

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



*DES Advisory Board Meeting*  
*Fourth Quarter FY12*  
*August 16, 2012*



# *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. FY12 Costs to Date
7. Update on FY13 Budget
8. Capital Projects Review & Status Report Update
9. Other Board Member Items
10. Adjourn



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



## 3. *Customer Sales*

- ❖ Table 3: Customer Cost Comparison
- ❖ Figure 3A: CHW Sales & CDD
- ❖ Figure 3B: Steam Sales & HDD

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

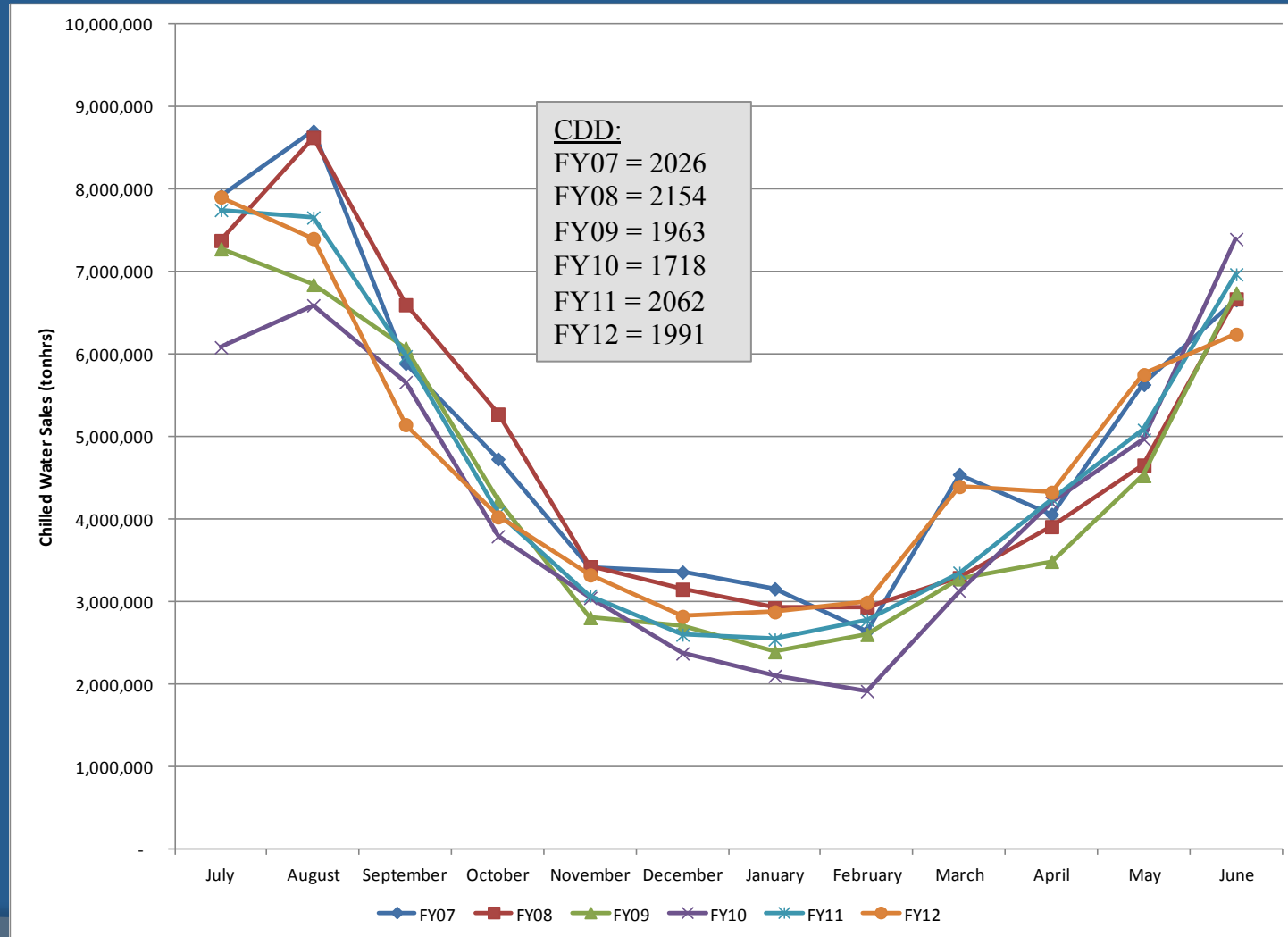
		Steam - Rolling 12 Month			Chilled Water - Rolling 12 Month		
		July 2011 - June 2012	July 2010 - June 2011	% Diff.	July 2011 - June 2012	July 2010 - June 2011	% Diff.
<b>Private</b>	Cost	\$ 1,596,195	\$ 1,431,490	-10.32%	\$ 3,189,357	\$ 3,383,024	6.07%
	Usage (lbs or tonhrs)	76,278,477	79,259,590	3.91%	17,470,101	18,058,707	3.37%
	Unit Cost	\$ 20.93	\$ 18.06	-13.7%	\$ 0.183	\$ 0.187	2.6%
<b>State</b>	Cost	\$ 2,078,963	\$ 1,854,011	-10.82%	\$ 3,314,694	\$ 3,458,497	4.34%
	Usage (lbs or tonhrs)	91,081,361	88,985,025	-2.30%	17,266,764	17,405,473	0.80%
	Unit Cost	\$ 22.83	\$ 20.84	-8.7%	\$ 0.192	\$ 0.199	3.5%
<b>Metro</b>	Cost	\$ 1,887,371	\$ 1,650,817	-12.53%	\$ 3,123,068	\$ 3,285,897	5.21%
	Usage (lbs or tonhrs)	87,409,393	82,168,924	-6.00%	18,981,595	19,034,502	0.28%
	Unit Cost	\$ 21.59	\$ 20.09	-7.0%	\$ 0.165	\$ 0.173	4.9%
<b>Aggregate</b>	Cost	\$ 5,618,358	\$ 4,959,251	-11.73%	\$ 10,203,142	\$ 10,769,328	5.55%
	Usage (lbs or tonhrs)	254,816,379	250,413,539	-1.73%	56,118,251	57,232,609	1.99%
	Unit Cost	\$ 22.05	\$ 19.80	-10.2%	\$ 0.182	\$ 0.188	3.49%

\*FY11 MFA = \$2,444,100; FY12 MFA=\$2,363,000 post-True-up; MFA not included in values shown

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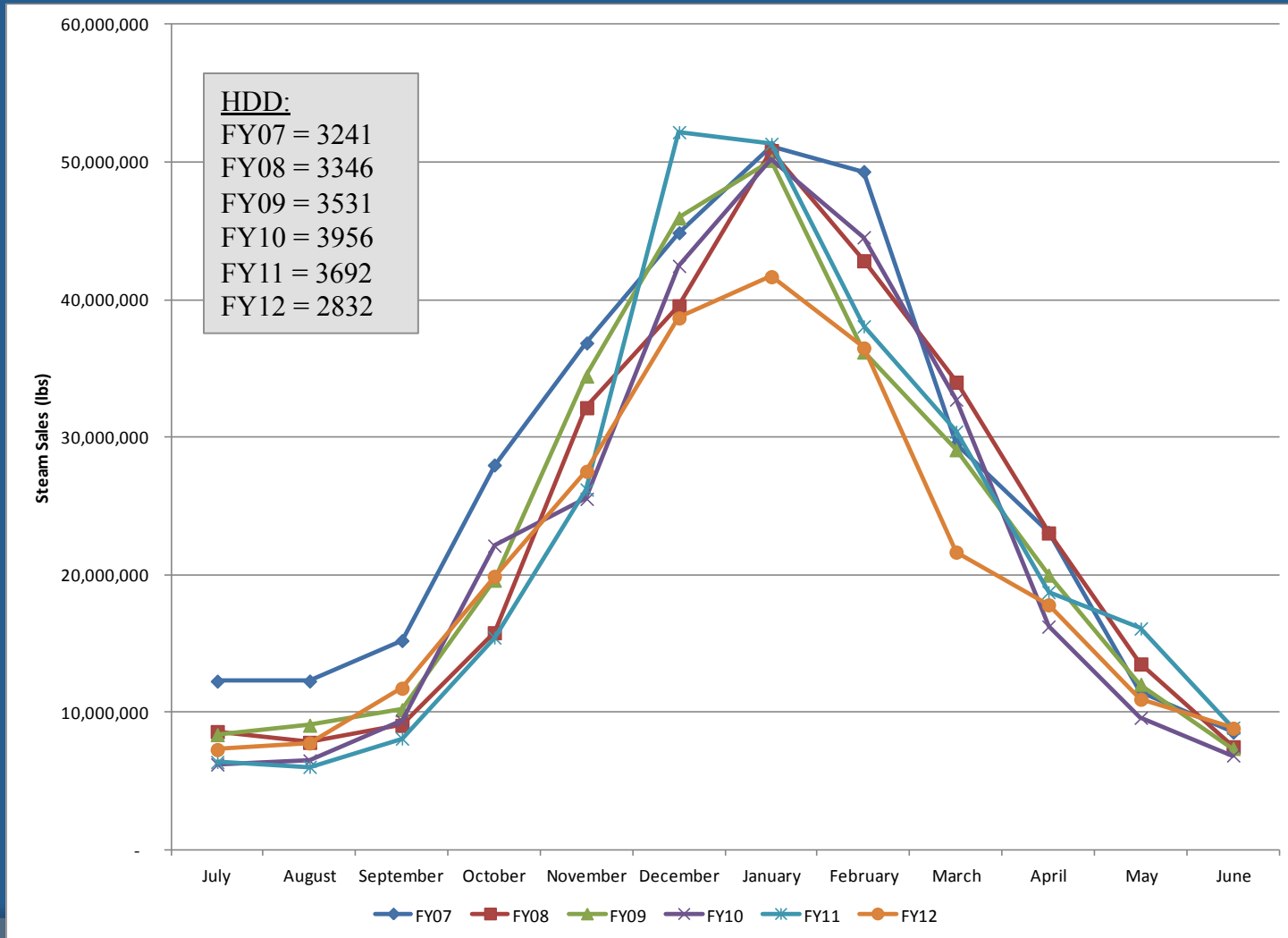
## Figure 3A: Historic CHW Sales



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## Figure 3B: Historic Steam Sales





## 4. *Review of DES Contractor Performance*

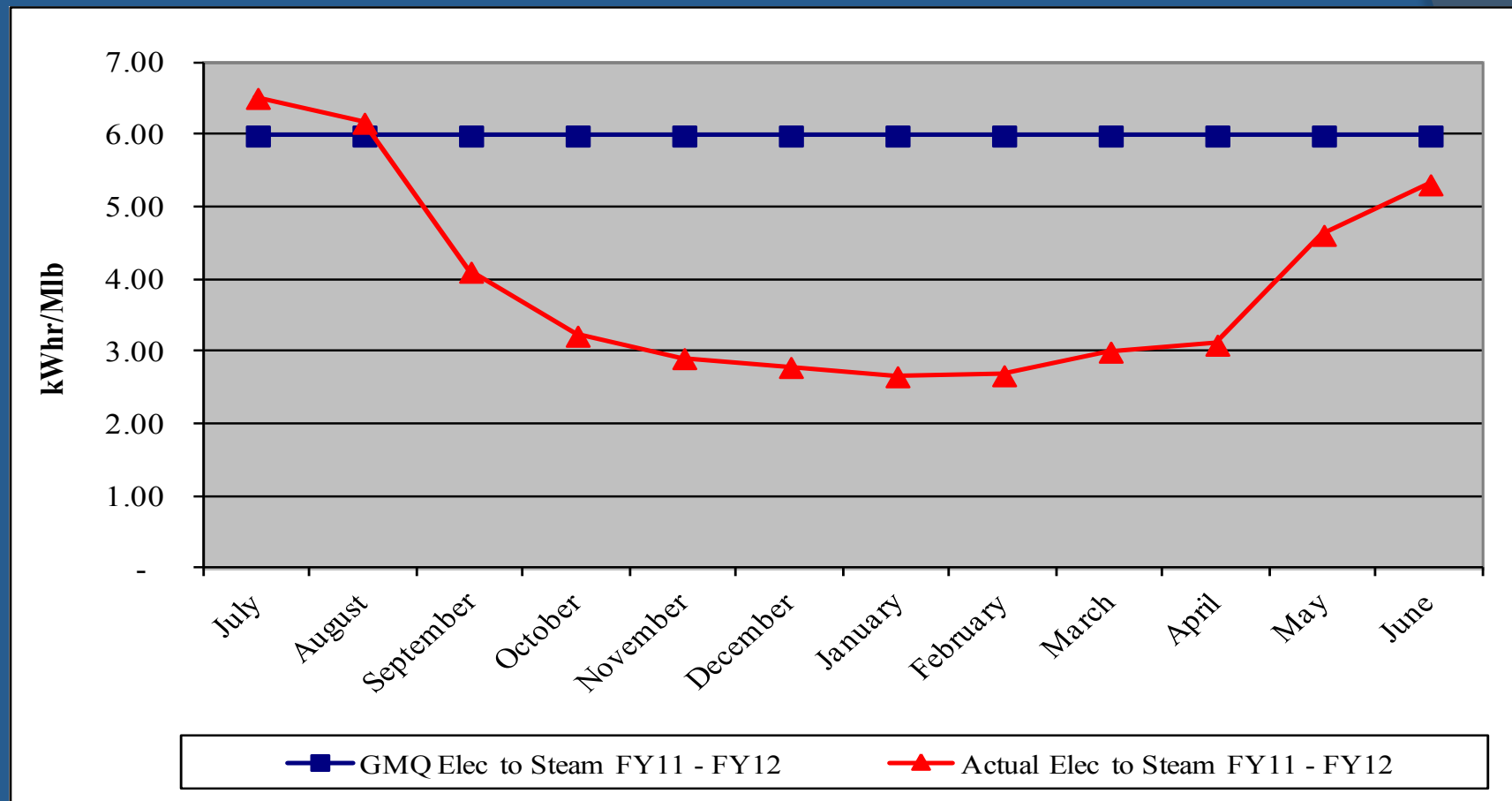
Contractor (CEPS) is in compliance with their contractual obligations for FY12.

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





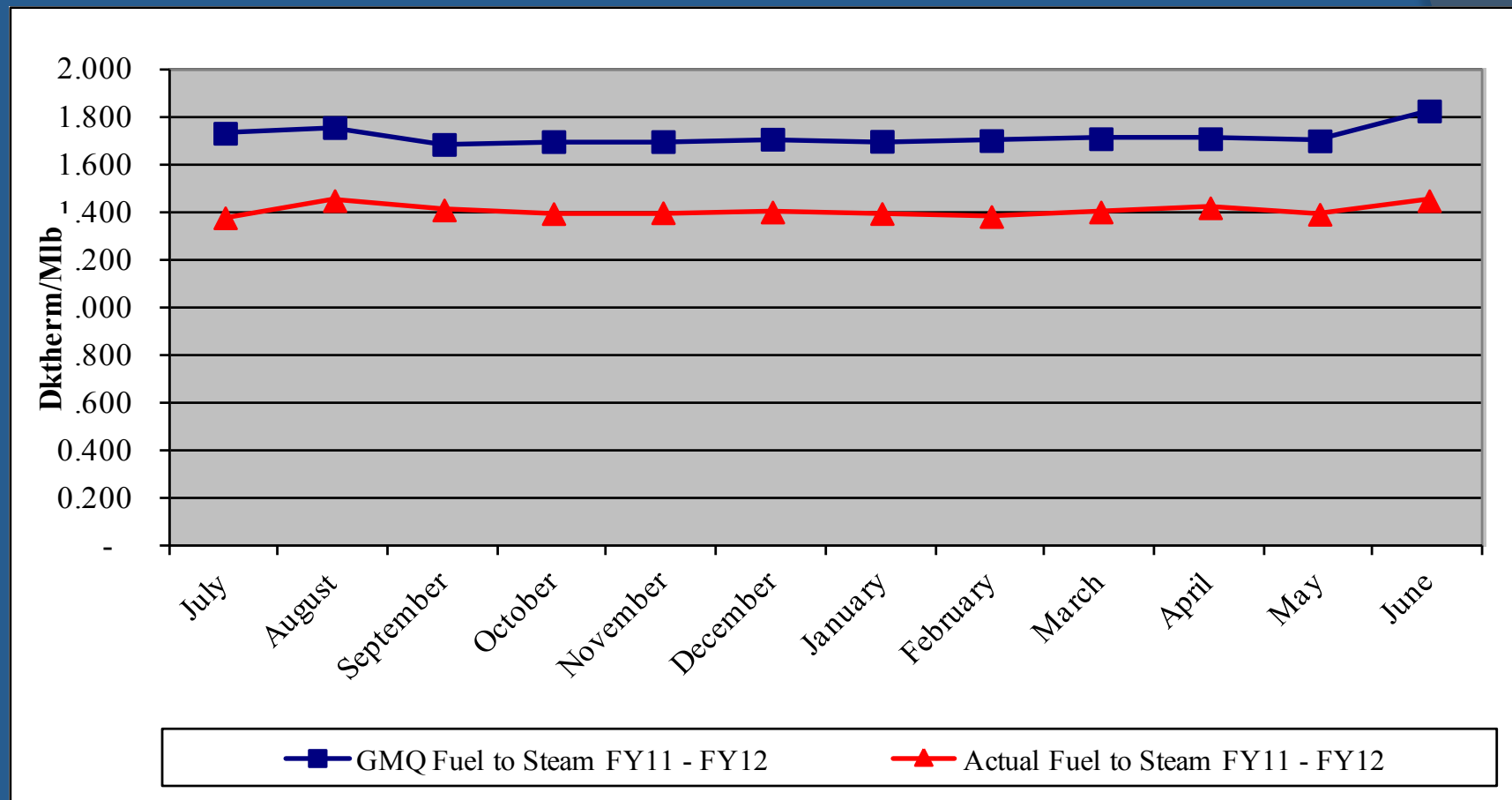
## Performance Measurement FY12: Steam Electric Conversion ●



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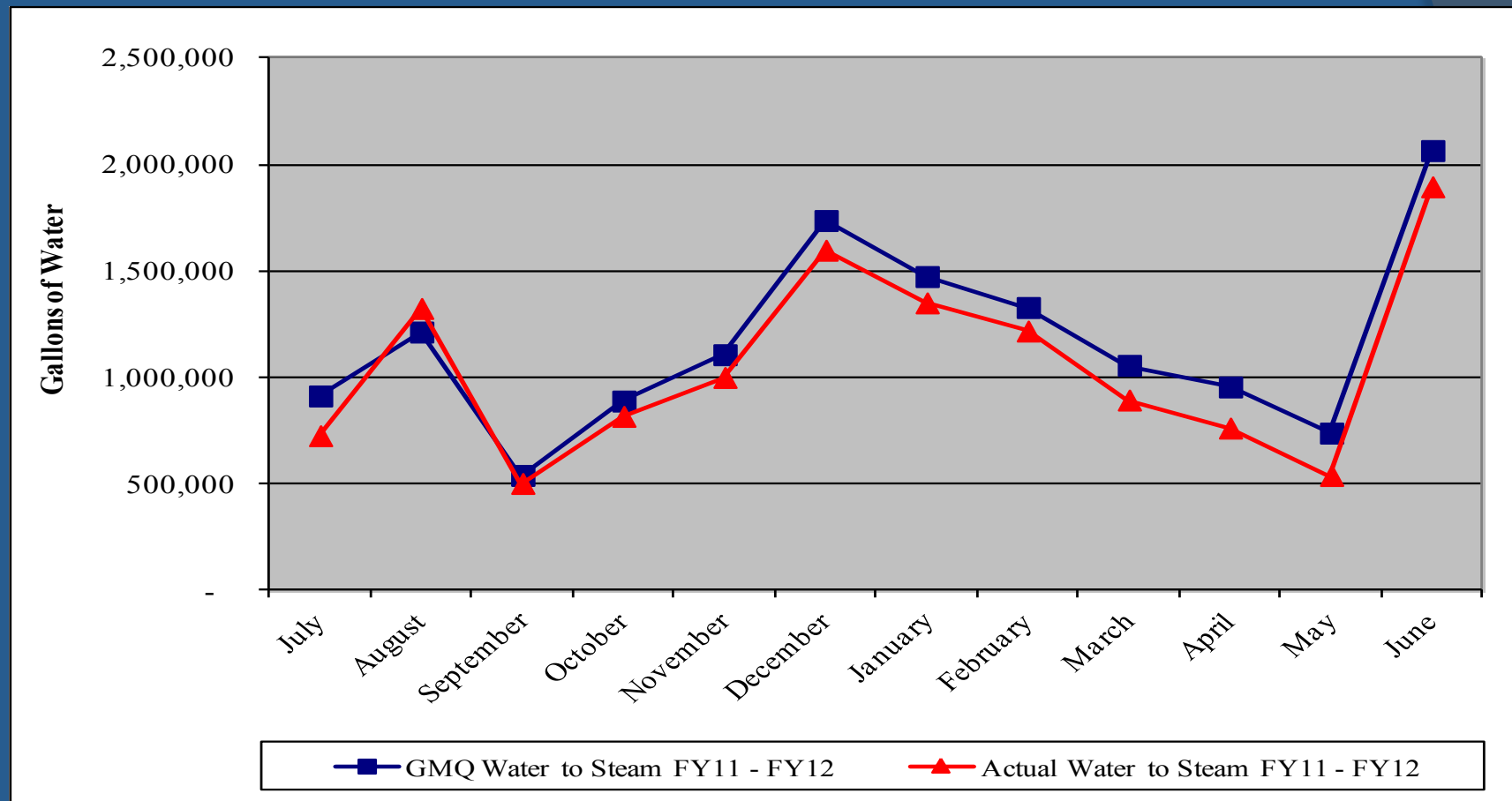


## Performance Measurement FY12: Steam Plant Efficiency ●





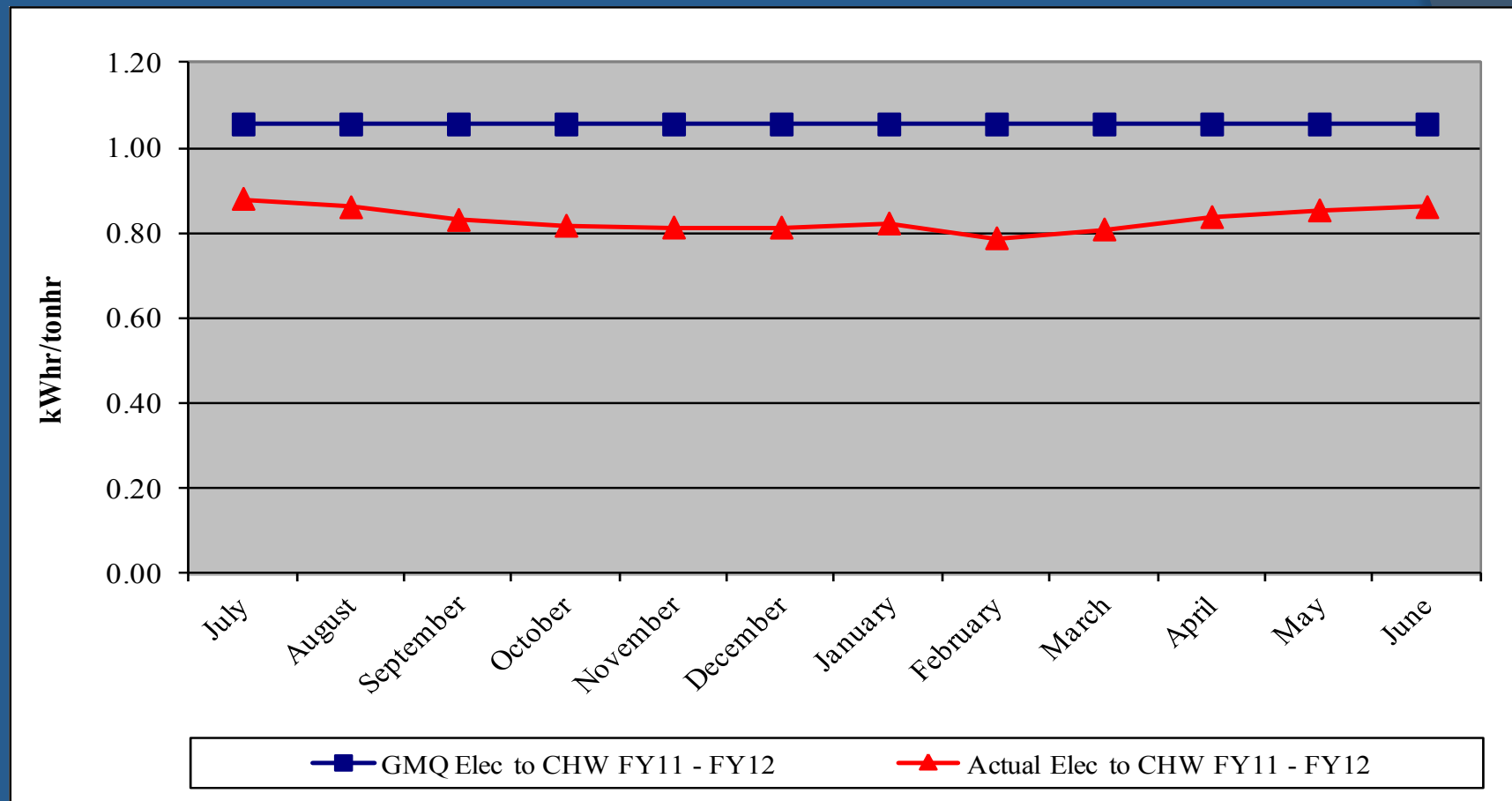
## Performance Measurement FY12: Steam Water Conversion ●



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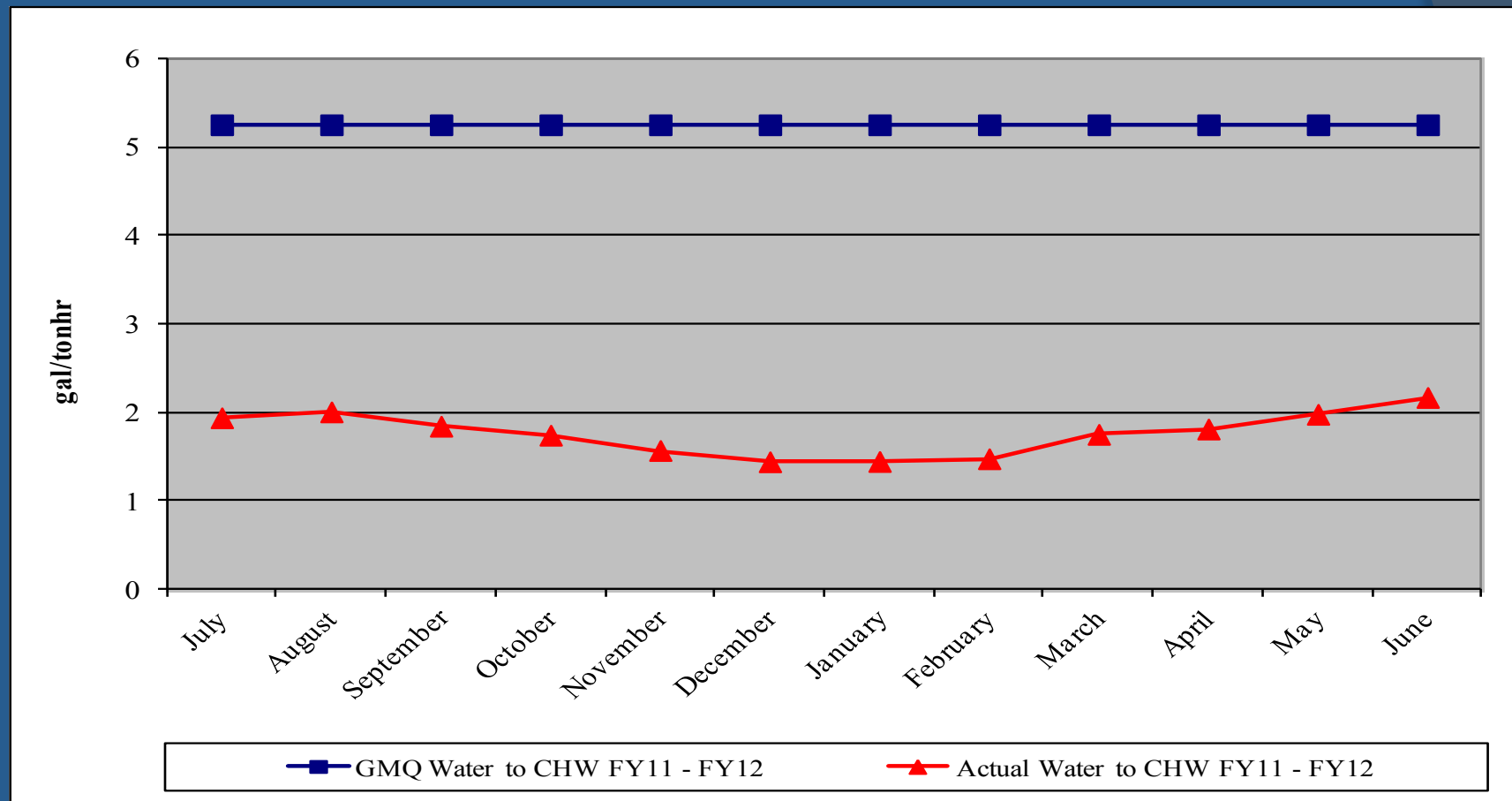


## Performance Measurement FY12: CHW Electric Conversion ●





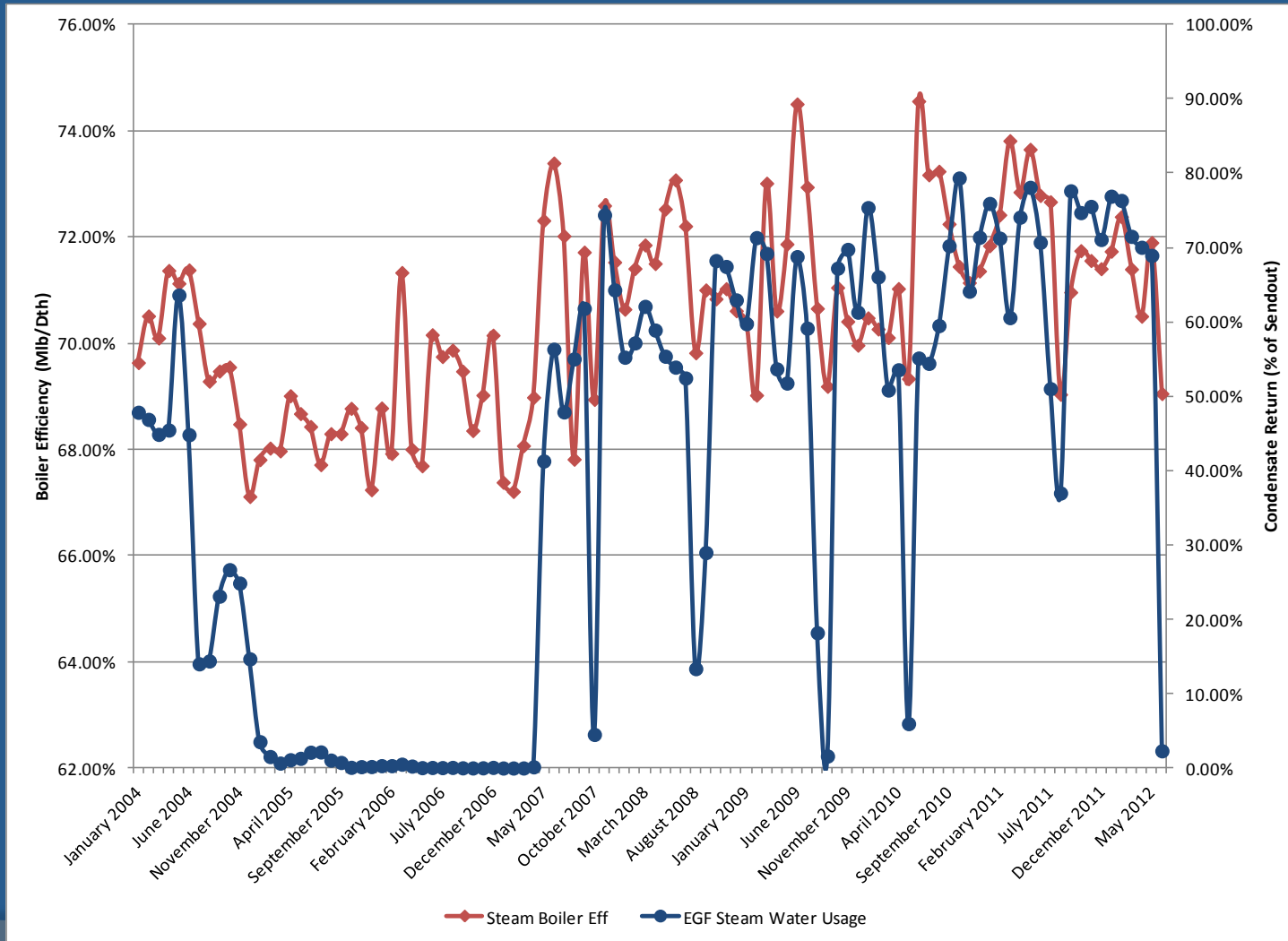
## Performance Measurement FY12: CHW Water Conversion ●



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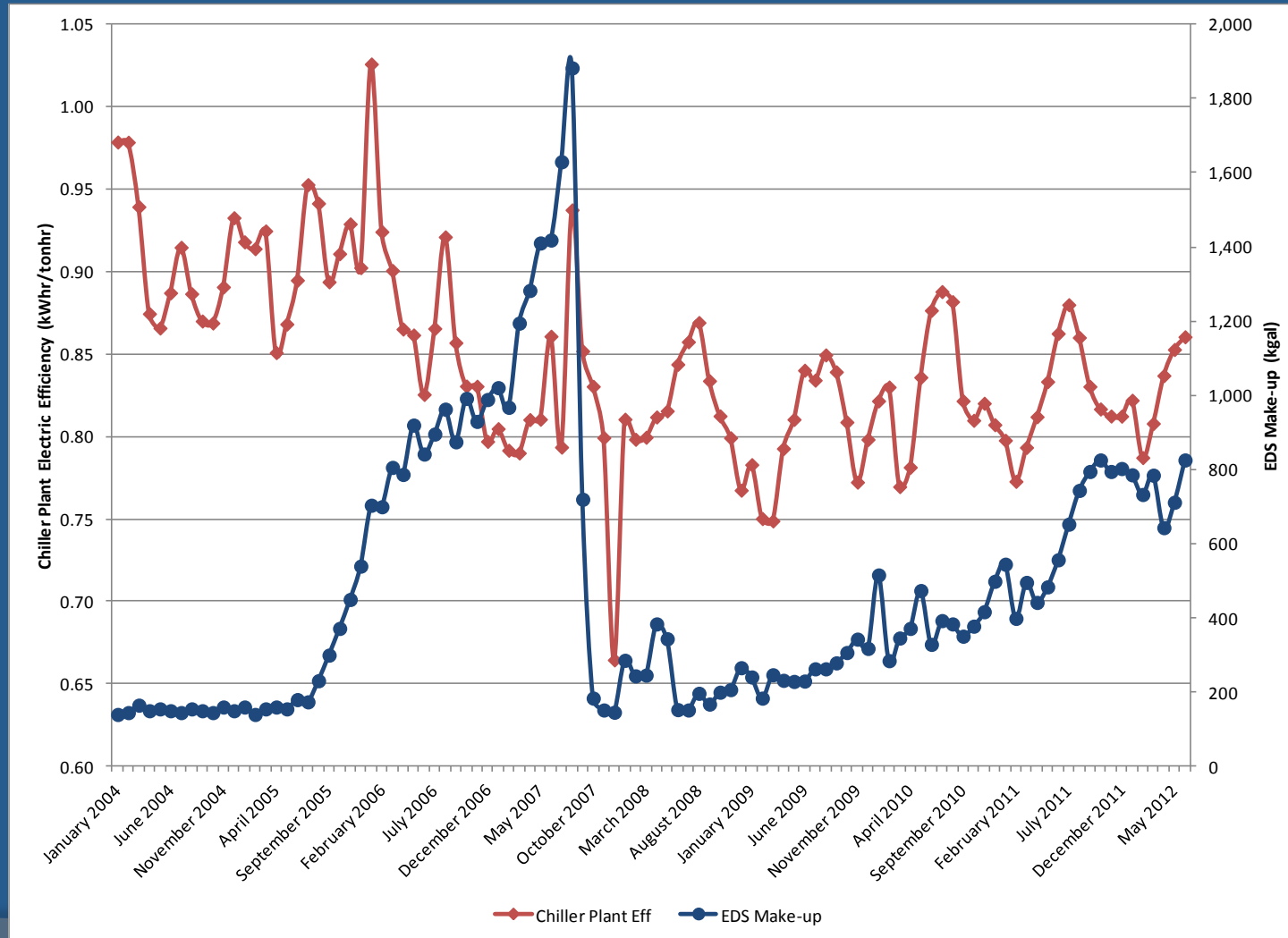
## Historic Steam Plant Efficiency and Condensate Return



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## Historic Chiller Plant Efficiency and Water Usage



~9 miles  
of CHW  
pipe +  
customer  
piping



# *Water Treatment*

## ❖ Steam and Condensate

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

## ❖ Condensing Water

- ❖ Conductivity
- ❖ Biologicals

## ❖ Chilled Water

- ❖ Hardness
- ❖ Corrosion
- ❖ Biologicals





# *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 (MH B2 being sealed) ●
  - ✓ Corrosion of Structural Metal Components ●
- ✓ Safety Items (DES 080 under construction – additional items added to scope) ●



## **5. Natural Gas Purchasing**

- ❖ Natural Gas Purchasing Review
  - ❖ Table 5: FY12 Gas Spending & Budget Comparison
  - ❖ Figure 5A: Actual and Projected Gas Cost Comparison for FY12
  - ❖ Figure 5B: Historic Hedging



**Table 5: FY12 Gas Spending & Budget Comparison**

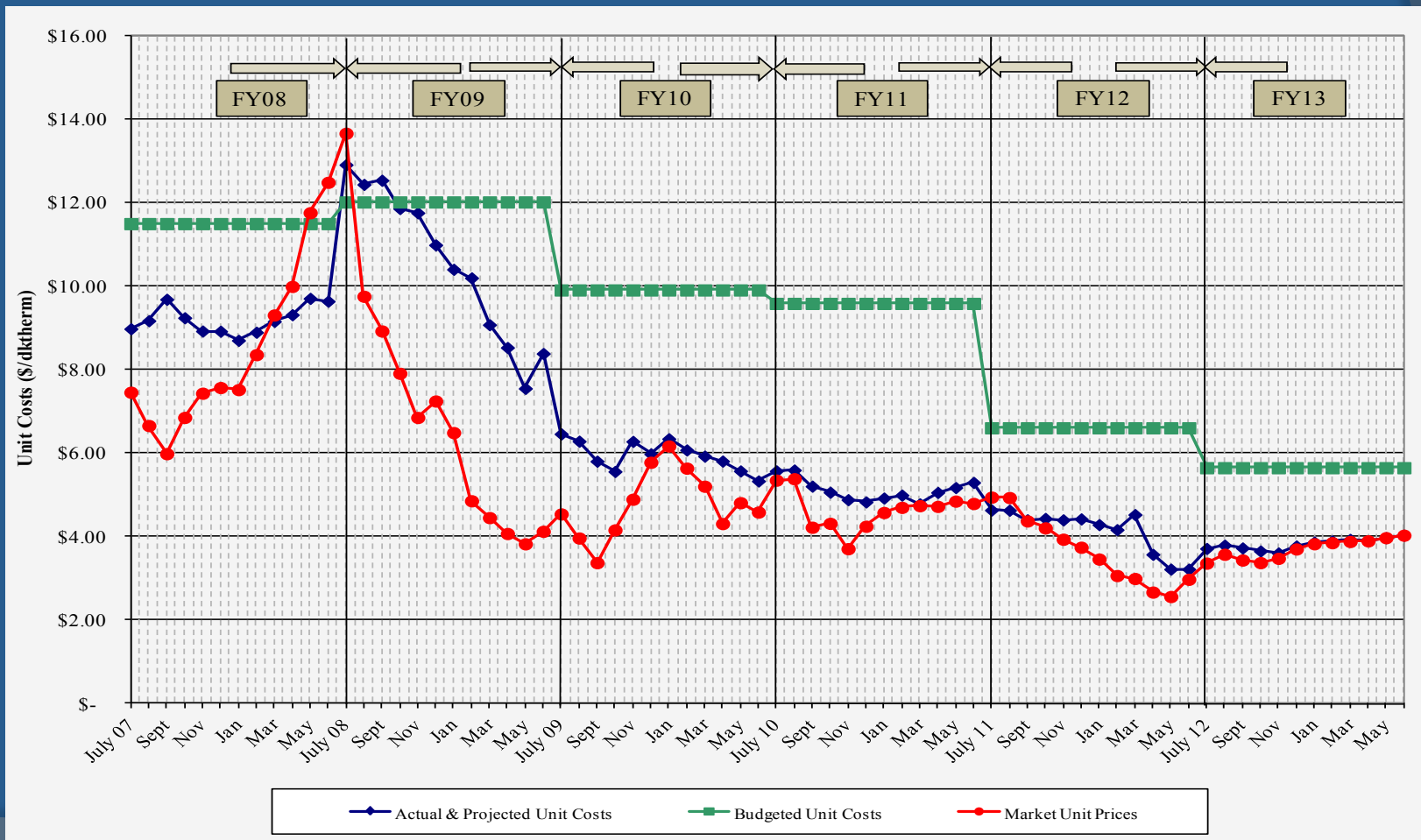
	Actual FY12 To date (June 30)	Budget FY12	Percent Difference
Steam Sendout (Mlbs)	309,290	404,961	23.6%
Fuel Use (Dth) (includes propane)	● 433,297	574,069	24.5%
Plant Eff (Dth/Mlb)	● 1.401	1.418	12.0%
Total Gas Cost (includes propane)	● \$2,013,894	\$3,796,892	47.0%
Unit Cost of Fuel (\$/ Dth)	● \$4.678	\$6.614	29.3%

Excludes consultant fees and FEA

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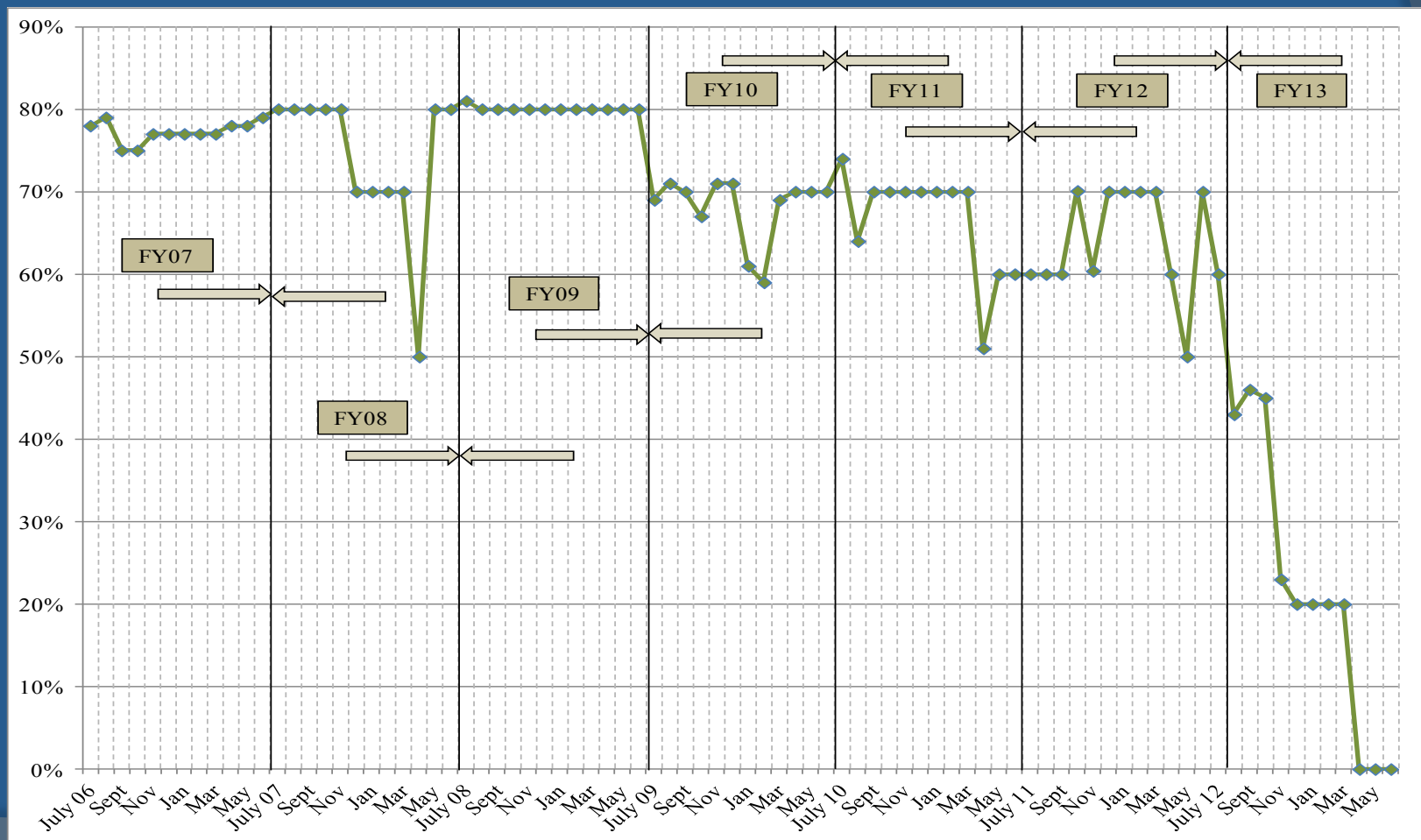
## Figure 5A. Actual and Projected Gas Cost Comparison History



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Figure 5B. Historic Hedging



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# 6. FY12 Costs to Date

Item	FY11 Actual	FY12 Budget w/MCCC	FY12 Actual	Percent of FY12 Budget
FOC's	\$ 4,129,302	\$ 4,303,100	\$ 4,247,401	98.71%
Pass Throughs				
Non-Energy	\$ 859,795	\$ 1,031,400	\$ 599,403	58.12%
Water/Sewer	\$ 396,869	\$ 597,700	\$ 444,969	74.45%
Natural Gas	\$ 2,496,141	\$ 3,939,300	\$ 2,047,692	51.98%
Electricity	\$ 4,310,054	\$ 5,192,900	\$ 4,766,662	91.79%
Debt Service	\$ 5,042,150	\$ 5,703,700	\$ 4,948,831	86.77%
<b>Total Expenses</b>	<b>\$ 17,234,310</b>	<b>\$ 20,768,100</b>	<b>\$ 17,054,958</b>	<b>82.12%</b>
<b>Total Revenues</b>	<b>\$ 15,395,261</b>	<b>\$ 18,405,100</b>	<b>\$ 15,741,994</b>	<b>85.53%</b>
<b>Metro Funding Amount</b>	<b>\$ 1,839,049</b>	<b>\$ 2,363,000</b>	<b>\$ 1,312,963</b>	<b>55.56%</b>

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### 7. FY13 Submitted Budget

Item	FY12 Actual	FY12 Budget	FY13 Budget	Percent Change (Budgets)
FOC's	\$ 4,247,401	\$ 4,303,100	\$ 4,391,700	2.06%
Pass Throughs				
Non-Energy	\$ 599,403	\$ 1,031,400	\$ 1,097,800	6.44%
Water/Sewer	\$ 444,969	\$ 597,700	\$ 616,400	3.13%
Natural Gas	\$ 2,047,692	\$ 3,939,300	\$ 3,184,800	-19.15%
Electricity	\$ 4,766,662	\$ 5,192,900	\$ 5,673,300	9.25%
Debt Service	\$ 4,948,831	\$ 5,021,600	\$ 5,165,830	2.87%
<b>Total Expenses</b>	<b>\$ 17,054,958</b>	<b>\$ 20,086,000</b>	<b>\$ 20,129,830</b>	<b>0.22%</b>
<b>Total Revenues</b>	<b>\$ 15,741,994</b>	<b>\$ 17,723,000</b>	<b>\$ 17,861,500</b>	<b>0.78%</b>
<b>Metro Funding Amount</b>	<b>\$ 1,312,963</b>	<b>\$ 2,363,000</b>	<b>\$ 2,268,330</b>	<b>-4.01%</b>





## 8. Capital Expenditure Update

	<b>Spent to End of FY11</b>	<b>FY12 Spending</b>	<b>Balance to Date (06/30/12)</b>
R&I Projects	\$1,313,613	\$229,395	\$428,758
2005B Bond	\$8,139,071	\$47,429	\$0
2010 Bond	\$1,461,651	\$414,572	\$533,778
MCCC Fund	\$3,856,349	\$1,407,673	\$3,235,978
<b>Total</b>	<b>\$14,770,684</b>	<b>\$2,099,069</b>	<b>\$4,198,514</b>



# Capital Projects Review

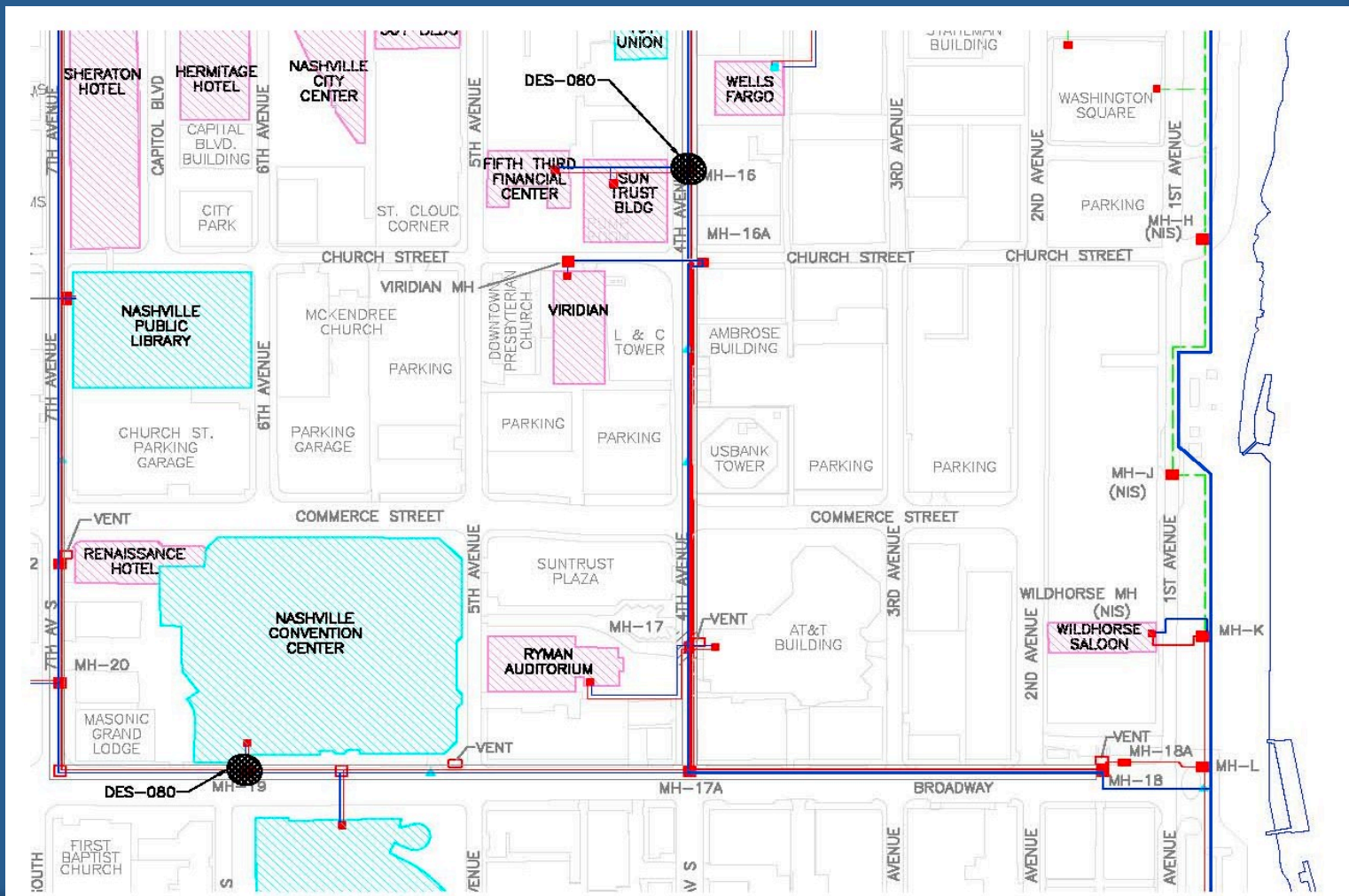
## Active Capital Projects

- DES 048: Tunnel Lighting Replacement Phase III – in close-out
- DES 061: MH & Tunnel Steel Corrosion Repair & Prevention – in close-out
- DES 076: MH-S4A State Manhole Rebuild – in closeout; under budget
- DES 080: Misc. MH & Tunnel Safety Repairs – in construction; additional items added to scope
- DES 087: Exploratory Dig @ MH D/CJC (Chilled Water Leak) – in closeout
- DES 090: MH/Tunnel Insulation – tunnel insulation in closeout (ongoing)
- DES 091: Thermal Storage System – in design/evaluation phase
- DES 093: Manhole 6 Repair and Structural Rehabilitation – in closeout
- DES 094: Molloy Street Exploratory Dig – Phase II will be under construction in the First Quarter FY13
- DES 095: MH B2 Water Infiltration Remediation – in construction

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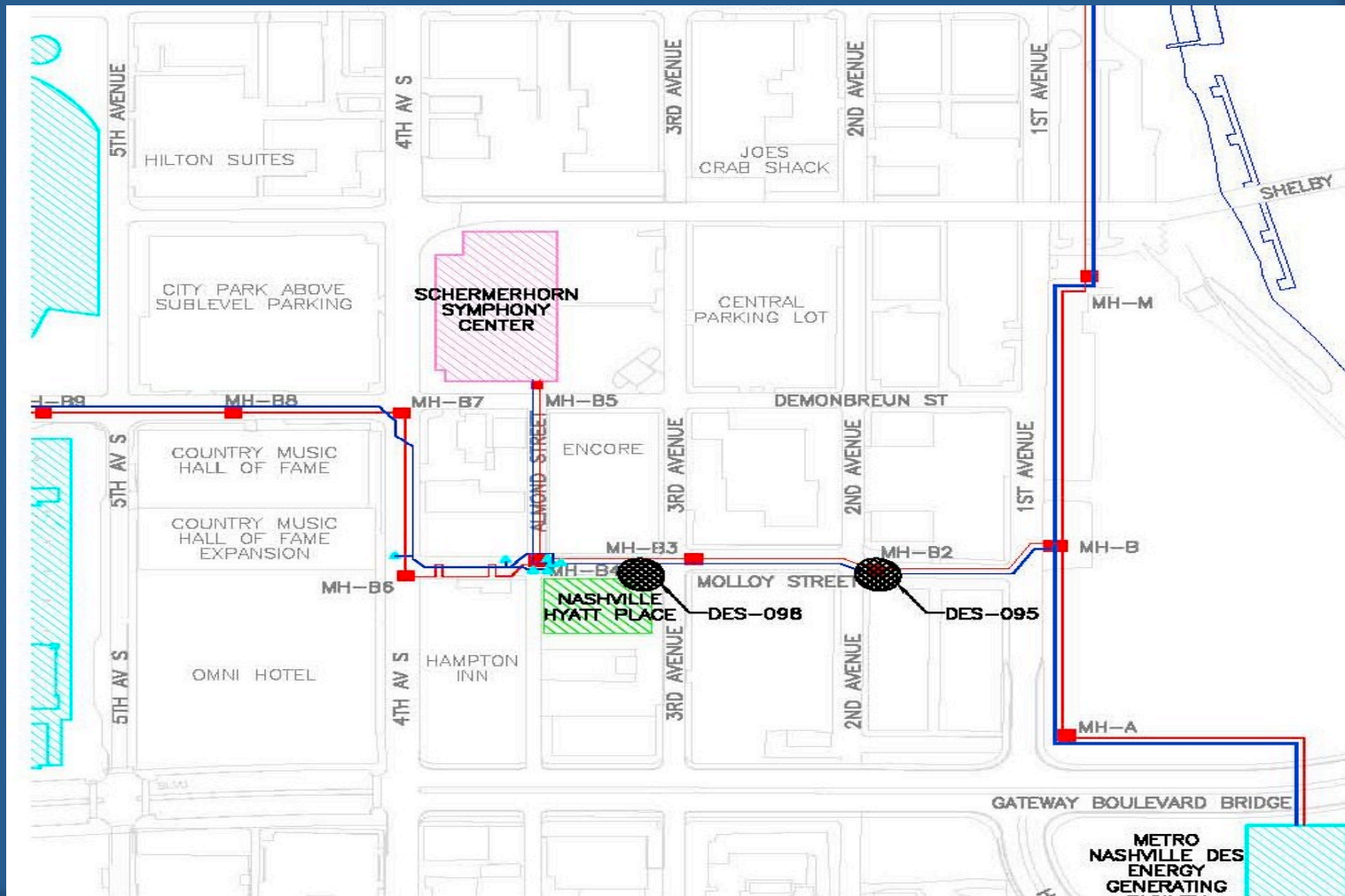
## Active Capital Projects



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## Active Capital Projects





# *Capital Projects Review*

## Capital Projects in Close-out

- DES 048: Tunnel Lighting
- DES 076: Manhole S4A Repair
- DES 077: Expansion of Service to the Music City Convention Center – complete; temporary CHW connection April 25, temporary STM connection July 24; meter finalization; pumps; cooling tower test #2 (DES 097)
- DES 087: Exploratory Dig @ MH D/CJC (chilled water leak)
- DES 090: Manhole & Tunnel Insulation – tunnel insulation project in closeout
- DES 093: Manhole 6 Repair and Structural Rehabilitation



## ***9. Other Board Member Items***

- ❖ Hedging Practices Elsewhere
- ❖ Simple ROI for Condensate Line Replacement  
(Following Slides)



# Condensate Replacement ROI

## Criteria

- Amount of condensate to be recovered – includes any condensate recovered from dedicated distribution system drip-legs going to customer(s)
- Cost of Steam delivered to customer(s), \$/Mlb including: Fuel (Natural Gas), Electricity, Water and Chemicals
- Convert this to \$/mmBTU in order to consider savings based upon heat recovered in addition to water and chemicals
- Capital Cost of Replacement Condensate Piping
- Other important considerations:
  - Cost of Tempering Station if condensate is not returned
    - Capital Cost of Tempering Station(s) @ Customer(s)
    - Capital Cost of dedicated , metered City Water service to customer(s)
    - Cost of City Water Usage for tempering operation



# Condensate Replacement ROI

## Example:

- ❖ Value of Condensate @ 190°F with 90% Recovered (from 0%) = \$2.46/Mlb

Gas @ \$4.50/mmBTU	= \$8.73/Mlb; 11.52% recovery	= \$1.006/Mlb
Electricity (2013 Budget)	= \$0.31/Mlb; 0% recovery	= \$0/Mlb
Water (2013 Budget)	= \$0.23/Mlb; 100% recovery	= \$0.23/Mlb
<u>Chemicals (Historic)</u>	<u>= \$0.12/Mlb; 100% recovery</u>	<u>= \$0.12/Mlb</u>
Total	= \$9.39/Mlb	= \$1.36/Mlb
Customer Water Savings for Tempering		= \$1.10/Mlb
- ❖ Average customer uses 7,400 Mlb/yr at 90% CR = 6,600 Mlb/yr
- ❖ For at 10 year simple return, capital expenditure of \$164,000 or ± 110 trench ft.
- ❖ An increase in natural gas cost by \$1/mmBTU results in an increase in capital of approximately \$15,000 or 10 trench ft.





# *New Board Member Items*

## *10. Adjourn*

- *Advisory Board Meeting Schedule*
- FY13 – 1<sup>st</sup> Quarter Meeting – November 15, 2012
- FY13 – 2<sup>nd</sup> Quarter Meeting – February 21, 2013
- FY13 – 3<sup>rd</sup> Quarter Meeting – May 16, 2013
- FY13 – 4<sup>th</sup> Quarter Meeting – August 25, 2013