



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

*DES Advisory Board Meeting*  
*First Quarter FY17*  
*November 17, 2016*

# 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 Status
6. FY17 Costs to Date
7. FY17 Budget Update
8. Capital Projects Review & Status
9. Other Board Member Items
  - *Third Party Review of Options*
  - *Updated Contact Information*
10. Adjourn

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

## 3. *Customer Sales*

- ❖ Table 3: Customer Cost Comparison
- ❖ Figure 3A: Aggregate Average System Delta T
- ❖ Figure 3B: Aggregate Average Metro Delta T
- ❖ Figure 3C: Aggregate Average Private Delta T
- ❖ Figure 3D: Aggregate Average State Delta T

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

		Steam - Rolling 12 Month			Chilled Water - Rolling 12 Month		
		Oct 2014 - Sept 2015	Oct 2015 - Sept 2016	% Diff.	Oct 2014 - Sept 2015	Oct 2015 - Sept 2016	% Diff.
<b>Private</b>	Cost	\$ 1,650,776	\$ 1,358,354	-17.71%	\$ 3,525,336	\$ 3,560,574	1.00%
	Usage (lbs or tonhrs)	102,027,222	88,718,930	-13.04%	17,850,454	19,233,935	7.75%
<b>State</b>	Cost	\$ 2,044,685	\$ 1,645,308	-19.53%	\$ 3,307,959	\$ 3,262,206	-1.38%
	Usage (lbs or tonhrs)	115,482,382	90,488,847	-21.64%	14,026,720	14,259,604	1.66%
<b>Metro</b>	Cost	\$ 2,381,741	\$ 2,083,754	-12.51%	\$ 5,322,161	\$ 5,429,598	2.02%
	Usage (lbs or tonhrs)	151,245,967	151,616,245	0.24%	26,489,581	29,719,981	12.19%
<b>Aggregate</b>	Cost	\$ 6,077,202	\$ 5,087,415	-16.29%	\$ 12,155,455	\$ 12,252,378	0.80%
	Usage (lbs or tonhrs)	368,755,571	330,824,022	-10.29%	58,366,755	63,213,520	8.30%
	Unit Cost	\$ 16.48	\$ 15.38	-6.7%	\$ 0.208	\$ 0.194	-6.93%

MFA not included in values shown

Figure 3A: Aggregate Average System Delta T

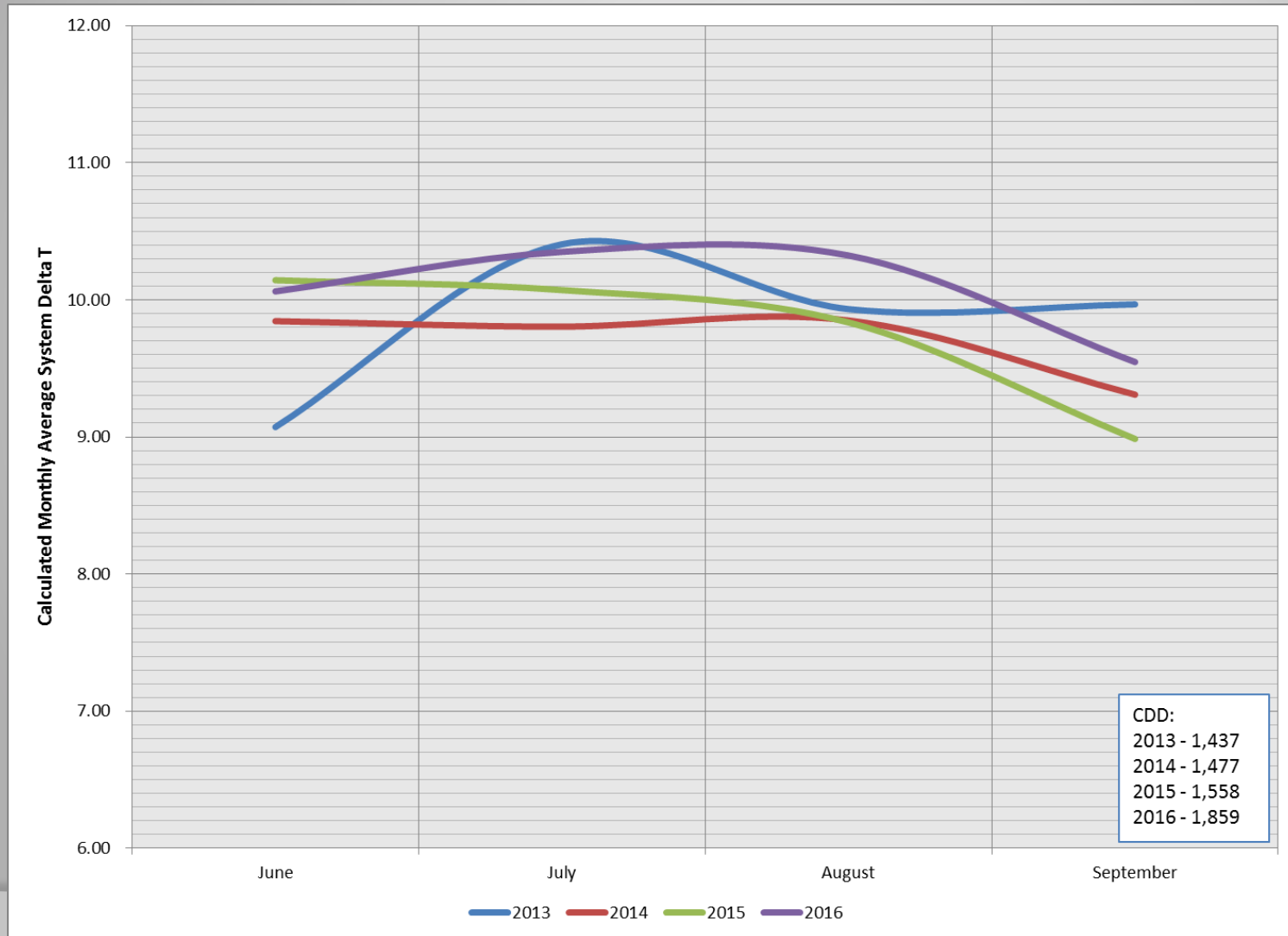


Figure 3B: Aggregate Average Metro Delta T

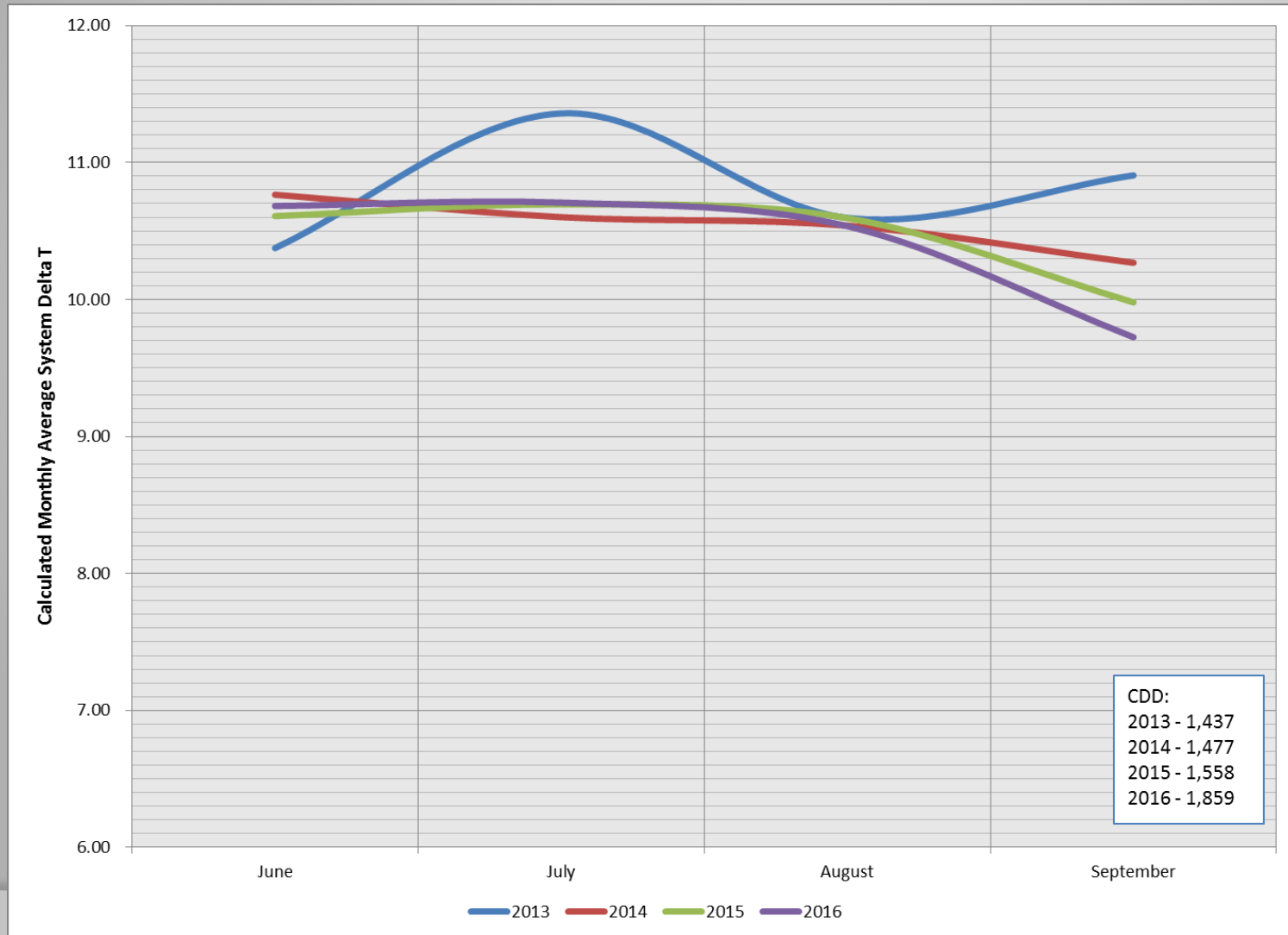


Figure 3C: Aggregate Average Private Delta T

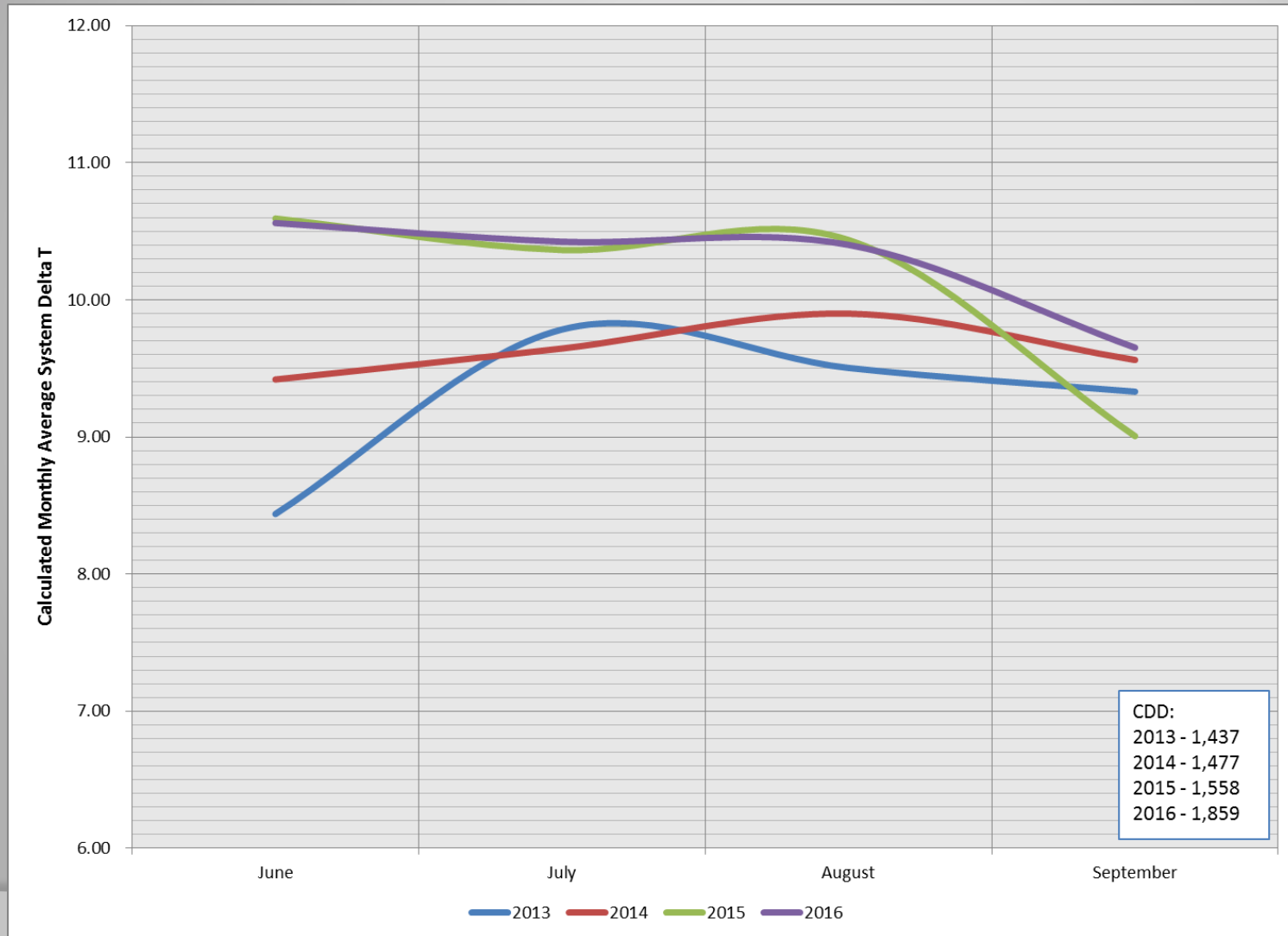
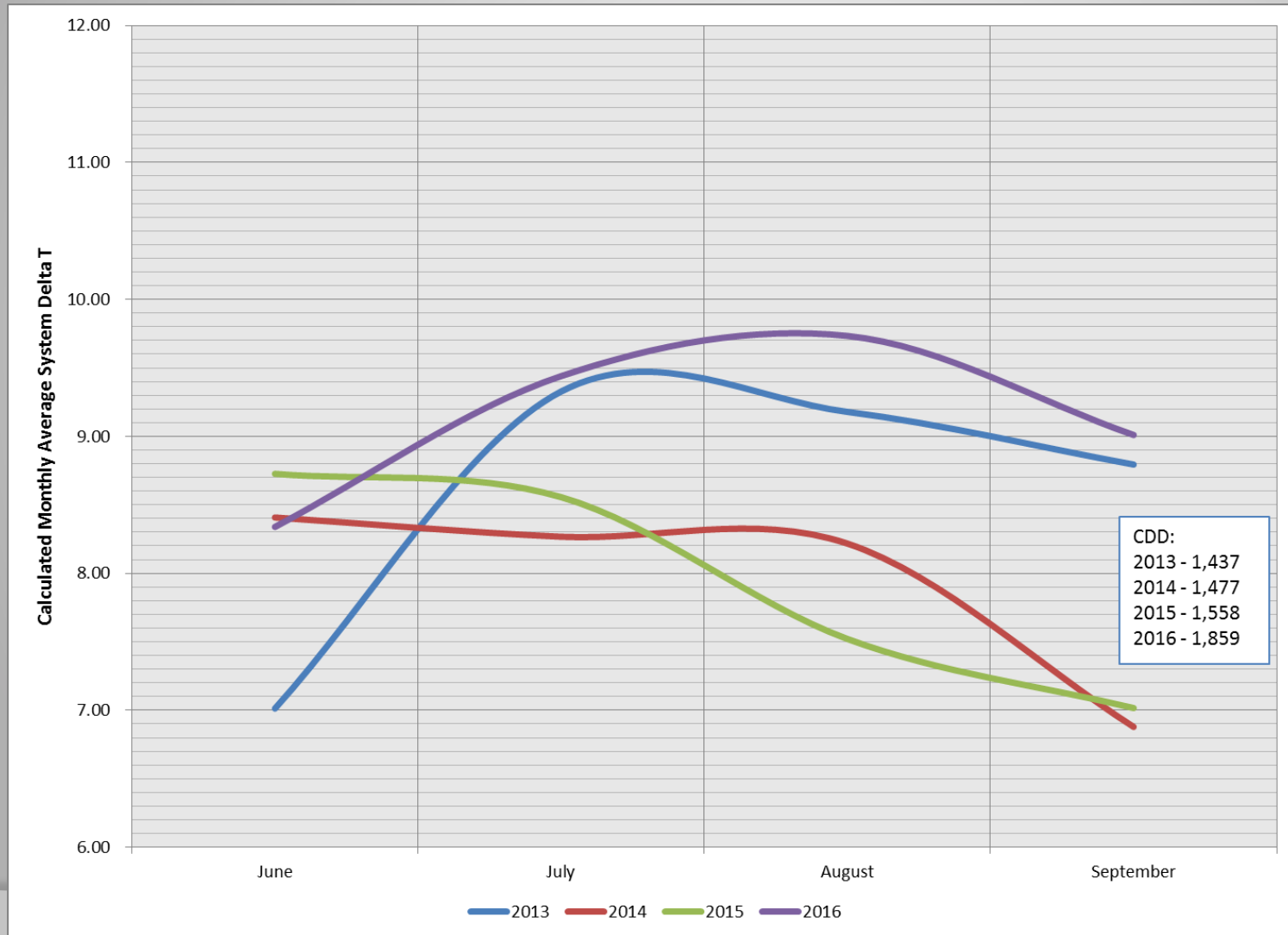







Figure 3D: Aggregate Average State Delta T

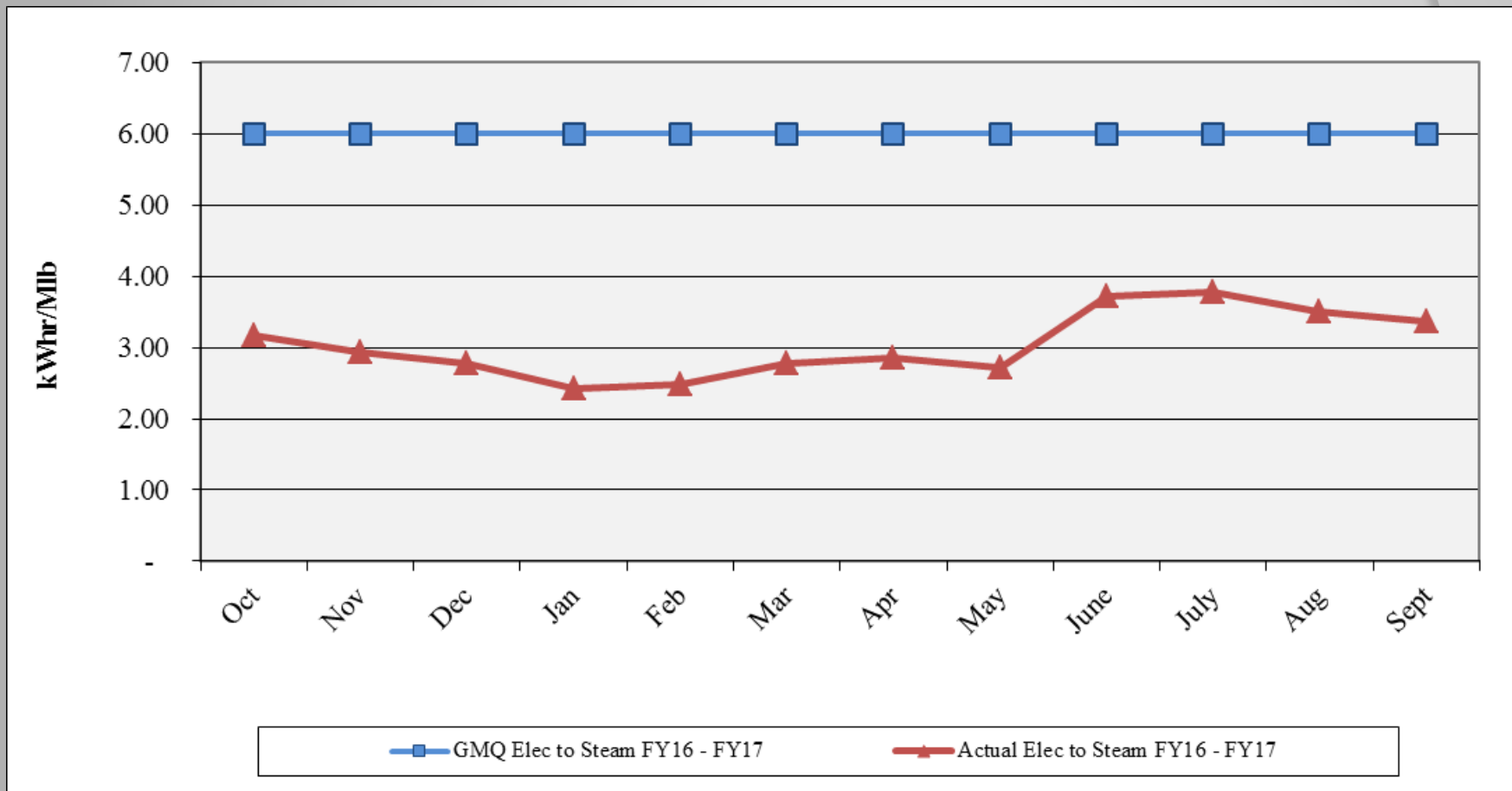


## 4. *Review of DES Contractor Performance*

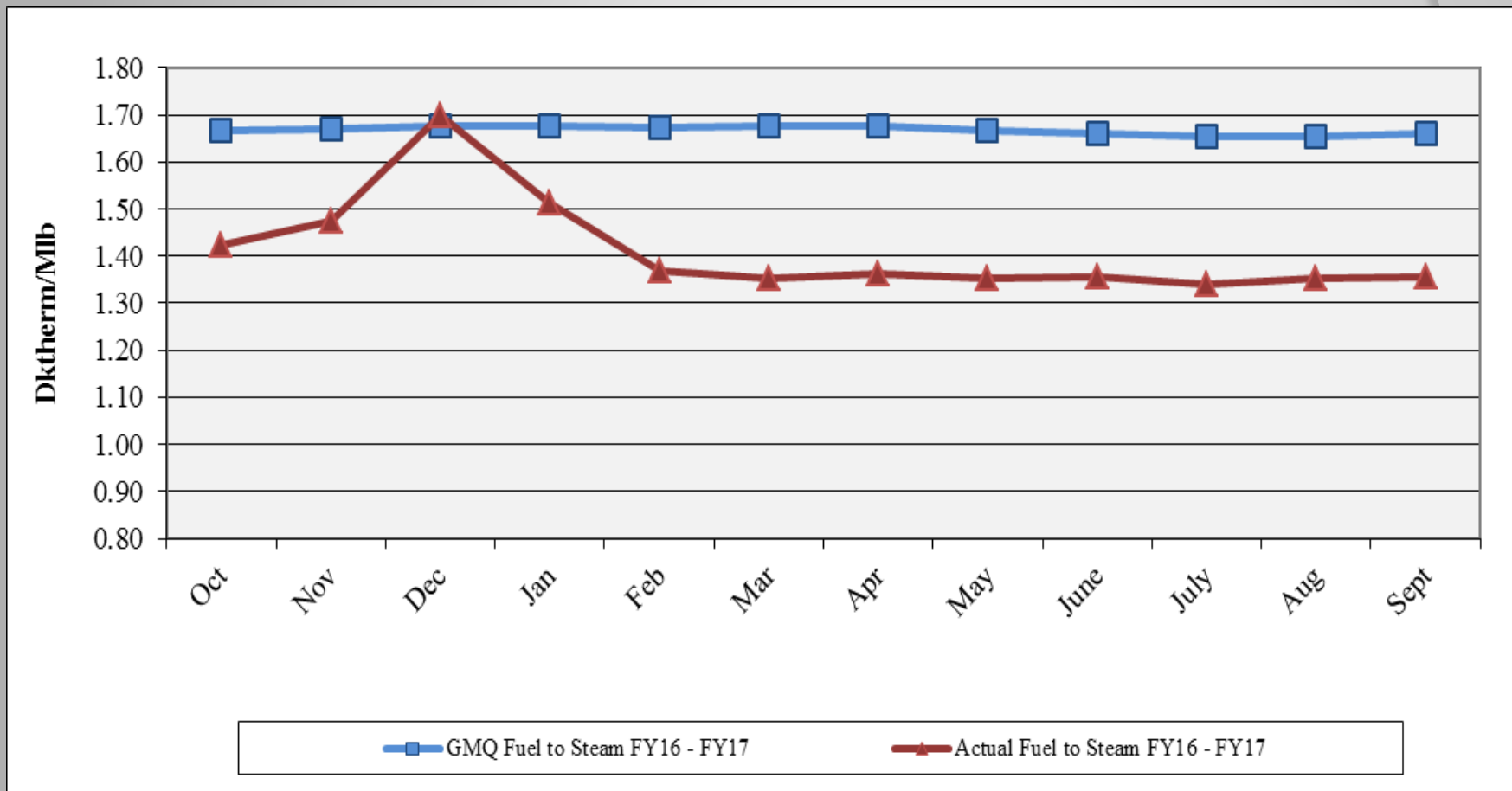
Contractor (CNE) is in compliance with their contractual obligations for FY17.

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

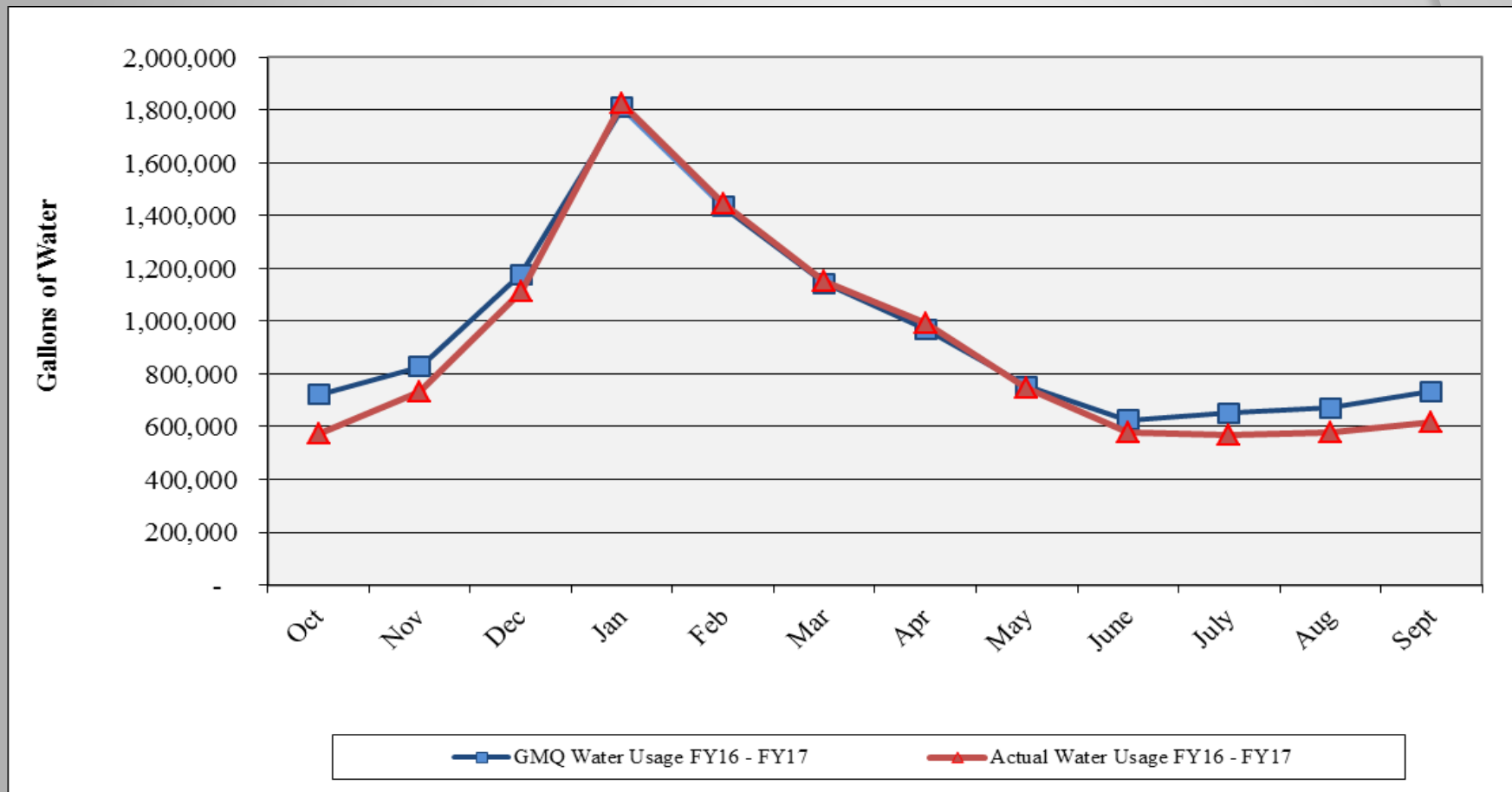
# Performance Measurement FY17: Steam Electric Conversion ●



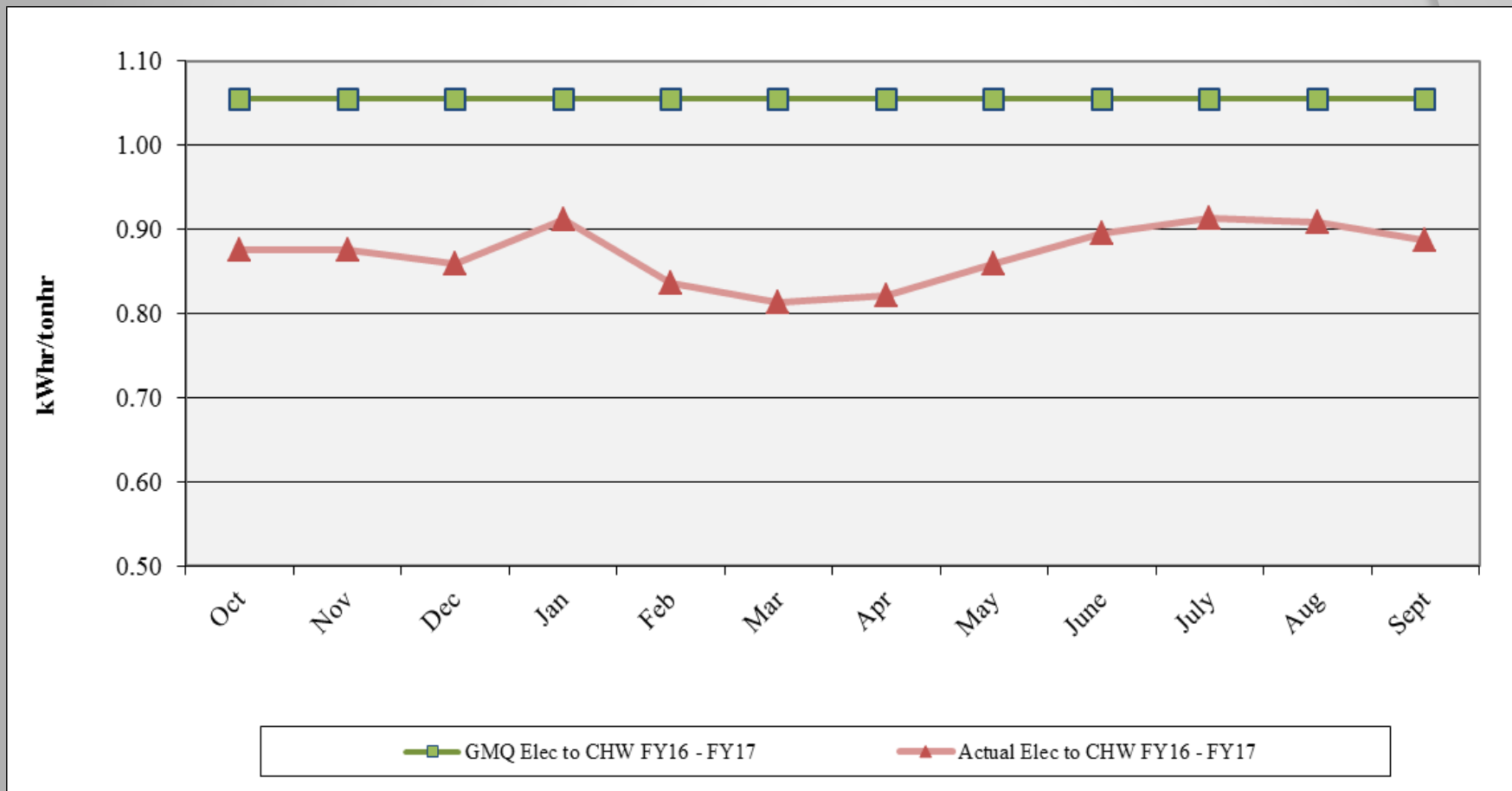
# Performance Measurement FY17: Steam Plant Efficiency



# Performance Measurement FY17: Steam Water Conversion

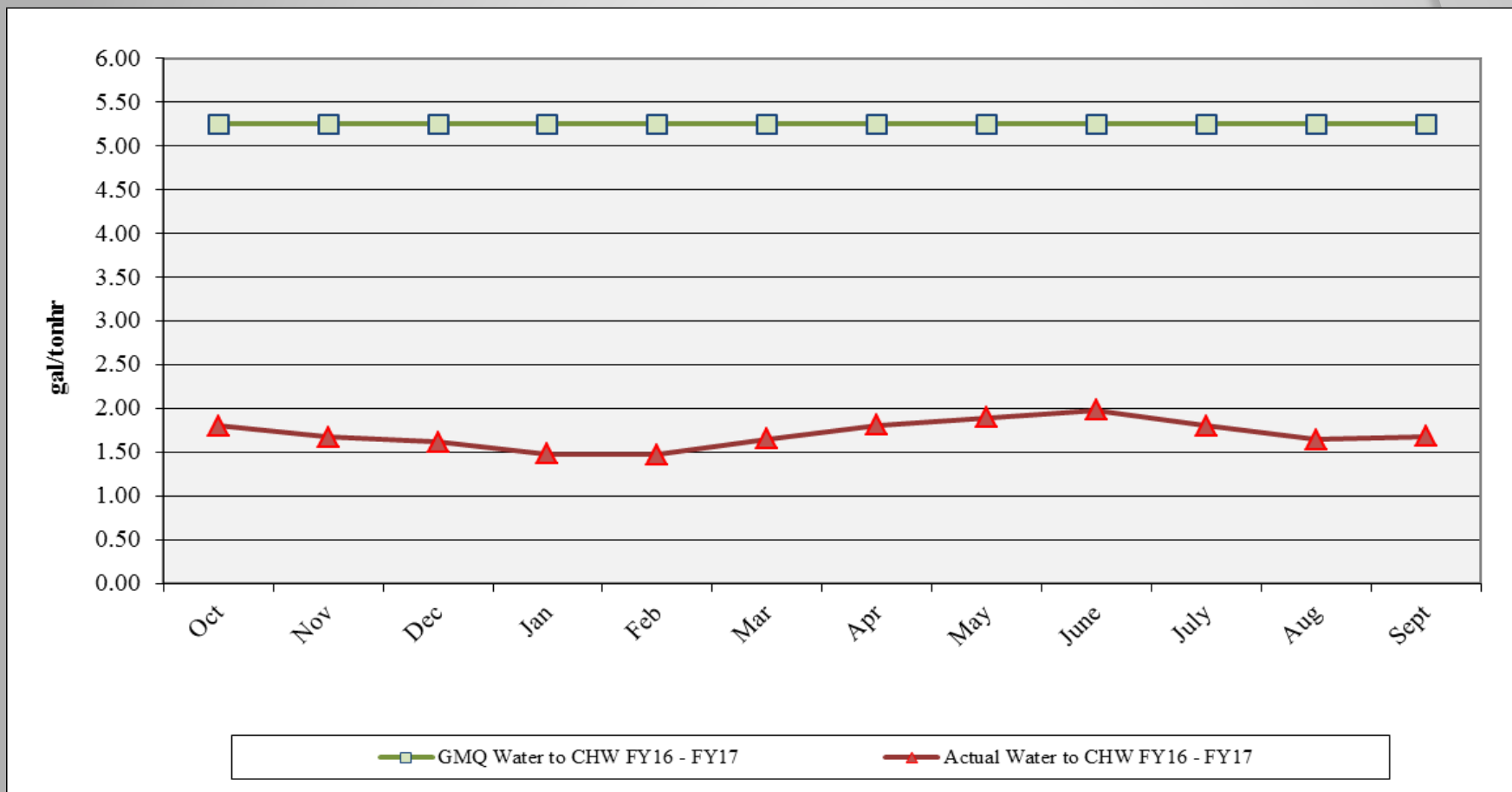


# Performance Measurement FY17: CHW Electric Conversion



# Performance Measurement FY17: CHW

## Water Conversion ●





# *Water Treatment*

## ❖ Steam and Condensate ●

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

## ❖ Condensing Water ●

- ❖ Conductivity
- ❖ Biologicals

## ❖ Chilled Water ●

- ❖ Hardness
- ❖ Corrosion
- ❖ Biologicals
- ❖ Delta T Issue (better)





## *EGF Walkthrough*

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










## *EDS Walkthrough*

- ✓ Vault/Tunnel Housekeeping ●
- ✓ Maintenance Items ●
  - ✓ Insulation Repair/Replacement ●
  - ✓ Water Infiltration ●
  - ✓ Corrosion of Structural Metal Components ●
- ✓ Safety Items ●

## *5. Natural Gas Purchasing*

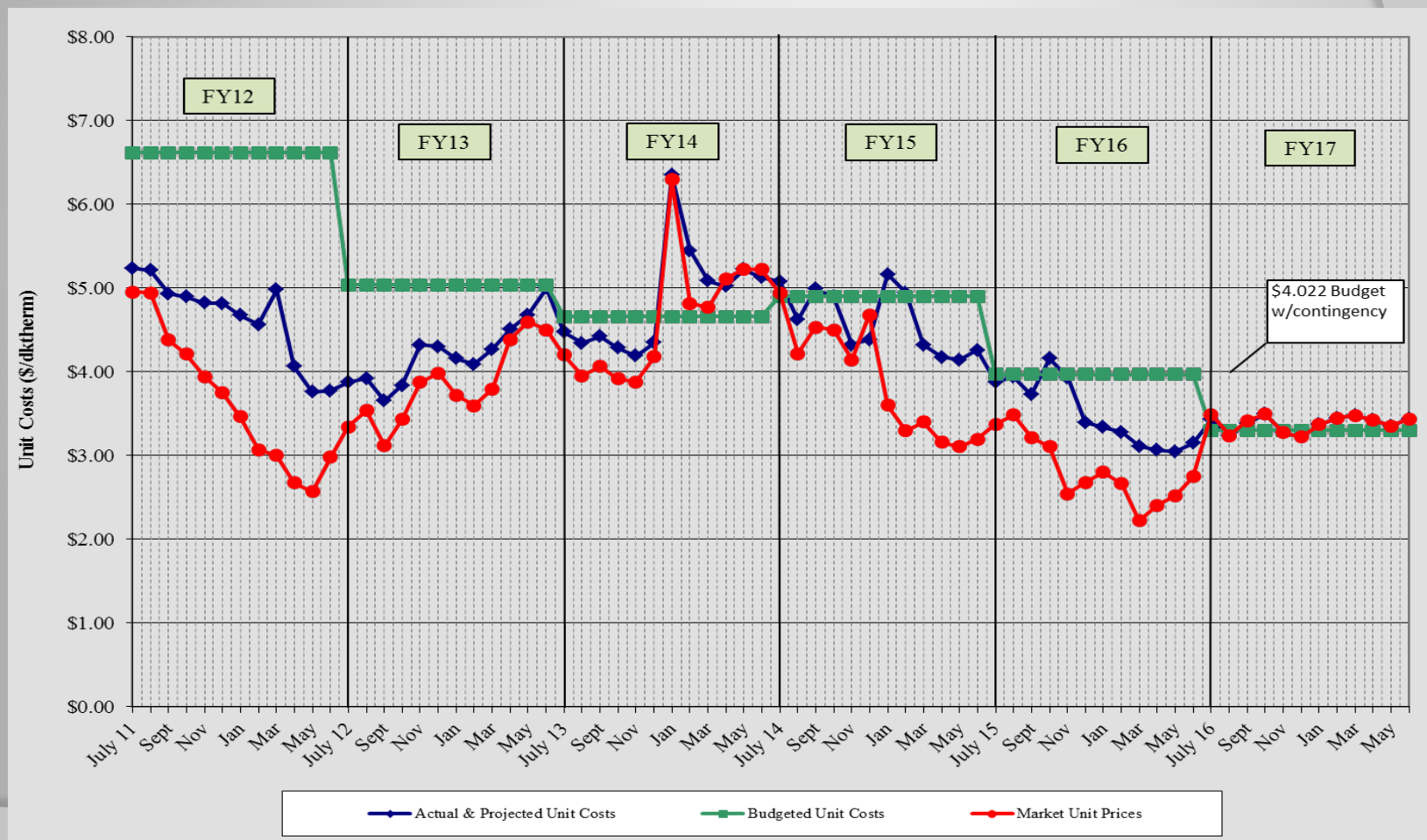
- ❖ Natural Gas Purchasing Review
  - ❖ Table 5: FY17 Gas Spending & Budget Comparison
  - ❖ Figure 5: Actual and Projected Gas Cost Comparison

## Table 5: FY17 Gas Spending & Budget Comparison

		Actual FY17 To date (Sept 30)	Budget FY17	Percent Difference
Steam Sendout (Mlbs)		62,409	48,169	29.6%
Fuel Use (Dth) (includes propane)	 	84,227	69,701	20.8%
Plant Eff (Dth/Mlb)		1.350	1.447	-6.7%
Total Gas Cost (includes propane)	 	\$282,208	\$219,907	28.3%
Unit Cost of Fuel (\$/ Dth)	 	\$3.351	\$3.155	6.2%

Excludes consultant fees and FEA and budget contingency; Includes transportation and propane costs

# Figure 5. Actual and Projected Gas Cost Comparison History



## 6. FY17 Costs to Date

Item	FY16 Actual	FY17 Budget	FY17 Actual to date	Percent of FY17 Budget
FOC's	\$ 4,532,100	\$ 4,668,100	\$ 1,139,800	24.42%
Pass Throughs				
Non-Energy	\$ 1,450,800	\$ 1,103,500	\$ 429,700	38.94%
Water/Sewer	\$ 533,100	\$ 640,200	\$ 232,800	36.36%
Natural Gas Base	\$ 1,971,200	\$ 2,155,700	\$ 284,200	13.18%
Natural Gas Contingency	\$ -	\$ 570,900	\$ -	0.00%
Electricity	\$ 5,530,500	\$ 6,093,800	\$ 2,091,800	34.33%
ORF Deposit	\$ -	\$ -	\$ -	
Debt Service	\$ 5,565,900	\$ 5,525,000	\$ 1,558,000	28.20%
<b>Total Expenses</b>	<b>\$ 19,583,600</b>	<b>\$20,757,200</b>	<b>\$ 5,736,300</b>	<b>27.64%</b>
<b>Total Revenues</b>	<b>\$ 17,774,500</b>	<b>\$19,035,200</b>	<b>\$ 5,084,300</b>	<b>26.71%</b>
<b>Metro Funding Amount</b>	<b>\$ 1,809,100</b>	<b>\$ 1,722,000</b>	<b>\$ 430,500</b>	<b>25.00%</b>

# 7. FY17 Budget

Item	FY16 Budget	FY17 Budget	Percent Change
FOC's	\$ 4,668,200	\$ 4,668,100	0.00%
Pass Throughs			
Non-Energy	\$ 1,069,500	\$ 1,103,500	3.18%
Water/Sewer	\$ 745,400	\$ 640,200	-14.11%
Natural Gas Base	\$ 2,832,900	\$ 2,155,700	-23.90%
Natural Gas Contingency	\$ 555,200	\$ 570,900	2.83%
Electricity	\$ 6,545,700	\$ 6,093,800	-6.90%
ORF Deposit	\$ -	\$ -	N.A.
Debt Service	\$ 5,565,900	\$ 5,525,000	-0.73%
<b>Total Expenses</b>	<b>\$ 21,982,800</b>	<b>\$ 20,757,200</b>	<b>-5.58%</b>
<b>Total Revenues</b>	<b>\$ 20,188,200</b>	<b>\$ 19,035,200</b>	<b>-5.71%</b>
<b>Metro Funding Amount</b>	<b>\$ 1,794,600</b>	<b>\$ 1,722,000</b>	<b>-4.05%</b>



## 8. Capital Expenditure Update

	<b>Spent to End of FY16</b>	<b>FY17 Spending</b>	<b>Balance to Date (10/18/16)</b>
R&I Projects	\$2,903,301	\$66,425	\$29,876
49109-2010 Bond	\$2,480,531	\$1,860	\$125,525
49107-Customer Connection Fund	\$6,760,435	\$56,049	\$1,692,516
49116-DES CHP	\$127,686	\$41,020	\$25,831,294
<b>Total</b>	<b>\$12,271,953</b>	<b>\$165,354</b>	<b>\$27,679,211</b>
<b>Available</b>			<b>\$1,847,917</b>



# *Capital Projects Review*

## Active Capital Projects

- DES 061: MH & Tunnel Steel Corrosion Repair & Prevention – Ongoing
- DES 111: EGF Combined Heat and Power – On hold
- DES 119: Chilled Water System Delta T – Monitoring performance
- DES 121: Misc. Manhole Repairs – Replace Ladders; Insulation, etc.; one punch-list item to be completed in 2<sup>nd</sup> Qtr FY17
- DES 122: Manhole 13 Structural Repairs – Concrete Roof Repairs; design complete; to be bid
- DES 124: CJC Redevelopment – Demolition Phase Complete
- DES 127: Manhole 12 Steam Anchor Repair – construction complete; in close-out
- DES 128: Manhole A Sparge Tube Addition – in construction; to be completed 2<sup>nd</sup> Qtr FY17
- DES 129: Manhole 22B Repair – construction complete; in close-out
- DES 130: Manhole B3 Repair – awarded; awaiting schedule from contractor
- DES 134: 401 Union Reconnection – design in progress
- DES 135: CHW Leak at 5<sup>th</sup> Ave and Union (at JKP/TPAC) – in construction

# *Capital Projects Review*

## Capital Projects in Close-out/Closed

- DES 104: TOU Programming
- DES 123: John Sevier Bldg Condensate Return Piping Replacement
- DES 126: Chilled Water Leak Exploratory Excavation on 3<sup>rd</sup> Avenue
- DES 131: Wildhorse CHW Service Connections Mod

## 9. *Other Board Member Items*

*Third Party Review of Options*

*Updated Contact Info*

## 10. *Adjourn*

- *Advisory Board Meeting Schedule*
- FY17 – 2<sup>nd</sup> Quarter Meeting – February 16, 2017
- FY17 – 3<sup>rd</sup> Quarter Meeting – May 18, 2017
- FY17 – 4<sup>th</sup> Quarter Meeting – August 17, 2017
- FY18 – 1<sup>st</sup> Quarter Meeting – November 16, 2017