



Metro Nashville
DISTRICT ENERGY SYSTEM

DES Advisory Board Meeting
Fourth Quarter FY23
August 17, 2023



Agenda

1. Call to Order
2. Review & Approval of Previous Meeting Minutes
3. Customer Sales
4. Review of DES Contractor Performance
5. Natural Gas Purchasing Update
6. FY23 Costs to Date and Budget
7. FY24 Budget
8. Marketing
9. Capital Projects Review & Status
10. Side Stream Filter Performance
11. Other Board Member Items
12. Adjourn



1. Call to Order
2. Review & Approval of Previous Meeting Minutes

3. *Customer Sales*

- ❖ There are 0 customers in arrears more than 30 days
- ❖ Table 3: Customer Cost Comparison for the Previous 12 Months
- ❖ Figure 3A: Historic Chilled Water Sales
- ❖ Figure 3B: Historic Steam Sales

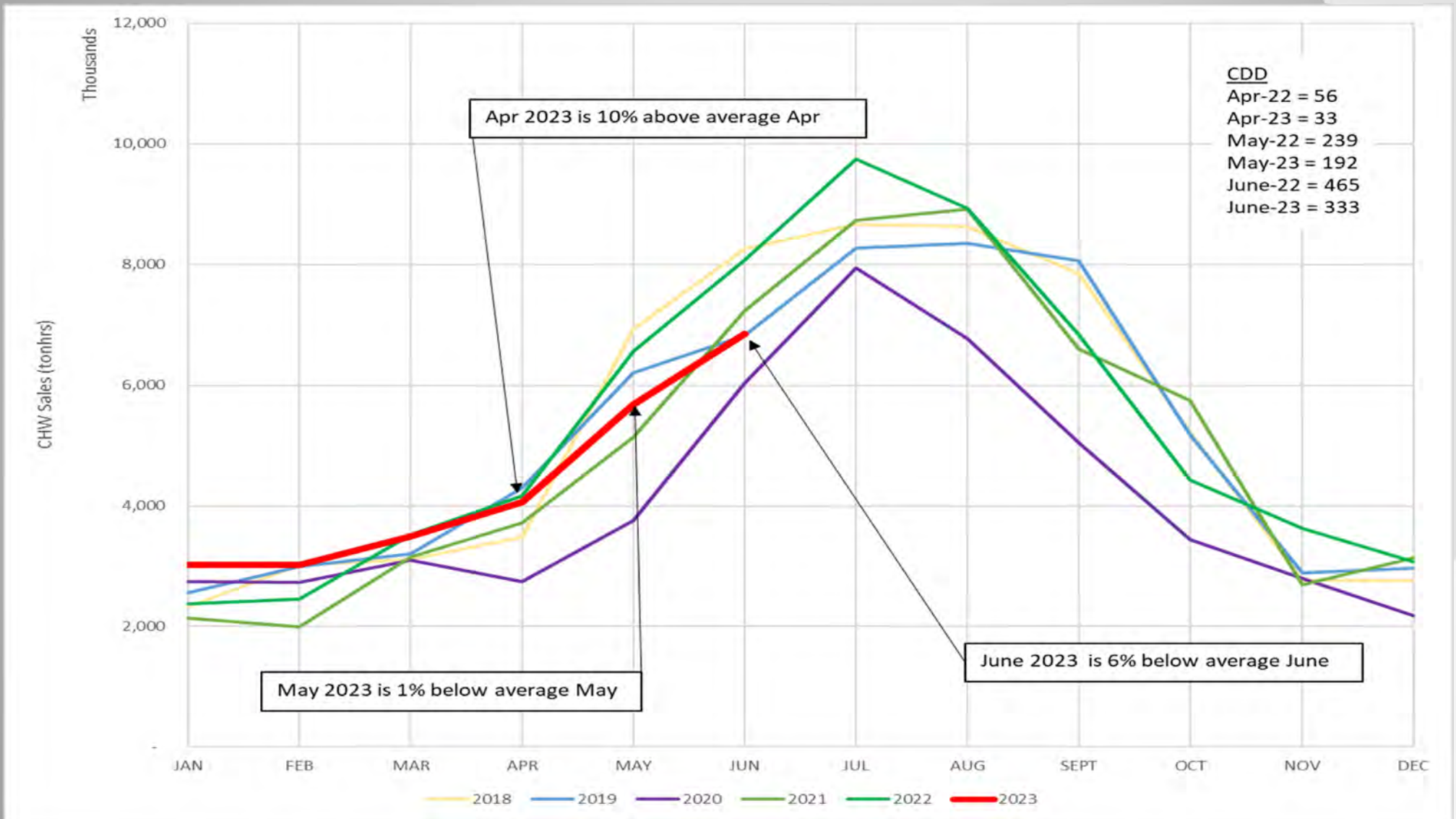
Summary Table 3: Customer Cost Comparison for the Previous 12 Months

		Steam - Rolling 12 Month			Chilled Water - Rolling 12 Month		
		July 2021- June 2022	July 2022- June 2023	% Diff.	July 2021- June 2022	July 2022- June 2023	% Diff.
Private	Cost	\$ 1,682,089	\$ 1,765,185	4.94%	\$ 4,264,460	\$ 4,603,991	7.96%
	Usage (lbs or tonhrs)	92,527,925	93,801,805	1.38%	22,909,117	22,666,656	-1.06%
State	Cost	\$ 2,106,815	\$ 2,263,886	7.46%	\$ 3,365,613	\$ 3,534,277	5.01%
	Usage (lbs or tonhrs)	105,967,830	113,294,924	6.91%	13,888,176	14,127,231	1.72%
Metro	Cost	\$ 2,145,852	\$ 2,235,828	4.19%	\$ 4,805,921	\$ 5,098,511	6.09%
	Usage (lbs or tonhrs)	136,525,499	135,171,823	-0.99%	26,461,938	25,958,323	-1.90%
Aggregate	Cost	\$ 5,934,756	\$ 6,264,898	5.56%	\$12,435,994	\$13,236,778	6.44%
	Usage (lbs or tonhrs)	335,021,254	342,268,552	2.16%	63,259,231	62,752,210	-0.80%
	Unit Cost	\$ 17.71	\$ 18.30	3.3%	\$ 0.197	\$ 0.211	7.30%

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

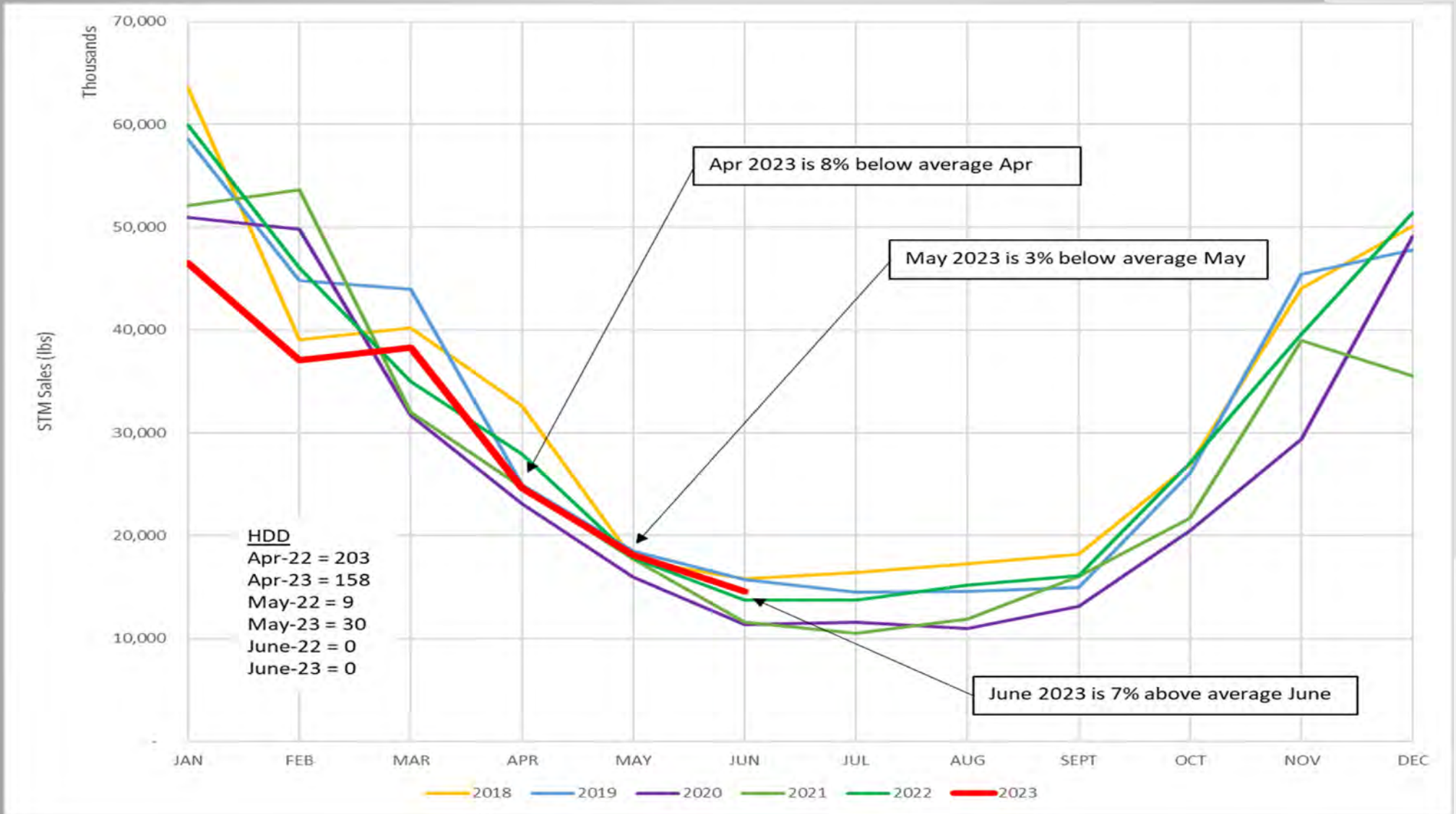


Figure 3A. Historic Chilled Water Sales



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

Figure 3B. Historic Steam Sales






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

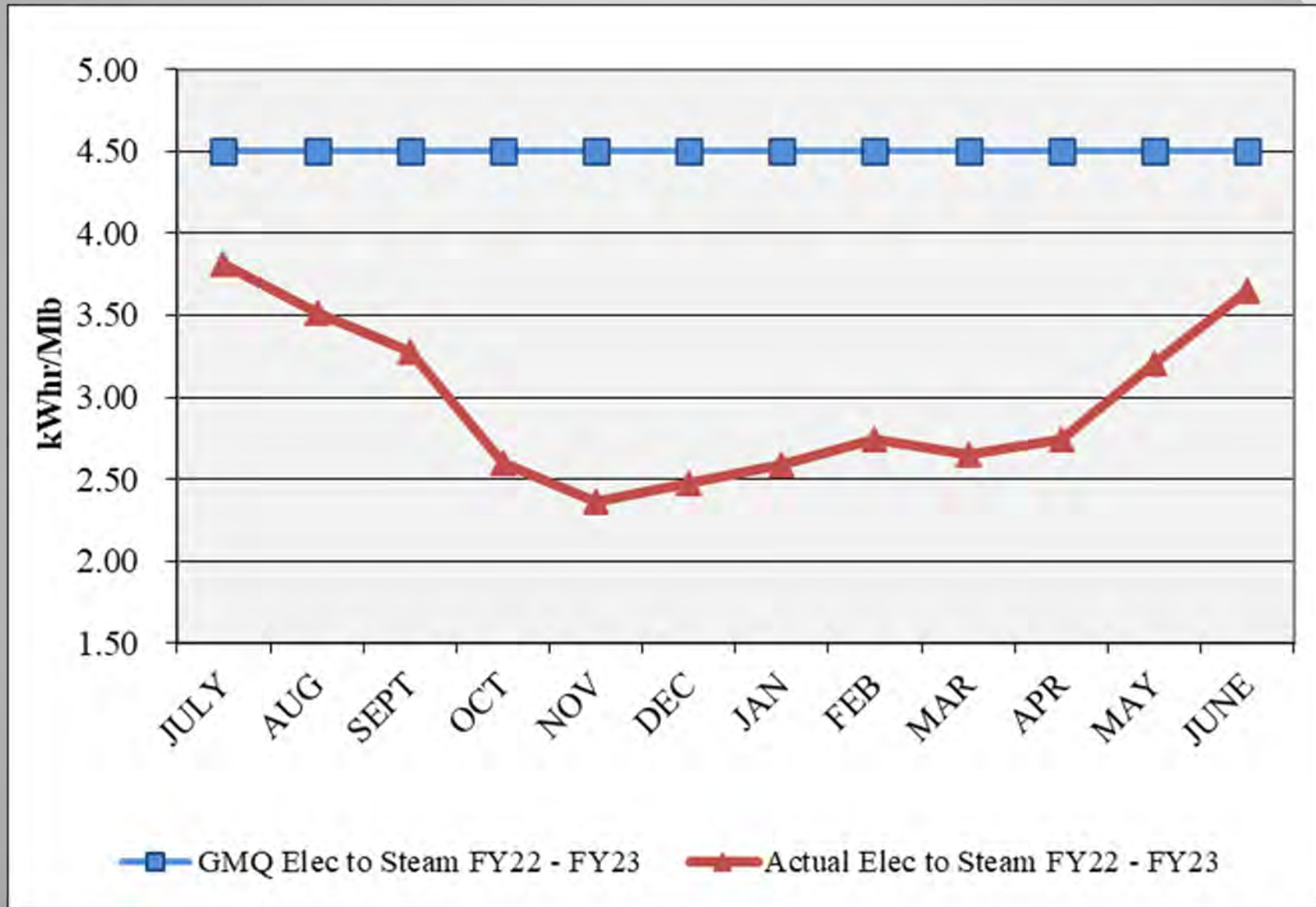
4. *Review of DES Contractor Performance*

CES has made improvements in FY23 and has met several of the performance metrics for Q4. CES continues to address the system energy usage.

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

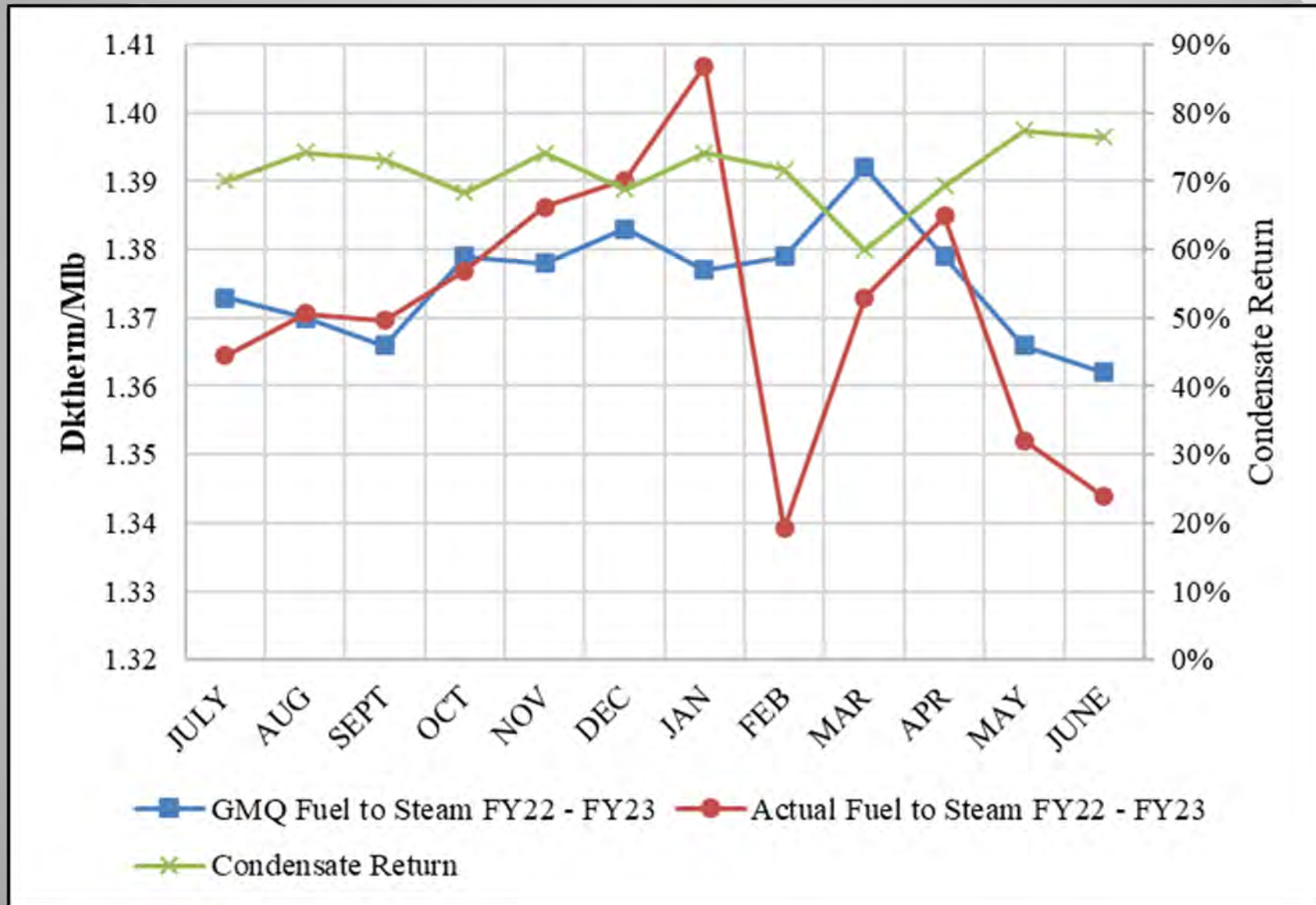
-  Excellent Performance – No Improvement Necessary
-  Satisfactory Performance – Some Improvement Could Be Made
-  Poor Performance – Much Improvement Necessary

Performance Measurement FY23: Steam Electric



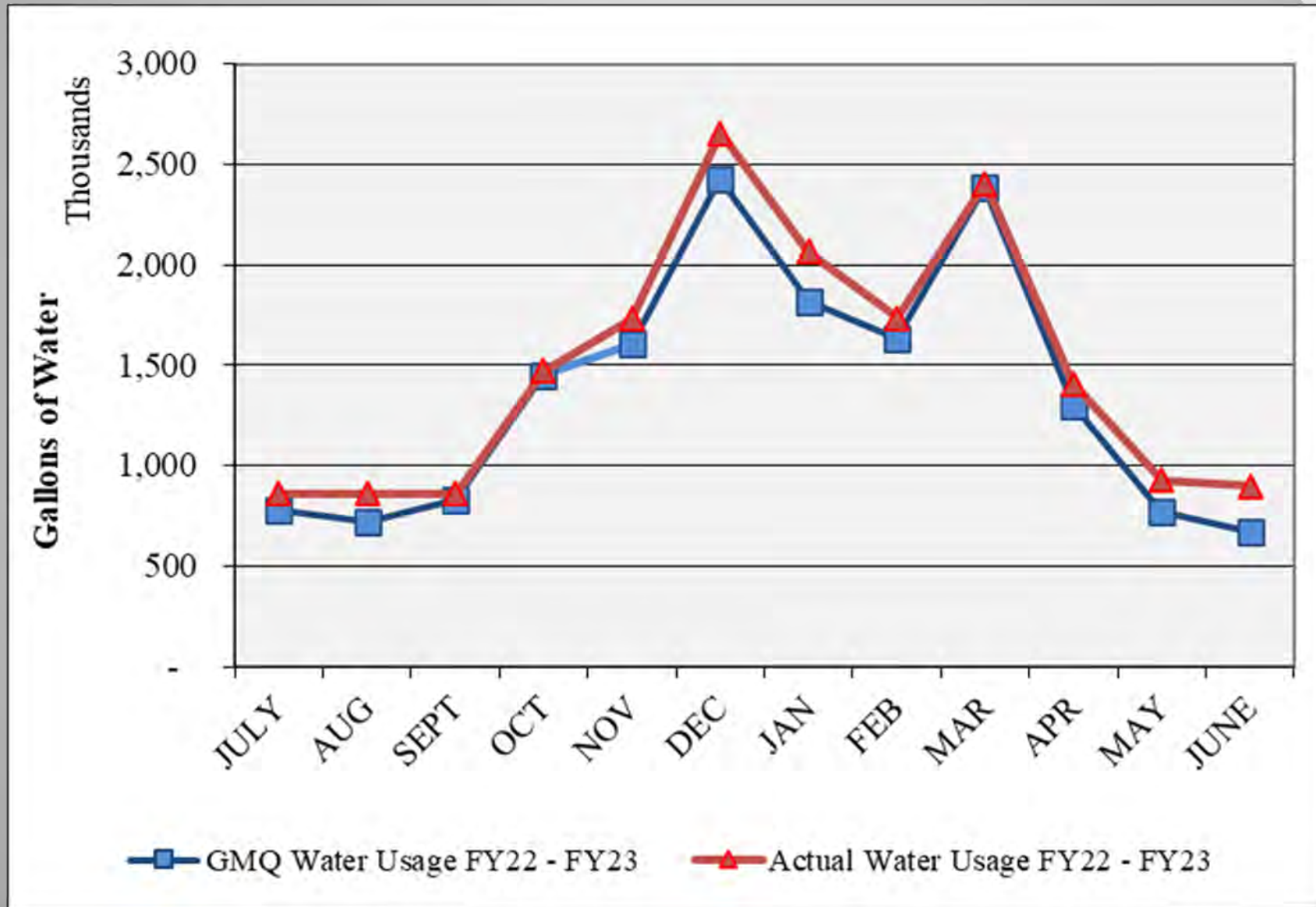
GMQ met in all months shown.

Performance Measurement FY23: Steam Plant Eff ● -



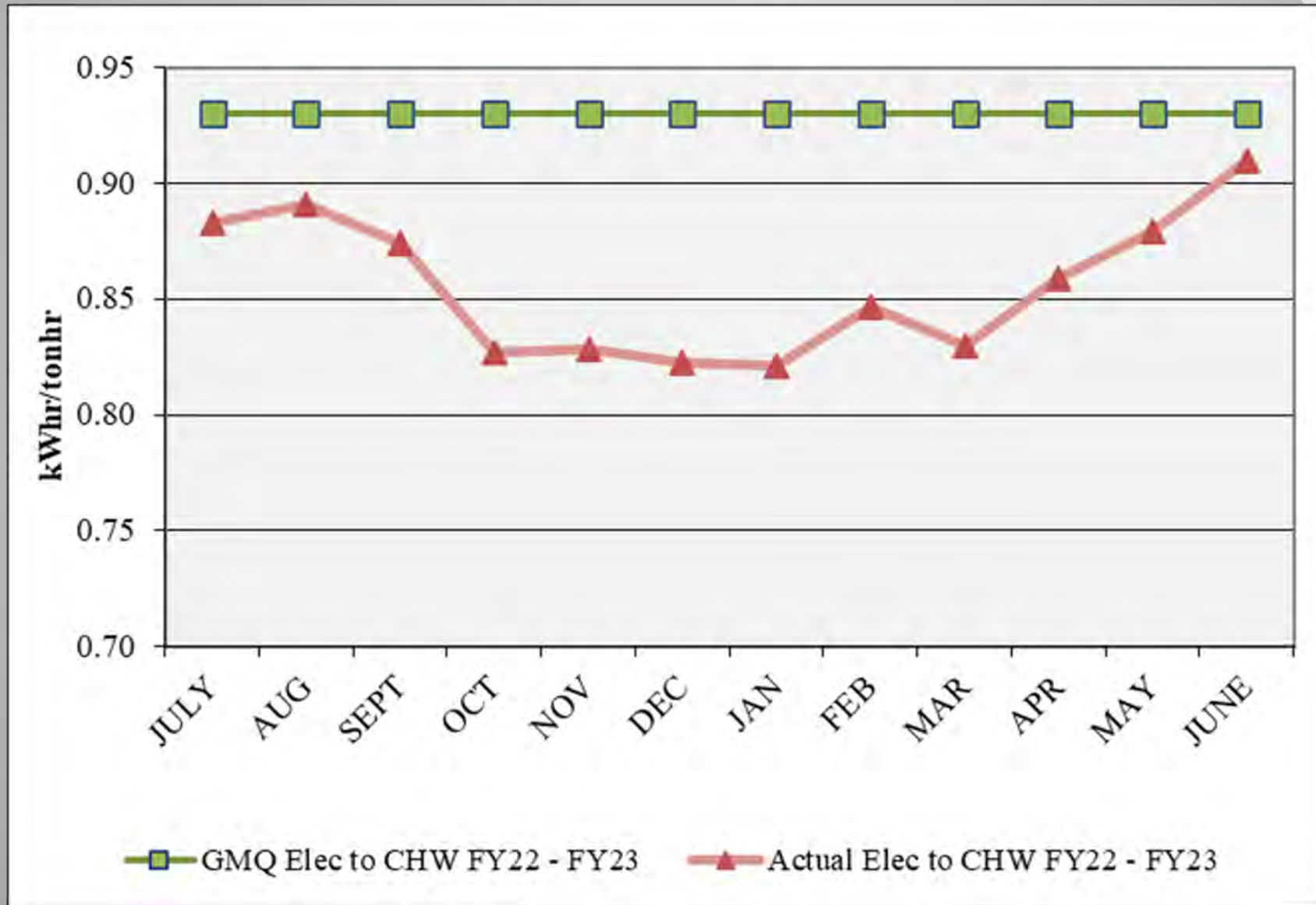
GMQ met in Jul, Oct, Feb, Mar, May, and June.

Performance Measurement FY23: Steam Water



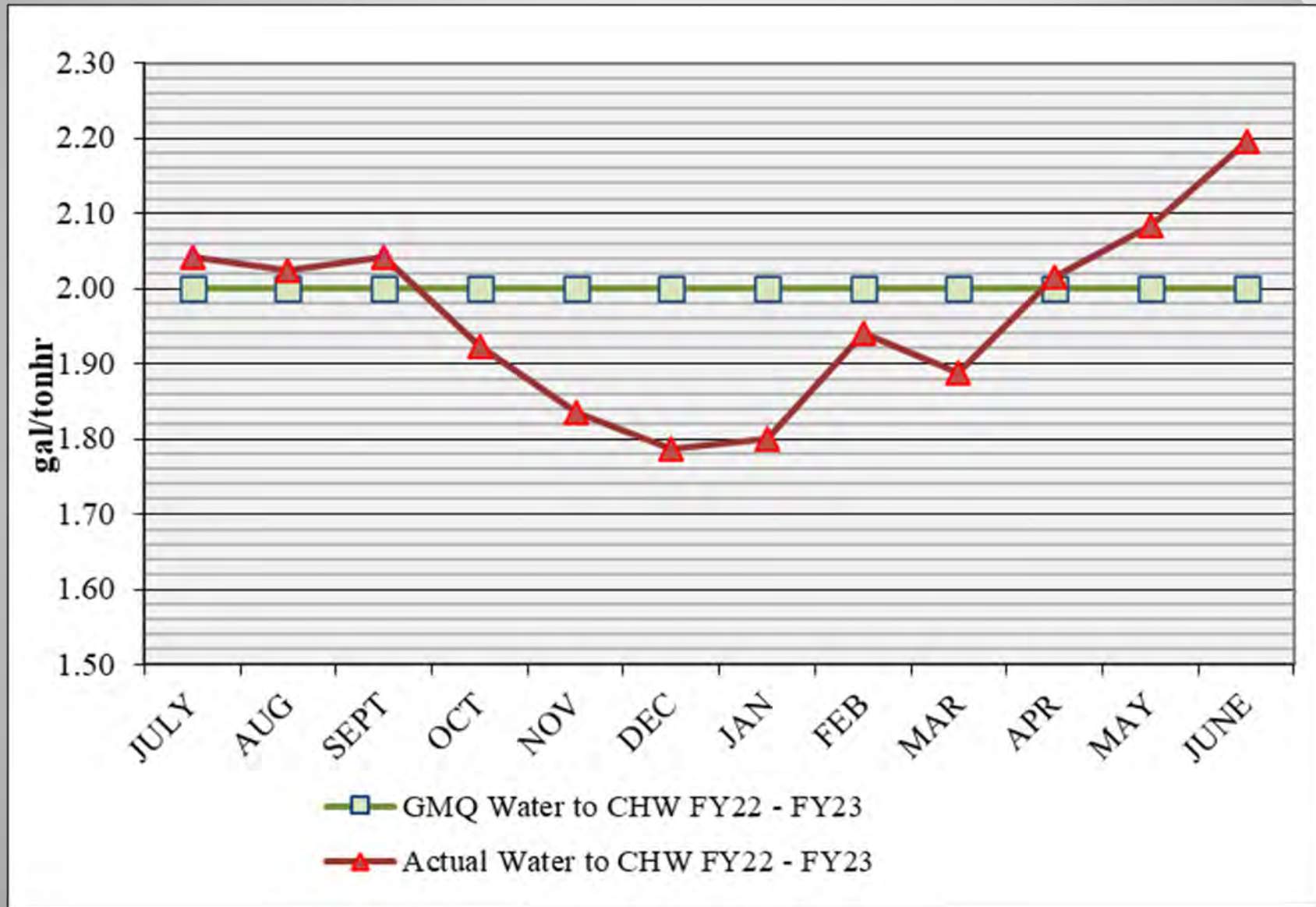
GMQ exceeded in all months shown. Average difference for the quarter is > 18%.

Performance Measurement FY23: CHW Electric



GMQ met in all months shown.

Performance Measurement FY23: CHW Water ● -



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



Water Treatment

Q4FY23 Q3FY23 Q2FY23 Q1FY23

❖ Steam and Condensate

- ❖ Corrosion
- ❖ Iron
- ❖ Hardness
- ❖ Chlorine/Sulfite



❖ Condensing Water

- ❖ Conductivity
- ❖ Biologicals



❖ Chilled Water

- ❖ Hardness
- ❖ Corrosion
- ❖ EGF and Customer Biologicals Good
- ❖ Deposits



❖ Chilled water side-stream filter became operational May 2023



EGF Walkthrough

Q4FY23 Q3FY23 Q2FY23 Q1FY21

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



EDS Walkthrough

Q4FY23 Q3FY23 Q2FY23 Q1FY23

✓ Overall Status; Tunnels	●	● -	● -	● -
✓ Overall Status; Vaults	● -	● -	● -	● -
✓ Housekeeping	●	●	●	●
✓ Maintenance Items				
✓ Piping	● -	● -	● -	● -
✓ Insulation R/R	● -	● -	● -	● -
✓ Water Infiltration	● +	● +	● +	● +
✓ Corrosion of Structural Metal Components	● -	● -	● -	● -
✓ Safety Items	●	●	●	●

5. Natural Gas Purchasing

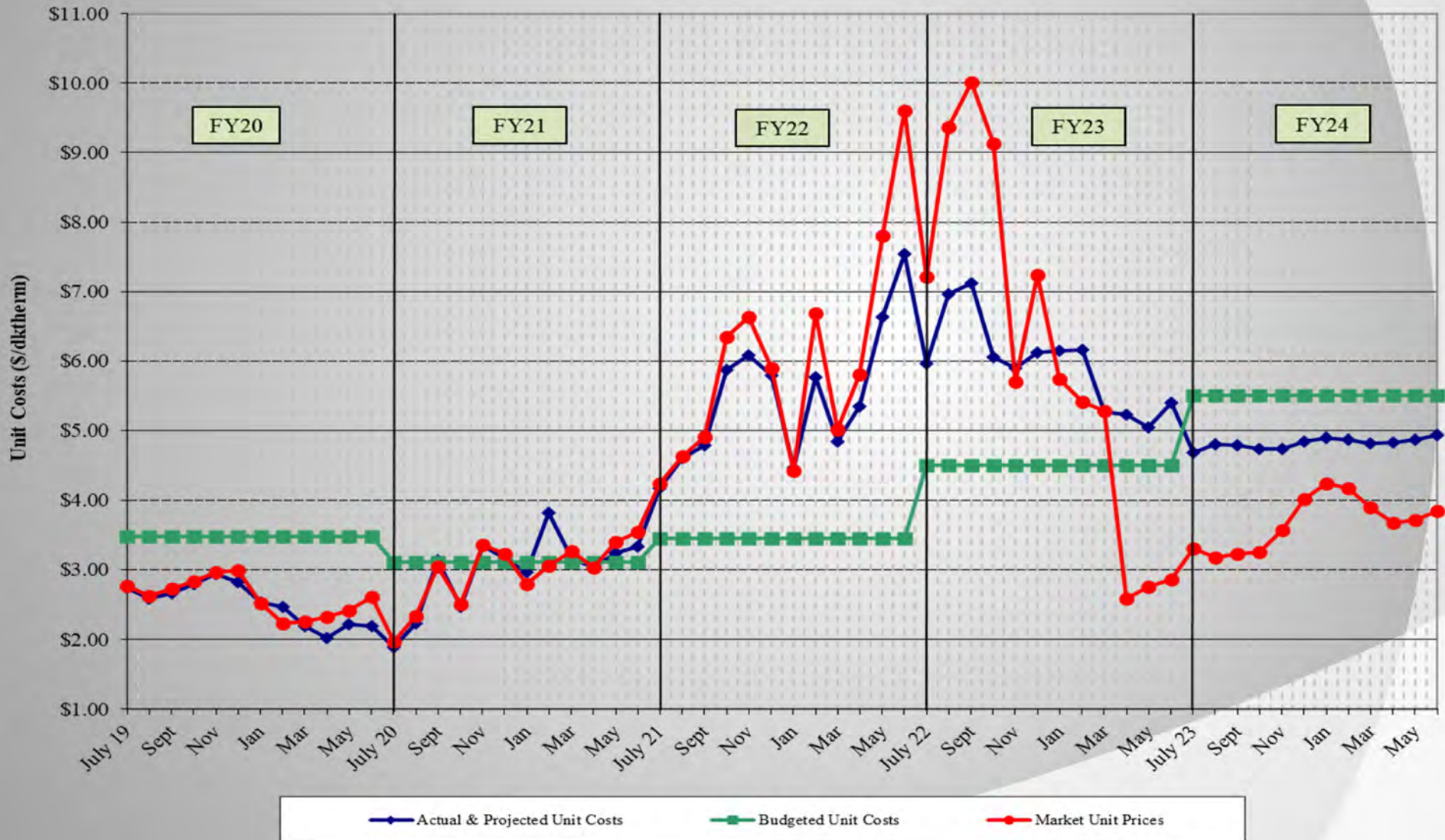
- ❖ Natural Gas Purchasing Review
 - ❖ Table 5: FY23 Gas Spending & Budget Comparison
 - ❖ Figure 5: Actual and Projected Fuel Cost Comparison

Table 5: FY23 Gas Spending & Budget Comparison

		Actual FY23 To Jun 30	Budget FY23	Percent Difference
Steam Sendout (Mlbs)		398,649	415,584	-4.1%
Fuel Use (Dth) (includes propane)	●	548,288	600,103	-8.6%
Plant Eff (Dth/Mlb)	●	1.374	1.444	-4.8%
Total Gas Cost (includes propane)	●	\$3,252,880	\$3,342,900	-2.7%
Unit Cost of Fuel (\$/Dth)	●	\$5.933	\$5.571	6.5%

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 5. Actual and Projected Fuel Cost Comparison



Currently hedging 80% of natural gas through FY24 and 20% through FY25; transportation costs included.



6. FY23 Costs to Date

Item	FY23 Budget	FY23 Actual to date	Percent of FY23 Budget
FOC's	\$ 4,006,800	\$ 4,006,819	100.00%
Pass Throughs			
Administrative Costs	\$ 932,100	\$ 578,309	62.04%
Chemicals	\$ 255,700	\$ 210,828	82.45%
R&I Fund Transfers	\$ 303,700	\$ 303,700	100.00%
Water/Sewer	\$ 773,400	\$ 998,621	129.12%
Fuel Base	\$ 2,797,256	\$ 2,797,256	100.00%
Fuel Contingency	\$ 677,044	\$ 567,879	83.88%
Electricity	\$ 6,394,800	\$ 5,796,598	90.65%
ORF Deposit	\$ 85,800	\$ 85,800	100.00%
Debt Service	\$ 4,311,300	\$ 4,552,816	105.60%
Total Expenses	\$ 20,537,900	\$ 19,898,625	96.89%
Total Revenues	\$ 20,163,600	\$ 19,957,205	98.98%
Metro Funding	\$ 374,300	\$ 374,300	100.00%

Actual Costs and Revenues to Date include FY22 True-up Items.



7. FY24 Budget

Item	FY23 Budget	FY24 Budget	Percent of FY23 Budget
FOC's	\$ 4,006,800	\$ 4,127,000	3.00%
Pass Throughs			
Administrative Costs	\$ 932,100	\$ 638,300	-31.52%
Chemicals	\$ 255,700	\$ 331,200	29.53%
R&I Fund Transfers	\$ 303,700	\$ 312,900	3.03%
Water/Sewer	\$ 773,400	\$ 1,152,000	48.95%
Fuel Base	\$ 2,797,256	\$ 3,422,700	22.36%
Fuel Contingency	\$ 677,044	\$ 764,200	12.87%
Electricity	\$ 6,394,800	\$ 6,476,700	1.28%
ORF Deposit	\$ 85,800	\$ 188,200	119.35%
Debt Service	\$ 4,311,300	\$ 4,774,000	10.73%
Total Expenses	\$ 20,537,900	\$ 22,187,200	8.03%
Total Revenues	\$ 20,163,600	\$ 21,802,800	8.13%
Metro Funding	\$ 374,300	\$ 384,400	2.70%



8. *Marketing*

- Remaining Capacity for Sale (approximate)
 - 2,429 tons of chilled water
 - 35,105 pph of steam

- Potential New Customer Interest
 - ~6,000 tons
 - ~87,000 pph (or equivalent)

- Potential Customers
 - Contacts with several A/E regarding new developments



Marketing (con't)

- Peabody St Development
 - 1st and KVB
 - Potential ~1,100 tons and ~17,000 MBTUH hot water
 - Early stages of discussions
 - 4th and Lea Ave
 - Potential ~1,000 tons and no steam or hot water
 - Residential and Retail
 - Interested in service
 - Peabody and Rutledge
 - Potential ~2,000 tons and ~36,000 MBTUH hot water
 - Residential and Retail
 - Early stages of discussions



Marketing (con't)

- New Development North of KVB
 - Printer's and Banker's Alley
 - ~450 tons and no steam
 - Apartment and Retail Development
 - Building design progressing with DES
 - 7th and Commerce
 - 660 tons and 14,500 pph steam
 - Hotel, Restaurants and Retail
 - Awaiting executed CSA
 - 8th and Demonbreun
 - ~1,300 tons and no steam
 - Hotel, Restaurants and Retail
 - Building design progressing with DES

9. *Capital Expenditure Update*

	Spent to End of FY22	FY23 Spending	Balance to Date (07/28/23)
R&I Projects	\$4,358,854	\$285,920	\$278,274
49116-DES Infrastructure Fund	\$4,649,663	\$361,647	\$4,362,547
Total	\$9,008,517	\$647,567	\$4,640,821

Capital Projects Review

Active Capital Projects – General & Marketing

- DES 163: Peabody Union – working with developer on Guthrie St impact to DES; blasting is complete
- 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
- DES 200: Side-stream Filter – became operational in May 2023; project closed

Capital Projects Review

Active Capital Projects – General & Marketing

- DES 201: East Bank Development – ongoing development and marketing activities related to the proposed Titans stadium, Oracle, and other potential developments on the East Bank
- DES 202: 7th and Commerce Hotel – awaiting executed CSA
- DES 203: Printer's and Banker's Alley Building – building construction delayed; intends to use DES CHW

Capital Projects Review

Active Capital Projects – Corrosion Repair/Prevention

- DES 178: MH 5 Repairs – corrosion/concrete/insulation repairs; piping insulation remains to be completed. Insulation is scheduled to be completed before the end of July 2023.
- DES 180: State Tunnel Support Repairs – several of the supports in the State Tunnel are corroded and need to be cleaned and coated to prevent further propagation of the corrosion. This project was completed during the 4th Qtr FY23 and is now closed.
- DES 194: MH B4 Repairs – cleaning and coating of structural steel; re-insulation of piping; coating and the field applied insulation was completed during the 4th Qtr FY23; the insulation blankets did not fit properly and had to be modified by the manufacturer. The modified blankets are expected to be delivered and installed early in the 1st Qtr FY24.

Capital Projects Review

Active Capital Projects – Repairs/Modifications

- DES 191: MH 20 Repairs – condensate return piping leaking (corrosion); ground/surface water collection/diversion needed; new access ladder needed; bid in late 3rd Qtr FY22; contractor delays; supply chain delays; underground work is complete. Anticipate construction completion by end of 1st Qtr FY24.
- 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 are investigating a reduced scope with an alternate contractor.
- DES 198: MH18 Condensate Pump Replacement – project bid and awarded in June; anticipate construction starting in Aug/Sept.



Capital Projects Review

Active Capital Projects – Repairs/Modifications

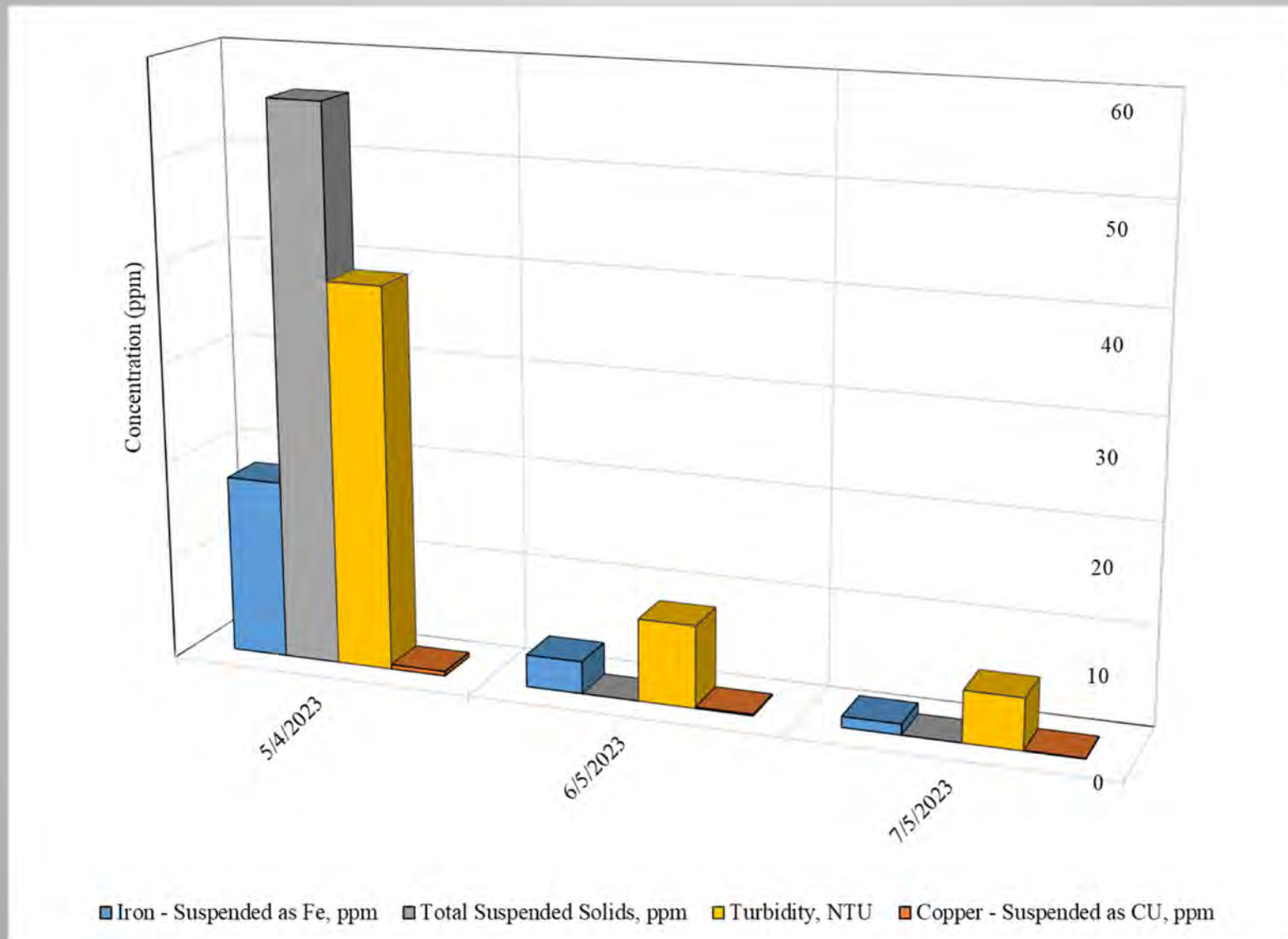
- DES 206: 7th Ave Tunnel Fan Replacement – 7th Ave Tunnel ventilation fan disintegrated while in operation; no injuries; new fan has been delivered; work scope developed, and contractor selected; delays due to additional permitting requirements; expect work to begin during 1st Qtr FY24.
- DES 207: MH N1 Insulation – CES was going to install insulation under their Amendment 2 obligations however, the result would have met CES's obligation past their contract expiration. Therefore, a new project number was assigned, and this work will be paid for by Metro. Project was bid and contractor selected; due to field conditions, scope/specifications had to be modified; work planned for fall 2023 during lower humidity so piping will not be sweating during installation.

Capital Projects Review

Active Capital Projects – Repairs/Modifications

- DES 208: 2023 Steam Outage – several repairs are needed in the EGF and EDS which requires a steam outage; based on discussions with customer, CES has preliminary schedule of September 24-25, 2023 (24-hour outage)
- 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 planned for September 2023.
- 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 investigating total cost/design

10. Side Stream Filter Performance



Side Stream Filter became operational on May 9, 2023.

***Constellation Energy Solutions,
LLC
System Operator***





Metro Nashville
DISTRICT ENERGY SYSTEM

11. Other Board Member Items

12. Adjourn

Great Turnout for the Customer Meeting on May 25, 2023

Webinar on Energy Savings Measures on Aug 2, 2023

- *Advisory Board Meeting Schedule*
- FY24 – 1st Quarter Meeting – November 16, 2023
- FY24 – 2nd Quarter Meeting – February 15, 2024
- FY24 – 3rd Quarter Meeting – May 16, 2024
- FY24 – 4th Quarter Meeting – August 15, 2024