



***Metro Nashville***  
**DISTRICT ENERGY SYSTEM**

*DES Advisory Board Meeting*  
*Second Quarter FY23*  
*February 16, 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. Marketing
8. Capital Projects Review & Status
9. Other Board Member Items
10. Adjourn

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

## 3. *Customer Sales*

- ❖ There are 2 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

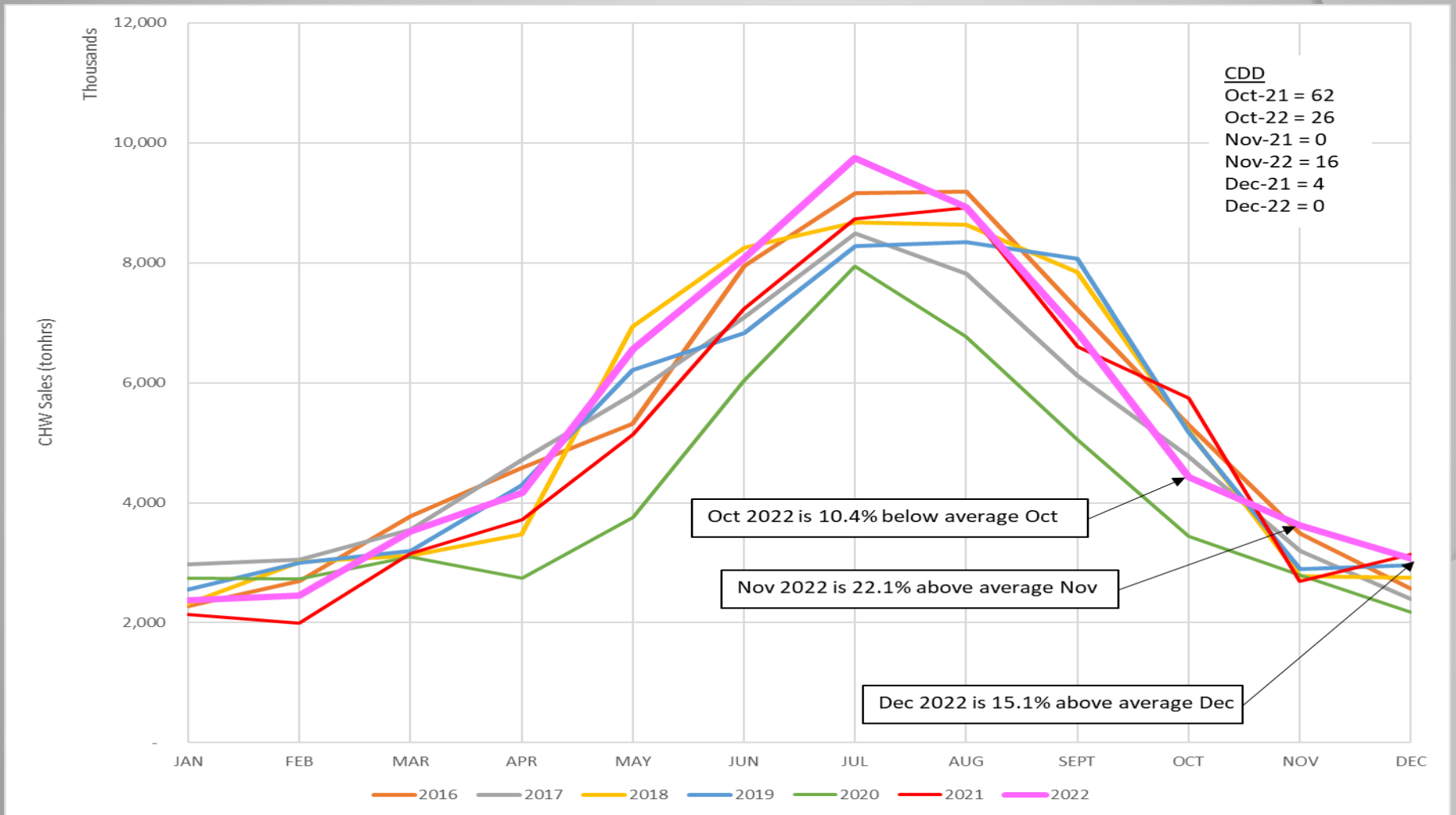
## Summary Table 3: Customer Cost Comparison for the Previous 12 Months

		Steam - Rolling 12 Month			Chilled Water - Rolling 12 Month		
		Jan 2021-Dec 2021	Jan 2022-Dec 2022	% Diff.	Jan 2021-Dec 2021	Jan 2022-Dec 2022	% Diff.
<b>Private</b>	Cost	\$ 1,446,300	\$ 1,801,681	24.57%	\$ 3,995,366	\$ 4,546,444	13.79%
	Usage (lbs or tonhrs)	86,144,540	100,539,634	16.71%	20,802,125	23,343,654	12.22%
<b>State</b>	Cost	\$ 1,913,293	\$ 2,275,825	18.95%	\$ 3,325,428	\$ 3,483,701	4.76%
	Usage (lbs or tonhrs)	110,324,209	118,089,798	7.04%	13,797,249	14,026,782	1.66%
<b>Metro</b>	Cost	\$ 1,824,604	\$ 2,292,605	25.65%	\$ 4,576,036	\$ 5,047,397	10.30%
	Usage (lbs or tonhrs)	129,760,802	144,920,706	11.68%	24,860,994	26,437,488	6.34%
<b>Aggregate</b>	Cost	\$ 5,184,197	\$ 6,370,111	22.88%	\$11,896,831	\$13,077,542	9.92%
	Usage (lbs or tonhrs)	326,229,551	363,550,138	11.44%	59,460,368	63,807,924	7.31%
	Unit Cost	\$ 15.89	\$ 17.52	10.3%	\$ 0.200	\$ 0.205	2.43%

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

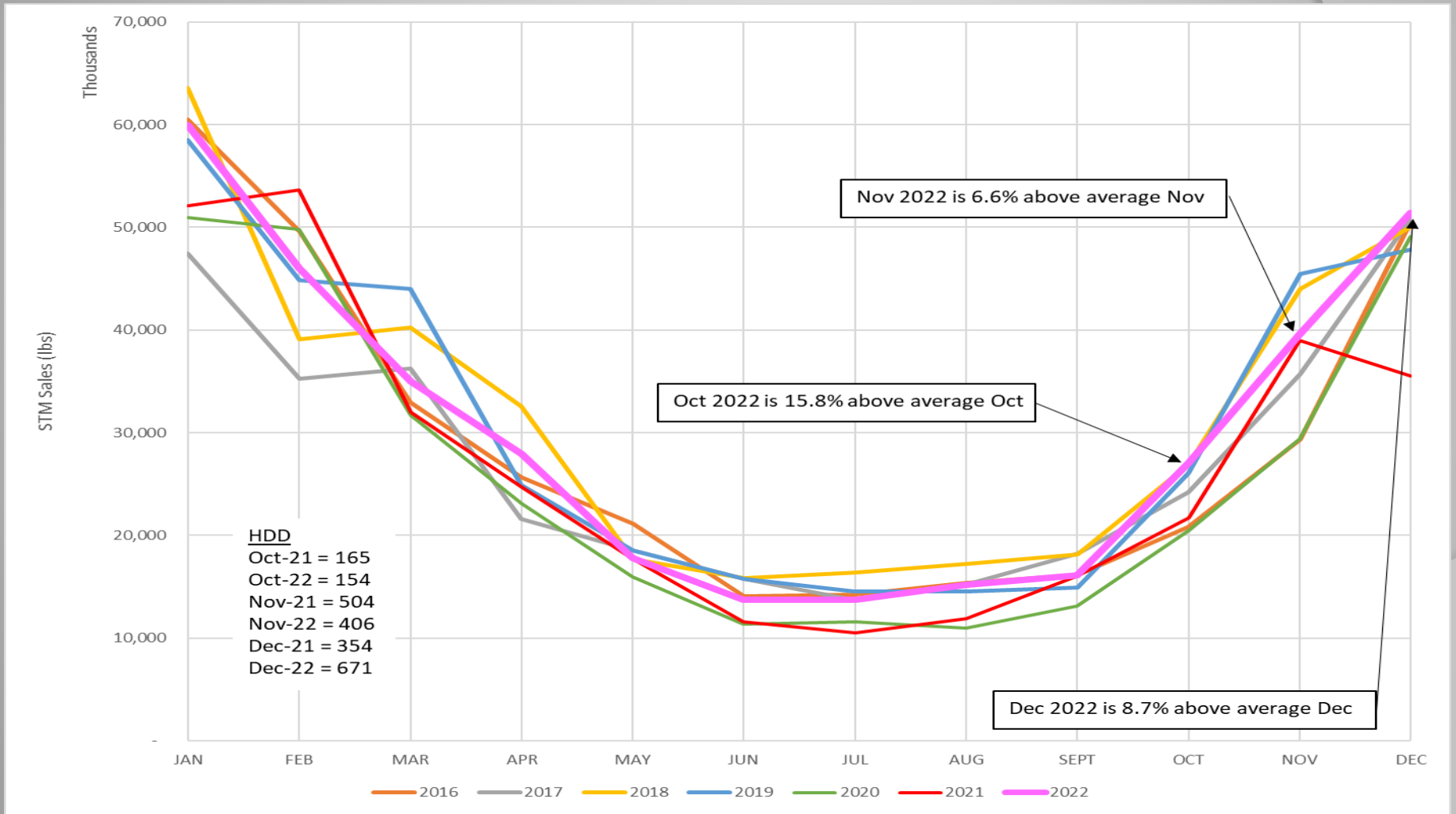


# Figure 3A. Historic Chilled Water Sales



Averages include the years 2016, 2017, 2018, 2019, 2020 and 2021.

# Figure 3B. Historic Steam Sales






Averages include the years 2016, 2017, 2018, 2019, 2020 and 2021.

## 4. *Review of DES Contractor Performance*

CES has made improvements since the 1<sup>st</sup> Quarter and has met the chilled water-electric and water, and the steam-electric performance guarantees during the 2<sup>nd</sup> Quarter FY23. CES is further developing a plan to address meeting the remaining two metrics.

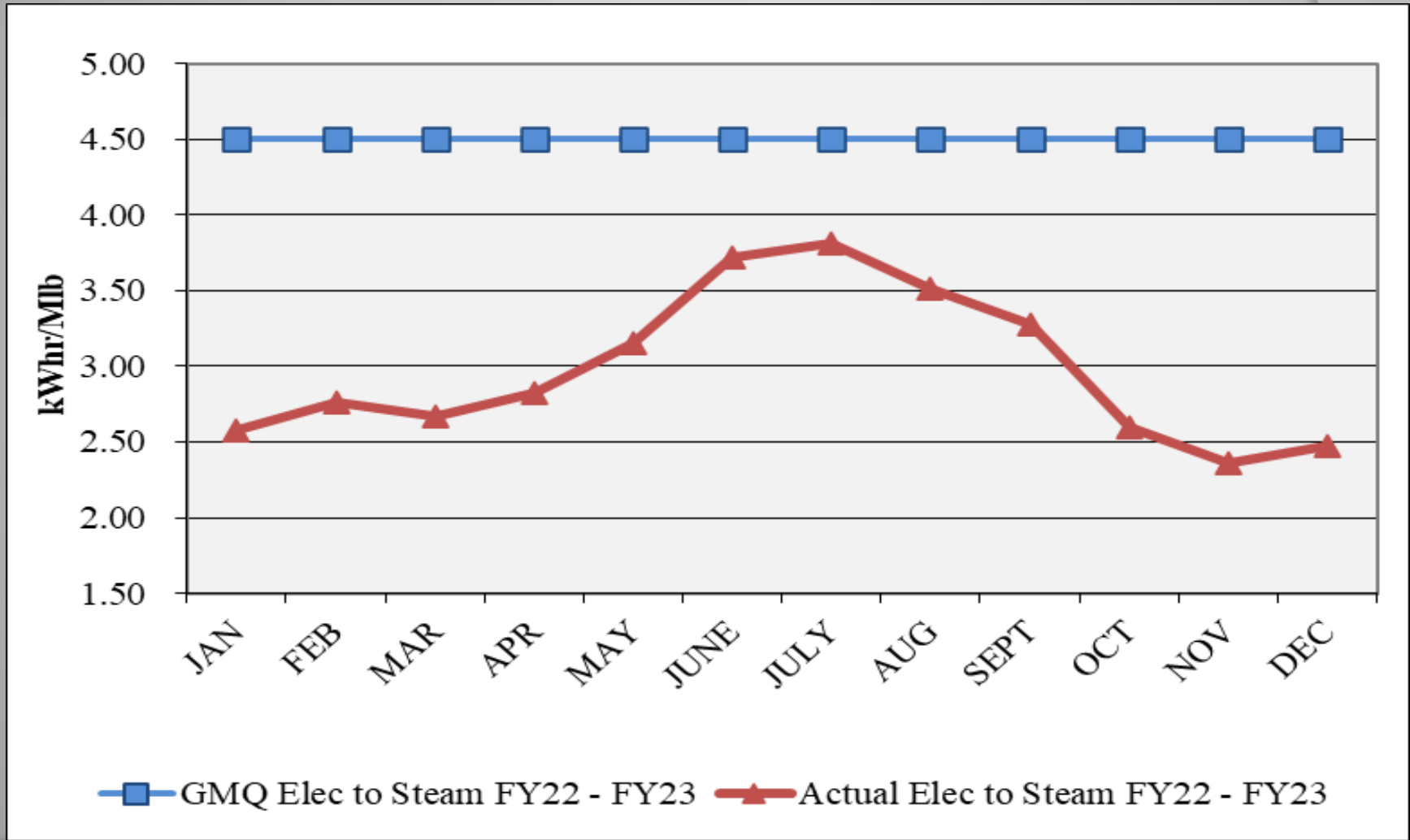
(Q1+Q2 FEA = \$56,775)

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

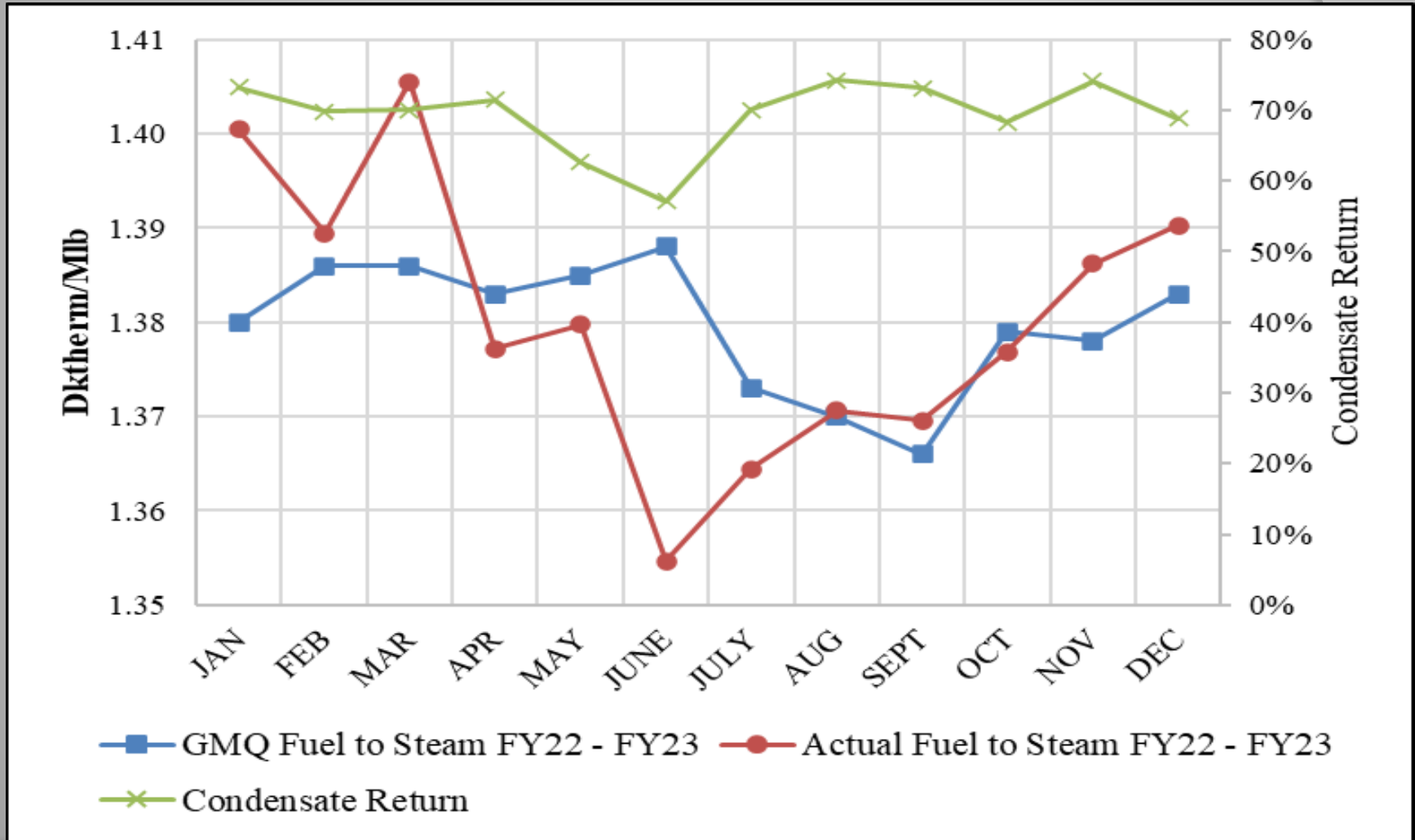


# Performance Measurement FY23: Steam Electric



GMQ met in all months shown.

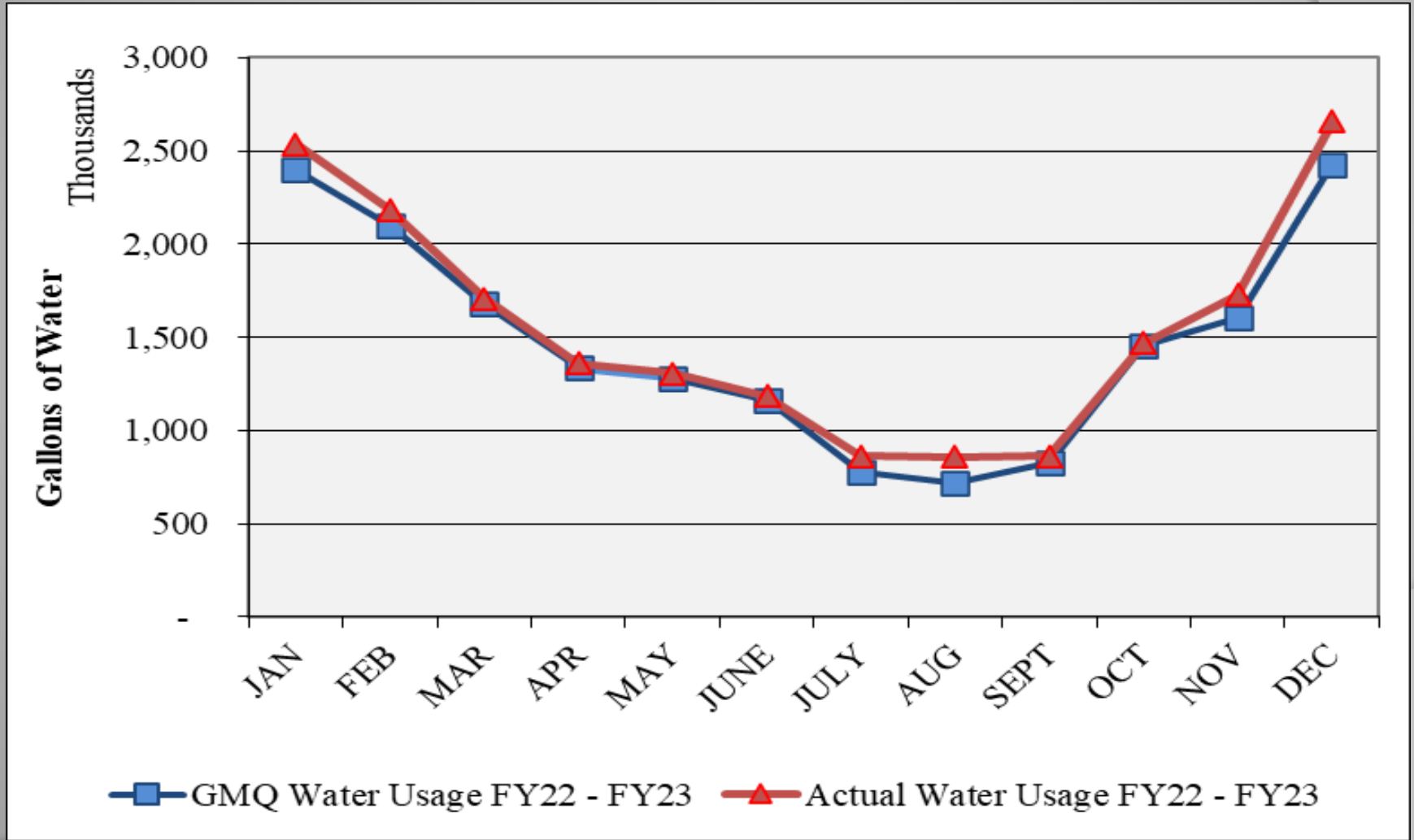
# Performance Measurement FY23: Steam Plant Eff ● +



GMQ exceeded in Jan, Feb, Mar, Aug, Sept, Nov and Dec. GMQ met in Oct.

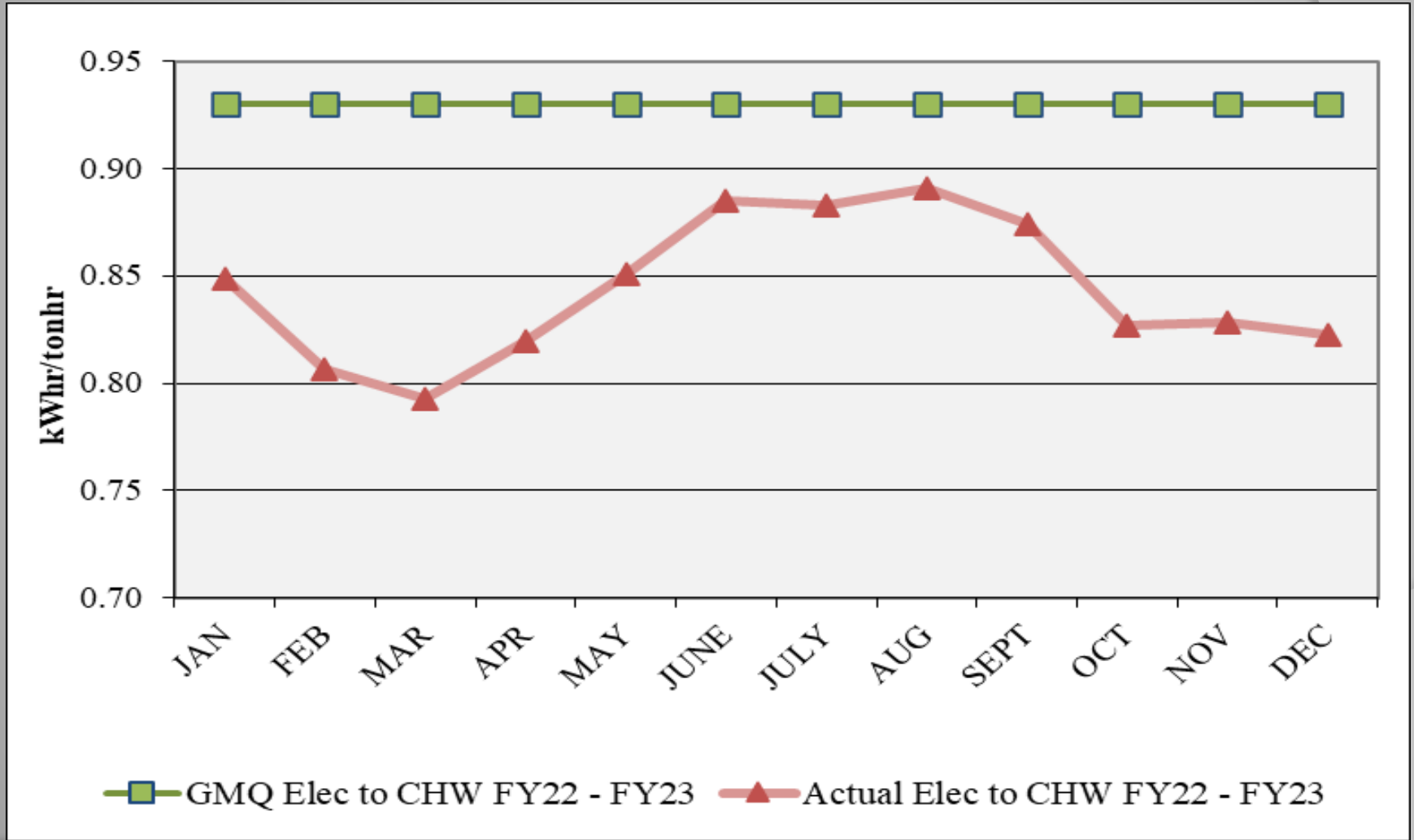


# Performance Measurement FY23: Steam Water



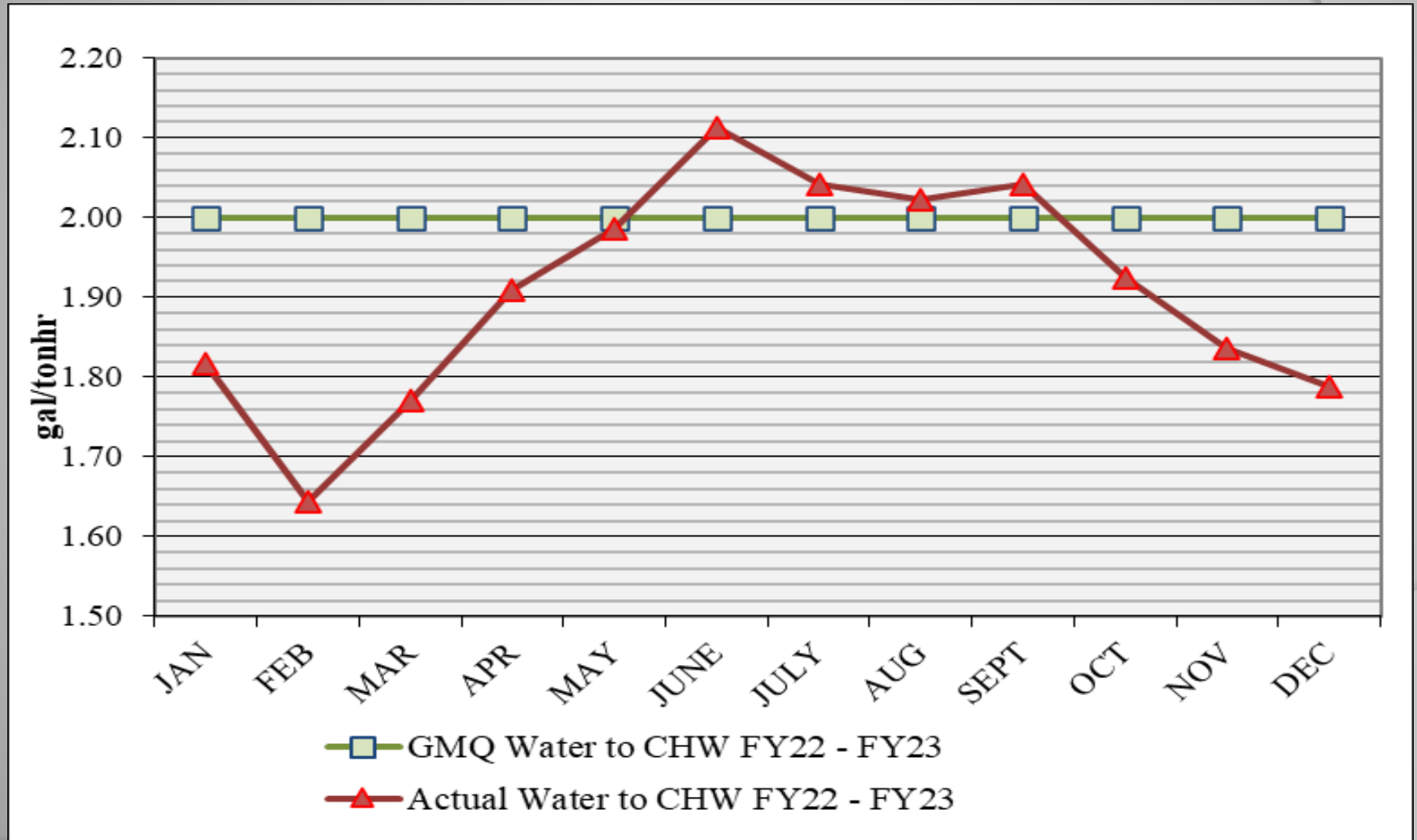
GMQ exceeded in all months shown. Average difference for the quarter is > 7%.

# Performance Measurement FY23: CHW Electric



GMQ met in all months shown.

# Performance Measurement FY23: CHW Water ● -



GMQ exceeded June, July, Aug, and Sept. GMQ met in each month of Q2FY23.

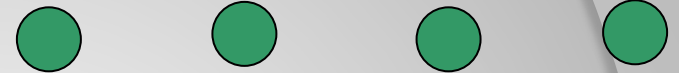


# Water Treatment

Q2FY23    Q1FY23    Q4FY22    Q3FY22

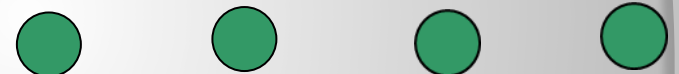
## ❖ Steam and Condensate

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



## ❖ Condensing Water

- ❖ Conductivity
- ❖ Biologicals



## ❖ Chilled Water

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



❖ Chilled water side-stream filter to be installed Q3FY23



# EGF Walkthrough

Q2FY23    Q1FY23    Q4FY22    Q3FY22

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



# EDS Walkthrough

Q2FY23    Q1FY23    Q4FY22    Q3FY22

✓ 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*

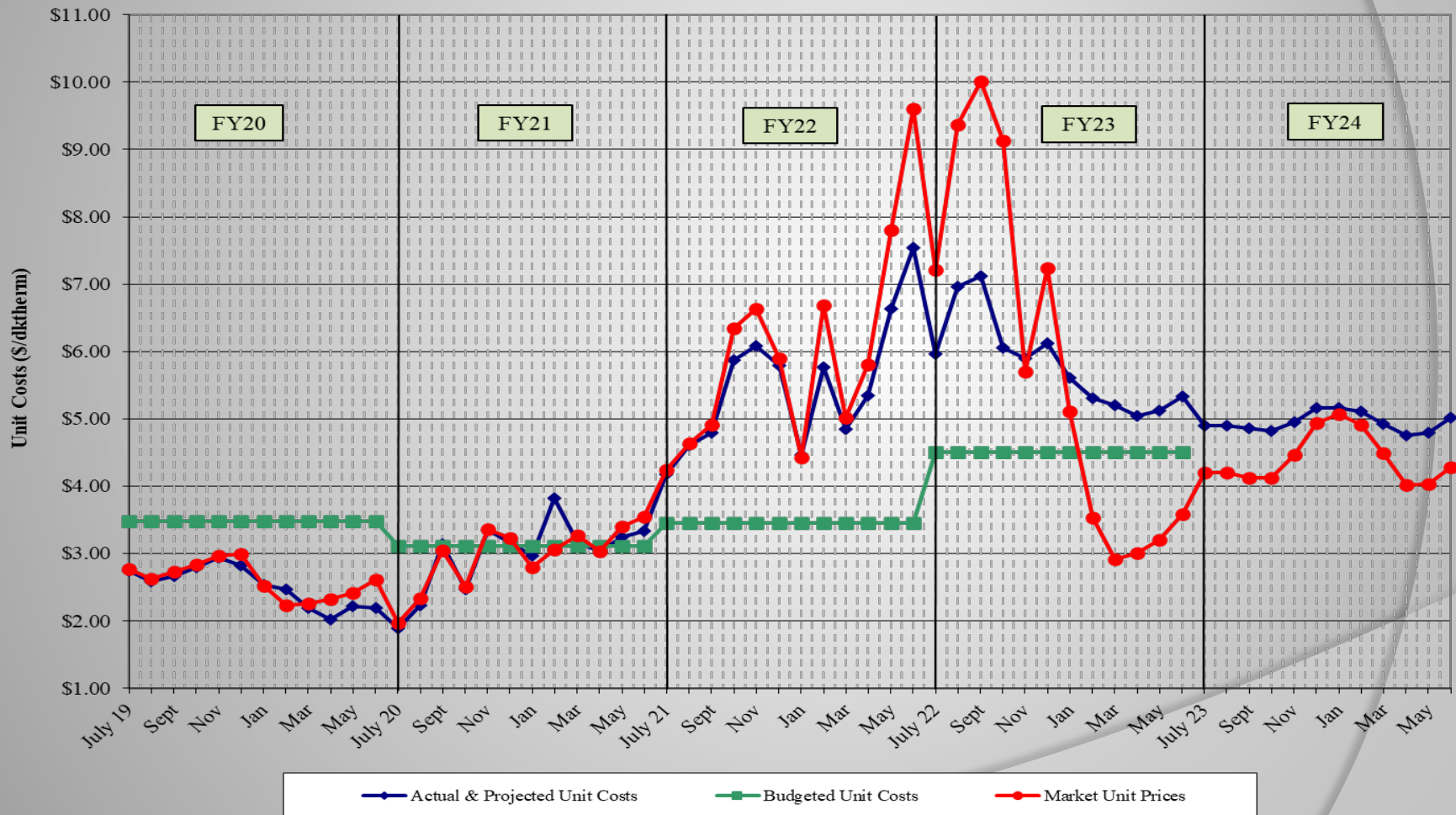
- ❖ Natural Gas Purchasing Review
  - ❖ Table 5: FY23 Gas Spending & Budget Comparison
  - ❖ Figure 5: Actual and Projected Fuel Cost Comparison

## Table 5: FY23 Gas Spending & Budget Comparison

		Actual FY23 To Dec 31	Budget FY23	Percent Difference
Steam Sendout (Mlbs)		191,573	189,781	0.9%
Fuel Use (Dth) (includes propane)	●	264,407	274,044	-3.5%
Plant Eff (Dth/Mlb)	●	1.380	1.444	-4.4%
Total Gas Cost (includes propane)	●	\$1,769,826	\$1,235,938	43.2%
Unit Cost of Fuel (\$/Dth)	●	\$6.693	\$4.510	48.4%

Excludes consultant fees, FEA, and pre-purchased and stored propane; Includes transportation and actual propane costs and usages

# Figure 5. Actual and Projected Fuel Cost Comparison



Currently hedging 80% of natural gas through FY23 and 50% through FY24; transportation costs included.



## 6. FY23 Costs to Date

Item	FY23 Budget	FY23 Actual to date	Percent of FY23 Budget
FOC's	\$ 4,006,800	\$ 2,003,409	50.00%
Pass Throughs			
Administrative Costs	\$ 932,100	\$ 299,806	32.16%
Chemicals	\$ 255,700	\$ 109,208	42.71%
R&I Fund Transfers	\$ 303,700	\$ 151,850	50.00%
Water/Sewer	\$ 773,400	\$ 589,756	76.26%
Fuel Base	\$ 2,797,256	\$ 1,809,046	64.67%
Fuel Contingency	\$ 677,044	\$ -	0.00%
Electricity	\$ 6,394,800	\$ 3,410,500	53.33%
ORF Deposit	\$ 85,800	\$ 42,900	
Debt Service	\$ 4,311,300	\$ 2,325,495	53.94%
<b>Total Expenses</b>	<b>\$ 20,537,900</b>	<b>\$ 10,741,970</b>	<b>52.30%</b>
<b>Total Revenues</b>	<b>\$ 20,163,600</b>	<b>\$ 10,536,975</b>	<b>52.26%</b>
<b>Metro Funding</b>	<b>\$ 374,300</b>	<b>\$ 187,150</b>	<b>50.00%</b>

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

# FY23 Budget

Item	FY22 Budget	FY23 Budget	Percent of FY22 Budget
FOC's	\$ 3,890,100	\$ 4,006,800	3.00%
Pass Throughs			
Administrative Costs	\$ 459,600	\$ 932,100	102.81%
Chemicals	\$ 232,200	\$ 255,700	10.12%
R&I Fund Transfers	\$ 294,800	\$ 303,700	3.02%
Water/Sewer	\$ 751,500	\$ 773,400	2.91%
Fuel Base	\$ 2,115,186	\$ 2,797,256	32.25%
Fuel Contingency	\$ 516,814	\$ 677,044	31.00%
Electricity	\$ 6,329,500	\$ 6,394,800	1.03%
ORF Deposit	\$ -	\$ 85,800	
Debt Service	\$ 5,083,200	\$ 4,311,300	-15.19%
<b>Total Expenses</b>	<b>\$ 19,672,900</b>	<b>\$ 20,537,900</b>	<b>4.40%</b>
<b>Total Revenues</b>	<b>\$ 19,042,200</b>	<b>\$ 20,163,600</b>	<b>5.89%</b>
<b>Metro Funding</b>	<b>\$ 630,700</b>	<b>\$ 374,300</b>	<b>-40.65%</b>

## 7. *Marketing*

### Remaining Capacity for Sale (approximate)

- 2,429 tons of chilled water
- 24,622 pph of steam

### Potential New Customer Interest

- ~6,000 tons
- ~87,000 pph (equivalent)

IDEA Article: Reinvention and Revitalization in Music City, USA (District Energy First Quarter 2023)

### Potential Customers

- Contacts with several A/E regarding new developments



## *Marketing (con't)*

- New Development North of KVB
  - Potential ~1,100 tons and ~15,000 pph
  - Early stages of discussions
- Peabody St Development
- 1<sup>st</sup> and KVB
  - Potential ~1,100 tons and ~17,000 pph steam
  - Early stages of discussions
- 2<sup>nd</sup> Ave and Peabody
  - Early stages of discussions
- 4<sup>th</sup> and Lea Ave
  - Potential ~500 tons and ~7,500 pph steam
  - Residential and Retail
  - Early stages of discussions



## *Marketing (con't)*

- Peabody and Rutledge
  - Potential ~2,000 tons and ~36,000 pph steam
  - Residential and Retail
  - Early stages of discussions
- Printer's and Banker's Alley
  - ~450 tons Apartment and Retail Development
  - No interest in steam at this point
  - Building design progressing with DES
- 7<sup>th</sup> and Commerce
  - Interested in 660 tons and 14,500 pph steam
  - Hotel, Restaurants and Retail
  - Building design progressing with DES
- 8<sup>th</sup> and Demonbreun
  - Early stages of discussions



## 8. *Capital Expenditure Update*

	<b>Spent to End of FY22</b>	<b>FY23 Spending</b>	<b>Balance to Date (01/20/23)</b>
R&I Projects	\$4,358,854	\$62,468	\$369,225
49116-DES Infrastructure Fund	\$4,649,663	\$159,699	\$4,564,495
<b>Total</b>	<b>\$9,008,517</b>	<b>\$222,167</b>	<b>\$4,933,720</b>

## *Capital Projects Review*

### **Active Capital Projects – General & Marketing**

- DES 139: Options Review - ongoing
- DES 163: Peabody Union – working with developer on Guthrie St impact to DES; blasting expected to end January 2023
- DES 192: Peabody St Developments – survey of routing down Peabody; DES plan for expansion in area with new customers
- DES 195: DES Parking Area – review of options for developing a parking area on the west side of the EGF to replace space lost in the Guthrie St development; preliminary drawings presented to TEG/Metro
- DES 200: Side-stream Filter – addition of filter on CHW at EGF; installation expected 3<sup>rd</sup> Qtr FY23

## *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: 7<sup>th</sup> and Commerce Hotel – proposed hotel intends to be a customer; service will extend from 7<sup>th</sup> Ave
- DES 203: Printer’s and Banker’s Alley Building – proposed residential and retail site intends to be a customer; service will extend from Union St.
- DES 204: New Signs for EGF – new signs in place on EGF; awaiting final invoices

## *Capital Projects Review*

### **Active Capital Projects – Corrosion Repair/Prevention**

- DES 143: MH N1 and N2 Insulation – MH N1 corrosion cleaned and coated; CES to install insulation in both MH N1 and MH N2 under Amendment 2 obligations, therefore this project will be closed.
- DES 154: MH K Repairs – closed
- DES 178: MH 5 Repairs – corrosion/concrete/insulation repairs; piping insulation remains to be completed. The project has been delayed and work is expected to begin in the 3<sup>rd</sup> Qtr FY23.

## *Capital Projects Review*

### **Active Capital Projects – Corrosion Repair/Prevention**

- 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. TEG identified the most severely corroded supports to have CES hire Enecon to clean and coat them. CES has included language in their proposal to potentially include a mark-up on this work which is being disputed by TEG.
- DES 193: MH 13 Pipe and Pipe Support Repairs – some insulation repairs have been completed but not all; anticipate work to be completed during 3<sup>rd</sup> Qtr FY23
- DES 194: MH B4 Repairs – cleaning and coating of structural steel; re-insulation of piping; pre-bid meeting was held during 2<sup>nd</sup> Qtr FY23; anticipate construction to begin during 3<sup>rd</sup> Qtr FY23
- DES 197: MH 3 Coatings and Repairs – closed

## *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 3<sup>rd</sup> Qtr FY22; contractor delays; supply chain delays; underground work is complete. Awaiting delivery of high temperature hose to start/complete piping work. Anticipate construction completion by end of 3<sup>rd</sup> Qtr FY23.
- DES 196: Exploratory Excav. & Cond. Leak Repair at MH 9 – in design; will also include pipe replacement at MH 10 and MH 11; anticipate bidding during 3<sup>rd</sup> Qtr FY23

## *Capital Projects Review*

### **Active Capital Projects – Repairs/Modifications**

- DES 198: MH18 Condensate Pump Replacement – replace pumps with new configuration to improve reliability and automation; pumps and VFDs delivered; anticipate bid/construction 3<sup>rd</sup> Qtr FY23
- DES 199: MH D3 Sparge Tube Addition – existing pipe support needs replacement due to corrosion and adding sparge tube because of steam hammer; sparge tube complete, modified pipe support completed; awaiting insulation repair. Anticipate completion by end of 3<sup>rd</sup> Qtr FY23.

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





## *9. Other Board Member Items*

*RFQ for DES PA proposal deadline was June 21, 2022. TEG was notified of Metro's intent to award in the 2<sup>nd</sup> Quarter. The temporary contract with TEG expired November 26<sup>th</sup>, 2022. Status of agreement remains with Procurement. No completion date has been identified.*

# 10. *Adjourn*

- *Advisory Board Meeting Schedule*
- FY23 – 3<sup>rd</sup> Quarter Meeting – May 18, 2023
- FY23 – 4<sup>th</sup> Quarter Meeting – August 17, 2023
- FY24 – 1<sup>st</sup> Quarter Meeting – November 16, 2023
- FY24 – 2<sup>nd</sup> Quarter Meeting – February 15, 2023