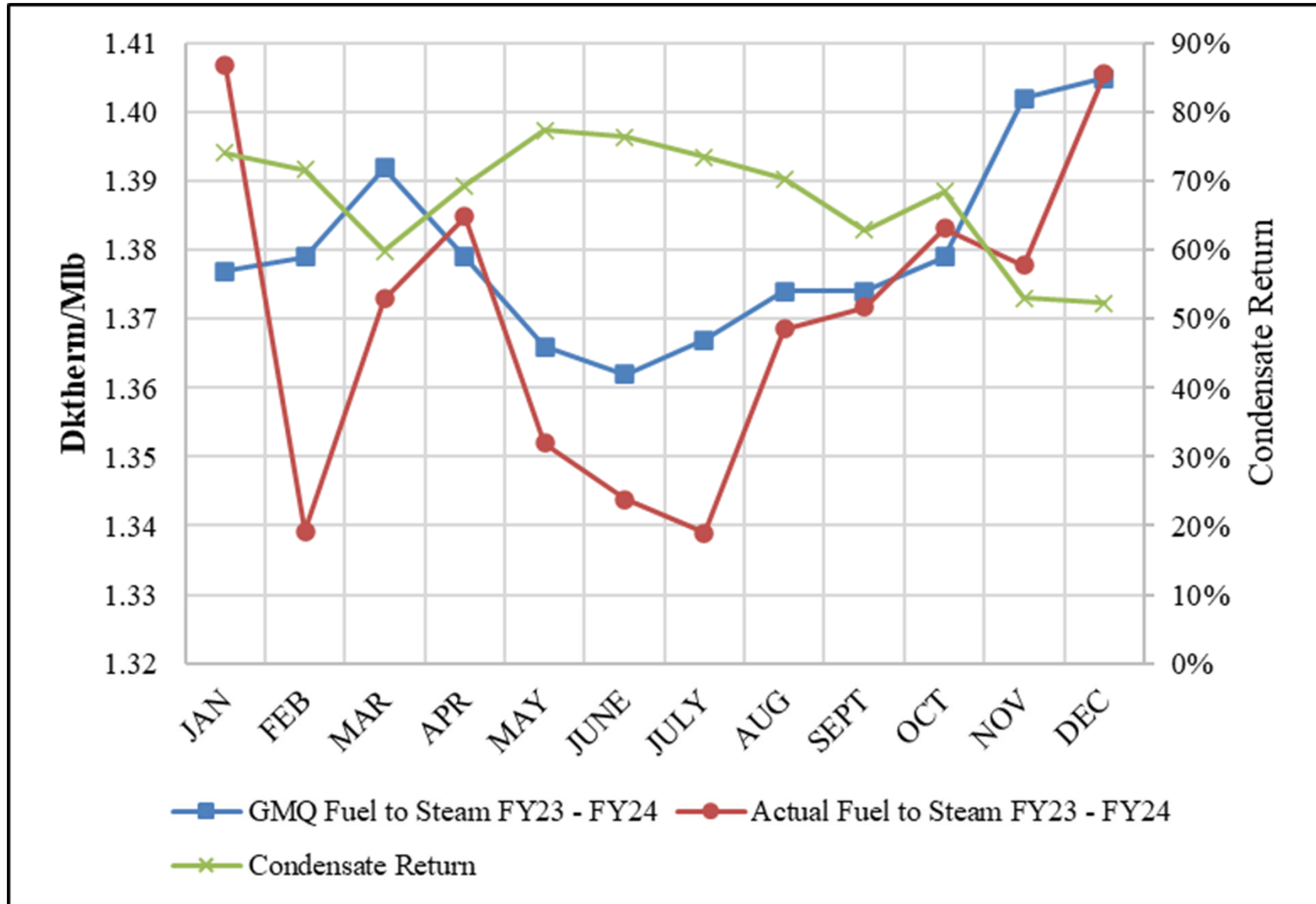
CES has made improvements in FY24 and has met several of the performance metrics for Q2. CES continues to address the system energy usage.

Performance Measurement FY24: Steam Electric



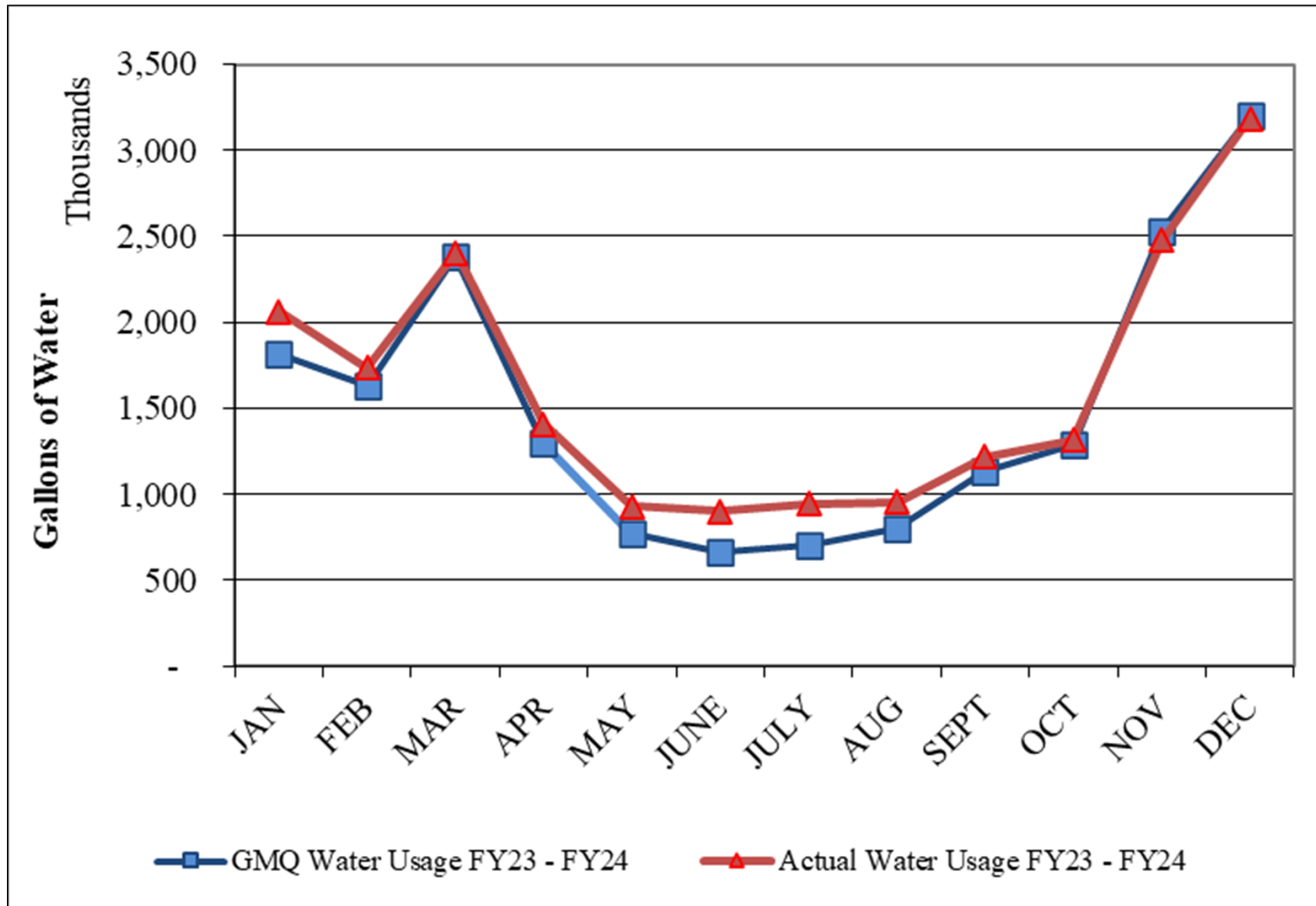
GMQ met in all months shown.

Performance Measurement FY24: Steam Plant Eff



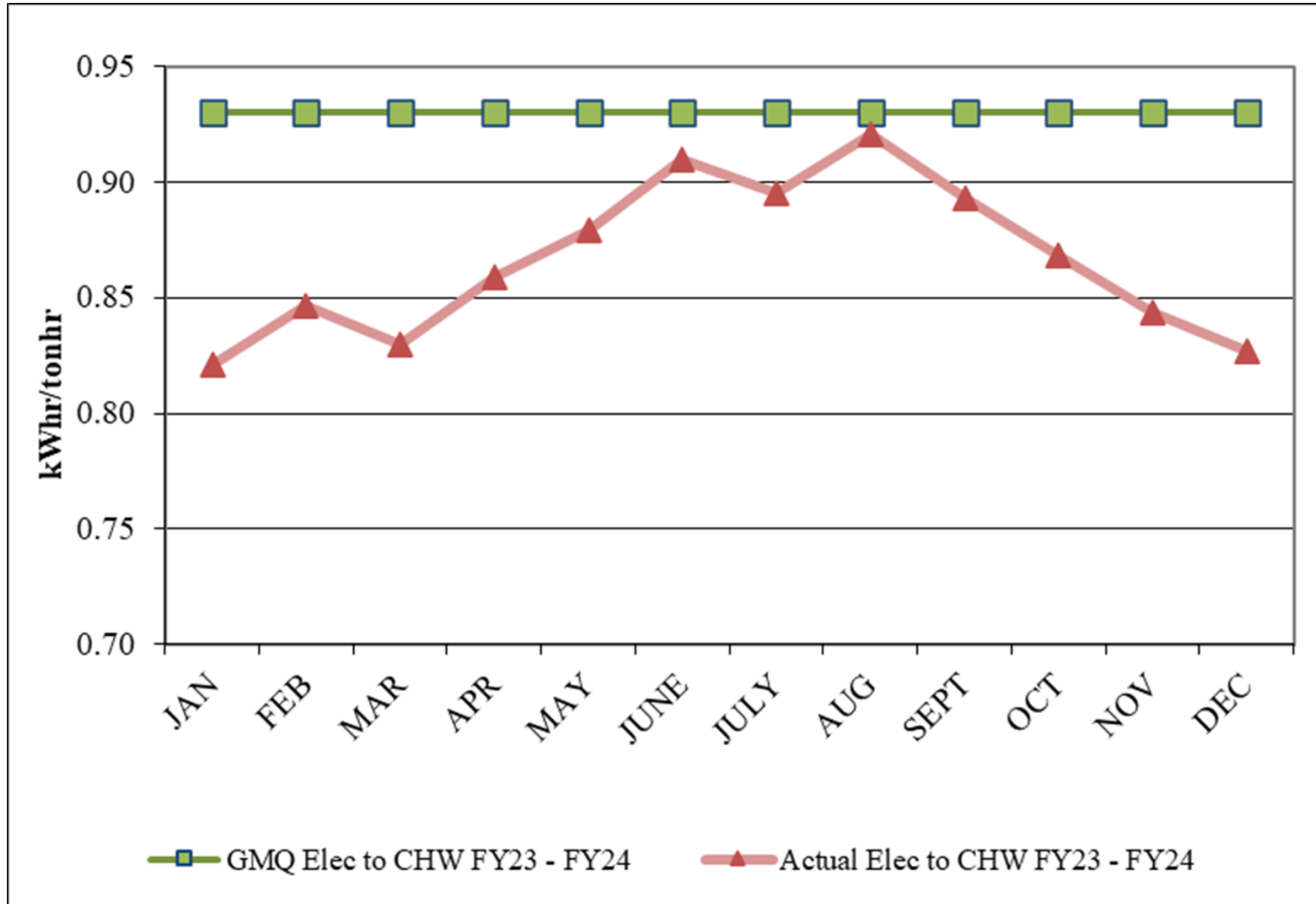
GMQ met Feb, Mar, May, June, July, Aug, Sept, and Nov (Dec 0.04% higher than GMQ)

Performance Measurement FY24: Steam Water



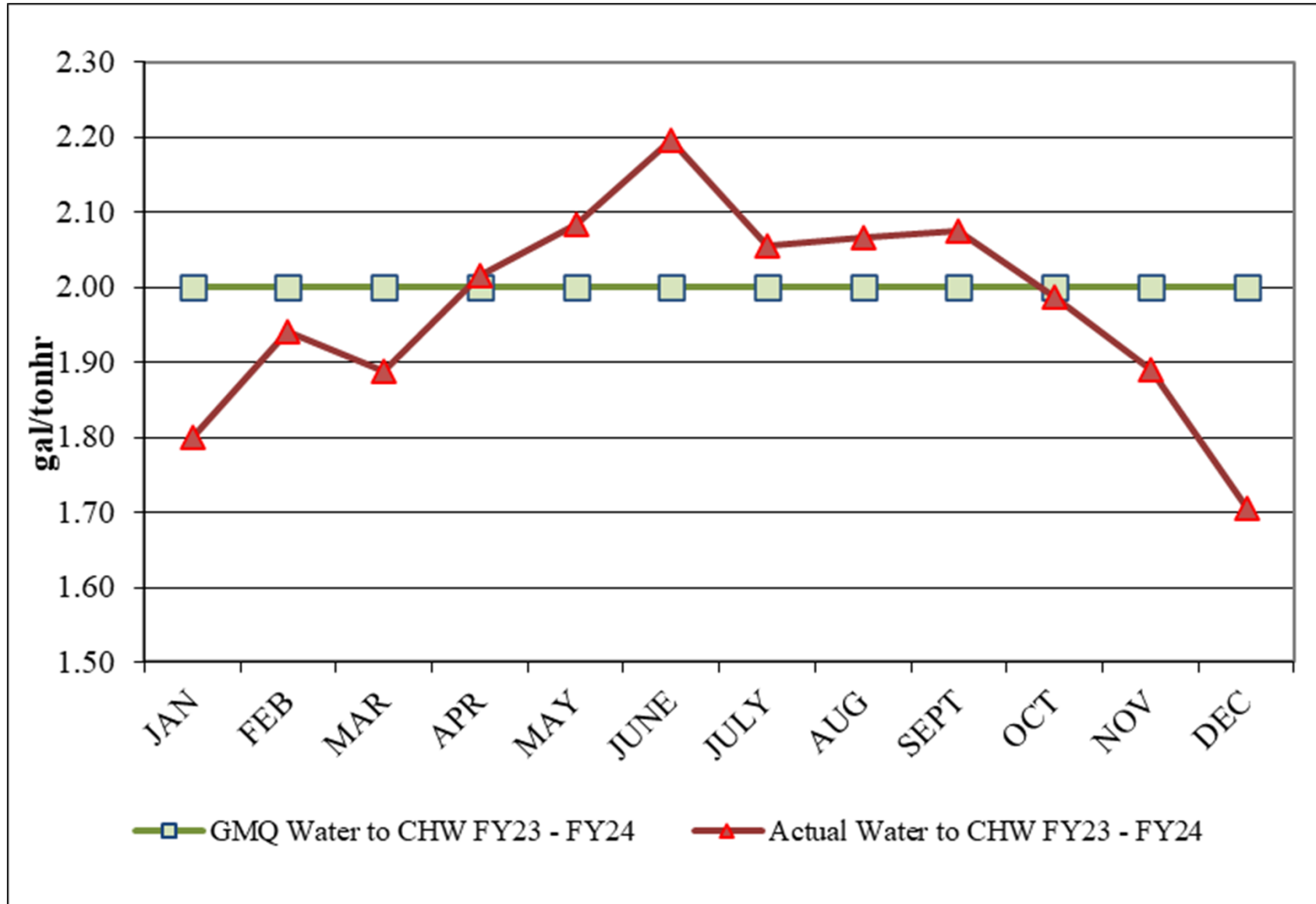
GMQ met in Nov and Dec.

Performance Measurement FY24: CHW Electric



GMQ met in all months shown.

Performance Measurement FY24: CHW Water

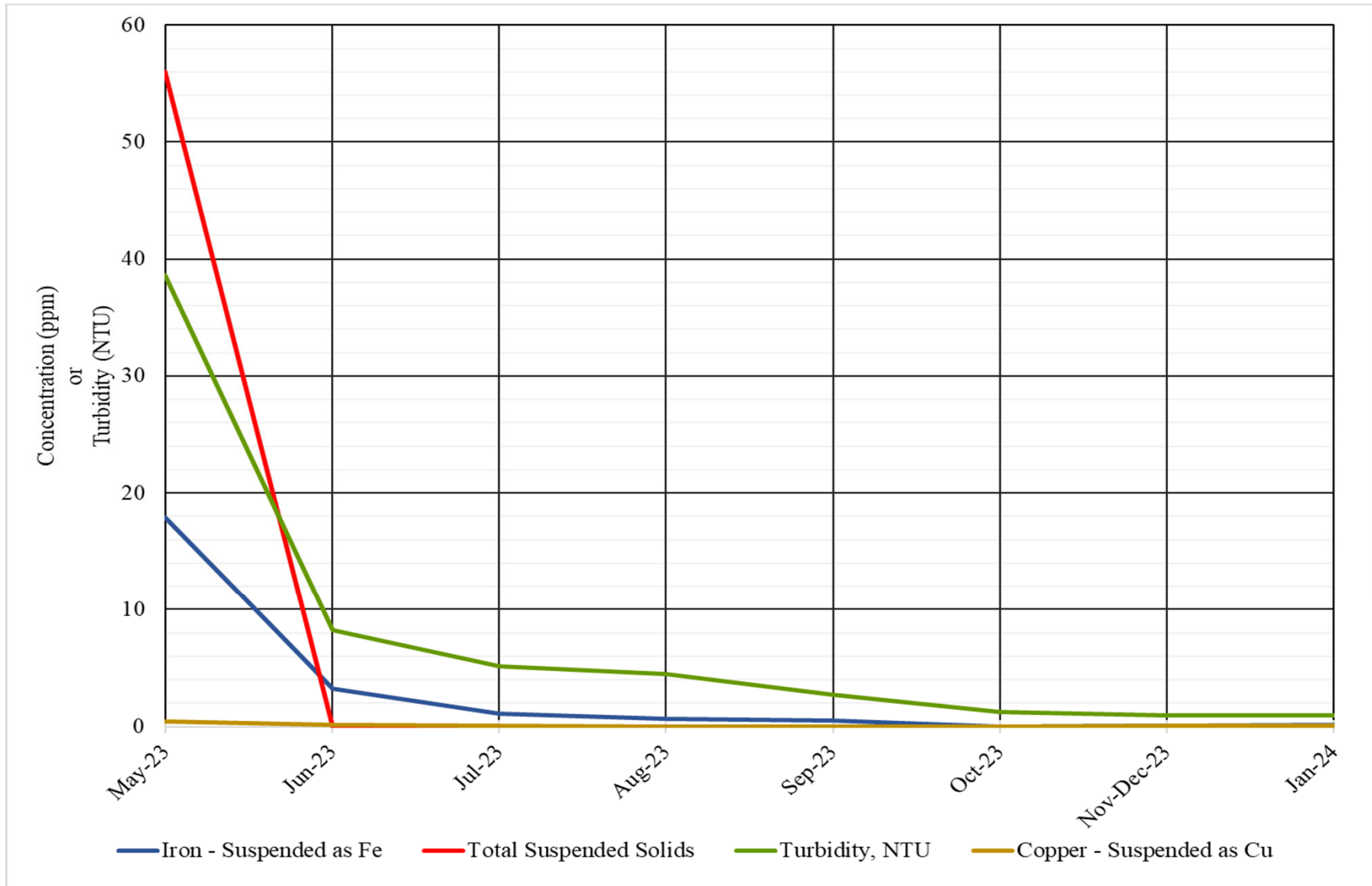


GMQ met Jan, Feb, Mar, Oct, Nov, and Dec.

Water Treatment

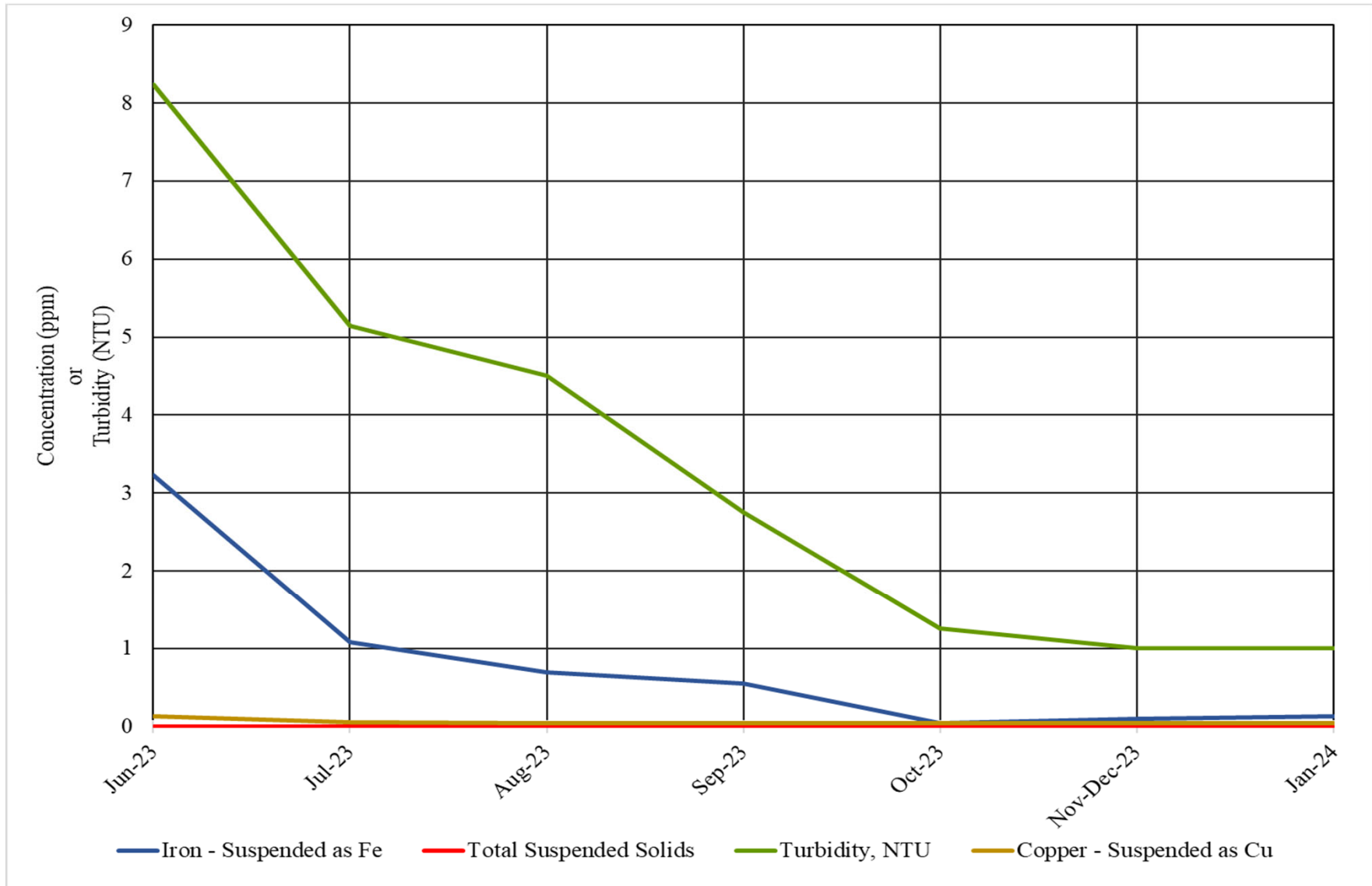
- ❖ Steam and Condensate
 - ❖ Corrosion
 - ❖ Iron
 - ❖ Hardness
 - ❖ Chlorine/Sulfite
- ❖ Condensing Water
 - ❖ Conductivity
 - ❖ Biologicals
- ❖ Chilled Water
 - ❖ Hardness
 - ❖ Corrosion
 - ❖ EGF and Customer Biologicals Good
 - ❖ Deposits

Side Stream Filter Performance



Decrease in backwash noted over the quarter. May data is pre-start-up; operational since May 9, 2023.

Side Stream Filter Performance



Copper and Iron remain less than 1 ppm. Total solids below detectable limit since June. Turbidity <1.0.

7. Natural Gas Purchasing

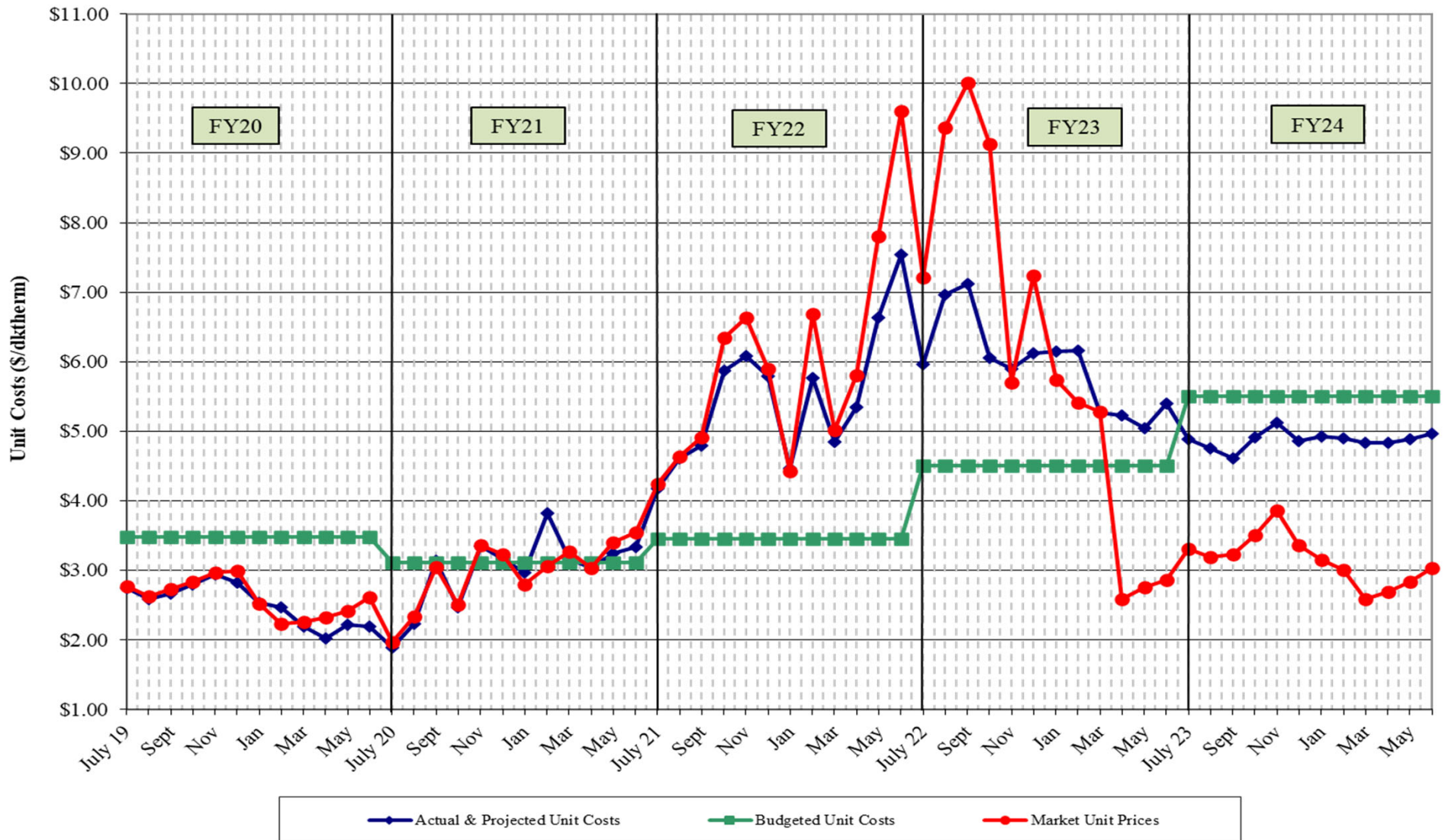
- ❖ Natural Gas Purchasing Review
 - ❖ Table 7: FY24 Gas Spending & Budget Comparison
 - ❖ Figure 7: Actual and Projected Fuel Cost Comparison

Table 7: FY24 Gas Spending & Budget Comparison

	Actual FY24 To Dec 31	Budget FY24	Percent Difference
Steam Sendout (Mlbs)	174,758	187,980	-7.0%
Fuel Use (Dth) (includes propane)	241,224	269,375	-10.5%
Plant Eff (Dth/Mlb)	1.380	1.433	-3.7%
Total Gas Cost (includes propane)	\$1,178,444	\$1,757,733	-33.0%
Unit Cost of Fuel (\$/Dth)	\$4.885	\$6.525	-25.1%

Excludes consultant fees, FEA, and pre-purchased and stored propane; Includes transportation and actual propane costs and usages. Budget values include price and weather contingencies.

Figure 7. Actual and Projected Fuel Cost Comparison



Currently hedging 70% of natural gas through FY24 and 30% through FY25; transportation costs included.




8. *FY24 Costs to Date*

Item	FY23 Budget	FY24 Budget	FY24 Actual to date	Percent of FY24 Budget
FOC's	\$ 4,006,800	\$ 4,127,000	\$ 2,063,512	50.00%
Pass Throughs				
Administrative Costs	\$ 932,100	\$ 638,300	\$ 354,230	55.50%
Chemicals	\$ 255,700	\$ 331,200	\$ 150,845	45.55%
R&I Fund Transfers	\$ 303,700	\$ 312,900	\$ 182,525	58.33%
Water/Sewer	\$ 773,400	\$ 1,152,000	\$ 672,010	58.33%
Fuel Base	\$ 2,797,256	\$ 3,422,700	\$ 1,304,460	38.11%
Fuel Contingency	\$ 677,044	\$ 764,200	\$ -	0.00%
Electricity	\$ 6,394,800	\$ 6,476,700	\$ 3,036,167	46.88%
ORF Deposit	\$ 85,800	\$ 188,200	\$ 94,100	50.00%
Debt Service	\$ 4,311,300	\$ 4,774,000	\$ 2,489,834	52.15%
Total Expenses	\$ 20,537,900	\$ 22,187,200	\$ 10,347,682	46.64%
Total Revenues	\$ 20,163,600	\$ 21,802,800	\$ 10,229,809	46.92%
Metro Funding	\$ 374,300	\$ 384,400	\$ 96,100	25.67%

Actual Costs and Revenues to Date include FY23 True-up Items.

9. *Review of EGF and EDS*

CES has several long-term, outstanding maintenance items in EDS tunnels that need to be addressed.

-  Excellent Performance – No Improvement Necessary
-  Satisfactory Performance – Some Improvement Could Be Made
-  Poor Performance – Much Improvement Necessary

EGF Walkthrough

Q2FY24 Q1FY24 Q4FY23 Q3FY23

✓ Equipment Maintenance	●	●	●	●
✓ Operations	●	●	●	●
✓ Electrical	●	●	●	●
✓ Housekeeping	●	●	●	●
✓ Building Structure	●	●	●	●
✓ Building Exterior and Grounds	●	●	●	●



EDS Walkthrough

Q2FY24 Q1FY24 Q4FY23 Q3FY23

✓ Overall Status; Tunnels	● +	●	● -	● -
✓ Overall Status; Vaults	● -	● -	● -	● -
✓ Housekeeping	●	●	●	●
✓ Maintenance Items				
✓ Piping	● -	● -	● -	● -
✓ Insulation R/R	● -	● -	● -	● -
✓ Water Infiltration	● +	● +	● +	● +
✓ Corrosion	● -	● -	● -	● -
✓ Lower Priority/Deferred	●	● -		
✓ Safety Items	●	●	●	●

10. *Capital Expenditure Update*

	Spent to End of FY23	FY24 Spending	Balance to Date (01/30/24)
R&I Projects	\$4,644,774	\$180,765	\$280,034
49116-DES Infrastructure Fund	\$5,011,324	\$886,793	\$3,475,754
Total	\$9,656,098	\$1,067,549	\$3,755,788

Capital Projects Review

Active Capital Projects – General & Marketing

- DES 163: Peabody Union – working with developer on Guthrie St. impact to DES; demolition of wall began in January
- DES 192: Peabody St. Developments – survey of routing down Peabody; DES plan for expansion in area with new customers
- DES 195: DES Parking Area – on hold pending Guthrie St. mods

Capital Projects Review

Active Capital Projects – General & Marketing

- DES 201: East Bank Development – ongoing development and marketing activities related to the East Bank
- DES 202: 7th and Commerce Hotel – project on hold; intends to use DES CHW and STM
- DES 203: Printer’s and Banker’s Alley Building – building development on hold; intends to use DES CHW
- DES 217: DES Service to Auto Nashville Hotel, LLC (8th and Demonbreun) – expecting service during construction in late 2025; 1,300 tons chilled water contract capacity with no steam

Capital Projects Review

Active Capital Projects – Corrosion Repair/Prevention

- DES 178: MH 5 Repairs – closed.
- DES 194: MH B4 Repairs – received and installed the last insulation blanket; project in close-out.
- DES 211: AA Birch Tunnel and MH D Repairs – cleaning and coating of structural steel pipe and platform supports is needed. TEG is working on scope, specifications and drawings. Anticipate work to begin late 3rd Qtr/ early 4th Qtr FY24.

Capital Projects Review

Active Capital Projects – Repairs/Modifications

- DES 191: MH 20 Repairs – work completed during 2nd Qtr FY24; project is in close-out.
- DES 196: Exploratory Excav. & Cond. Leak Repair at MH 9 – involves condensate return piping replacement between MH 9 and MH 10 and additional work at MH 11; project was bid during the 4th Qtr FY23, only one bid was received, and pricing was prohibitive; TEG and CES met with an alternate contractor and received pricing much less than bid pricing. Work began during 2nd Qtr FY24; expect work to be complete (with possible exception of paving) during 3rd Qtr FY24.
- DES 198: MH18 Condensate Pump Replacement – project closed; increasing condensate return to EGF.

Capital Projects Review

Active Capital Projects – Repairs/Modifications

- DES 206: 7th Ave Tunnel Fan Replacement – 7th Ave Tunnel ventilation fan disintegrated while in operation; no injuries; new fan was ordered; work began during 1st Qtr FY24. Electrical equipment had to be re-ordered due to water damage. Project was substantially complete during 2nd Qtr FY24. Awaiting punch list item completion and cost substantiation review.
- DES 207: MH N1 Insulation – CES is installing most of the insulation under their Amendment 2 obligations with the balance being paid for by Metro; work began during 2nd Qtr FY24; anticipate completion during 3rd Qtr FY24.
- DES 208: 2023 Steam Outage – several repairs are needed in the EGF and EDS which requires a steam outage; outage took place September 24-25, 2023; disturbed piping has been re-insulated. Awaiting final review of cost substantiation.

Capital Projects Review

Active Capital Projects – Repairs/Modifications

- DES 209: MH B2 Sump Pump Discharge Repair – sump pump discharge piping is either obstructed or damaged preventing evacuation of groundwater accumulation; obstruction/damage has been located using pipe tracing technology. Work completed during 2nd Qtr FY24. Awaiting final review of cost substantiation and final paving.
- DES 210: MH C Sump Pump Installation – MH C is located adjacent to MTA bus station which complicates review and pumping manhole; TEG has obtained permission from MTA to use power from bus station for an electric sump pump in MH C. TEG investigated cost of installation and cost is prohibitive. Project has been cancelled.

Capital Projects Review

Active Capital Projects – Repairs/Modifications

- DES 212: MH 2 End Can Replacement – Steam piping end can assembly is corroded and requires replacement. TEG provided drawings and met with contractor to review work. Work began during 2nd Qtr FY24; anticipate project completion during 3rd Qtr FY24.
- DES 213: 4th, 7th & Broadway Tunnel Piping Slide Support Repairs – several pipe slides are damaged due to use over past 38+ years; TEG is working on repair/replacement scope and drawings. Anticipate bidding work during the 3rd Qtr FY24.
- DES 214: Chiller 2 R’newal – chiller 2 issues during Q2 prompted review of machine; Trane recommended their R’newal program to replace compressors, motors, etc.; with 7-year warranty; work anticipated in Q3FY24.

11. System Operator Update



Constellation Energy Solutions, LLC

12. Other Board Member Items

Election of Board Chair

*Operating Management Agreement Development
(current agreement expires end of FY25)*

13. Adjourn

- *Advisory Board Meeting Schedule*
- FY24 – 3rd Quarter Meeting – May 16, 2024
- FY24 – 4th Quarter Meeting – August 15, 2024
- FY25 – 1st Quarter Meeting – November 21, 2024
- FY25 – 2nd Quarter Meeting – February 20, 2025