



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

*DES Advisory Board Meeting*  
*Second Quarter FY18*  
*February 15, 2018*

# *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. FY18 Costs to Date
7. DES Options Review Update
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*

- ❖ Table 3: Customer Cost Comparison
- ❖ Figure 3A: Historic Chilled Water EDS Make-up
- ❖ Figure 3B: Daily Chilled Water EDS Make-up

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

		Steam - Rolling 12 Month			Chilled Water - Rolling 12 Month		
		Jan 2016 - Dec 2016	Jan 2017 - Dec 2017	% Diff.	Jan 2016 - Dec 2016	Jan 2017 - Dec 2017	% Diff.
<b>Private</b>	Cost	\$ 1,359,219	\$ 1,405,097	3.38%	\$ 3,451,158	\$ 3,647,132	5.68%
	Usage (lbs or tonhrs)	92,692,969	88,494,451	-4.53%	18,709,263	18,581,319	-0.68%
<b>State</b>	Cost	\$ 1,656,021	\$ 1,714,585	3.54%	\$ 3,247,738	\$ 3,300,469	1.62%
	Usage (lbs or tonhrs)	96,254,500	95,648,808	-0.63%	14,153,213	13,328,752	-5.83%
<b>Metro</b>	Cost	\$ 2,112,613	\$ 2,001,838	-5.24%	\$ 5,429,446	\$ 5,205,898	-4.12%
	Usage (lbs or tonhrs)	161,579,279	148,855,220	-7.87%	30,067,129	28,071,489	-6.64%
<b>Aggregate</b>	Cost	\$ 5,127,853	\$ 5,121,519	-0.12%	\$ 12,128,343	\$ 12,153,499	0.21%
	Usage (lbs or tonhrs)	350,526,748	332,998,479	-5.00%	62,929,605	59,981,560	-4.68%
	Unit Cost	\$ 14.63	\$ 15.38	5.1%	\$ 0.193	\$ 0.203	5.13%

MFA not included in values shown

Figure 3A: Historic Chilled Water EDS Make-up

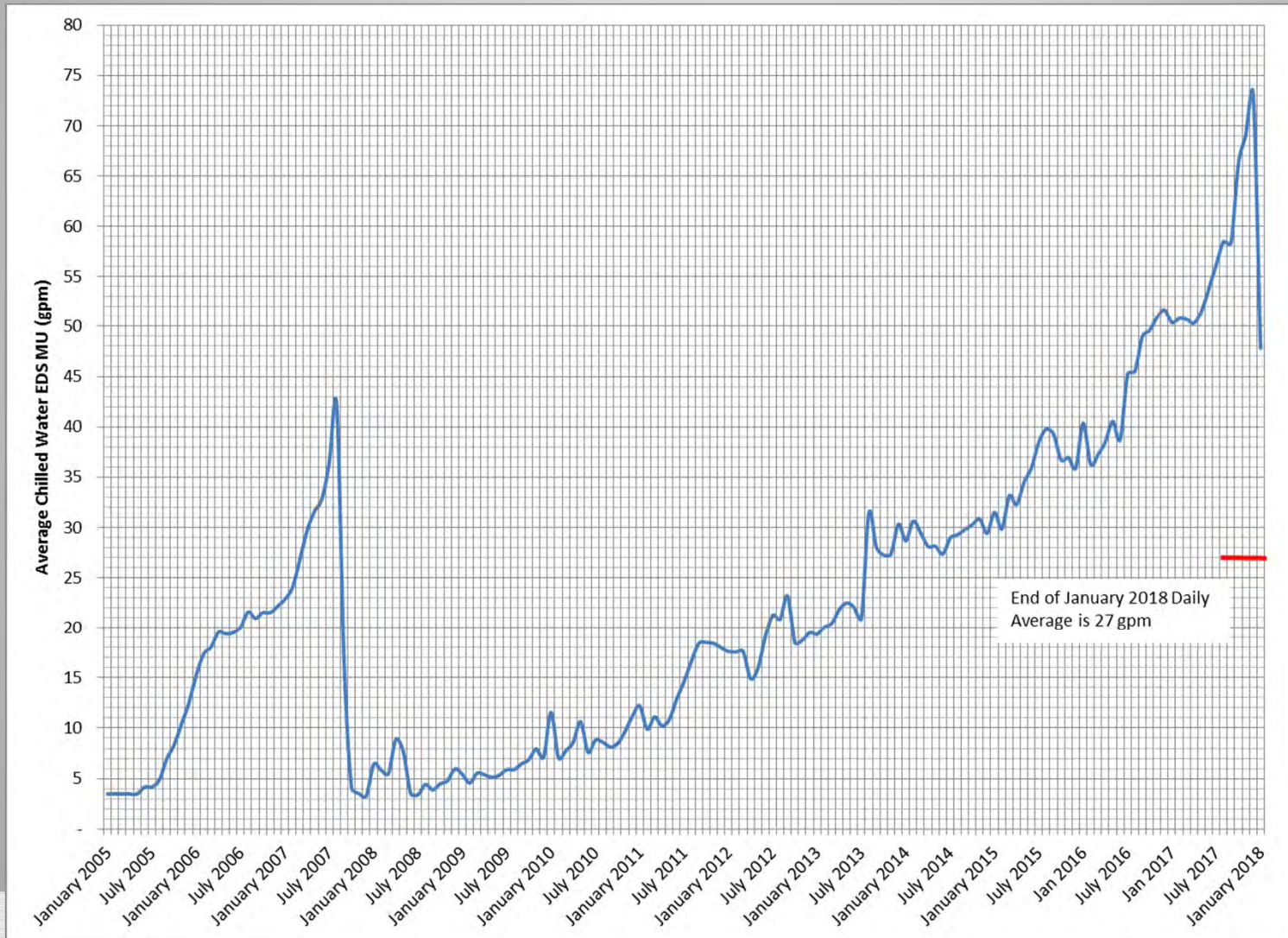
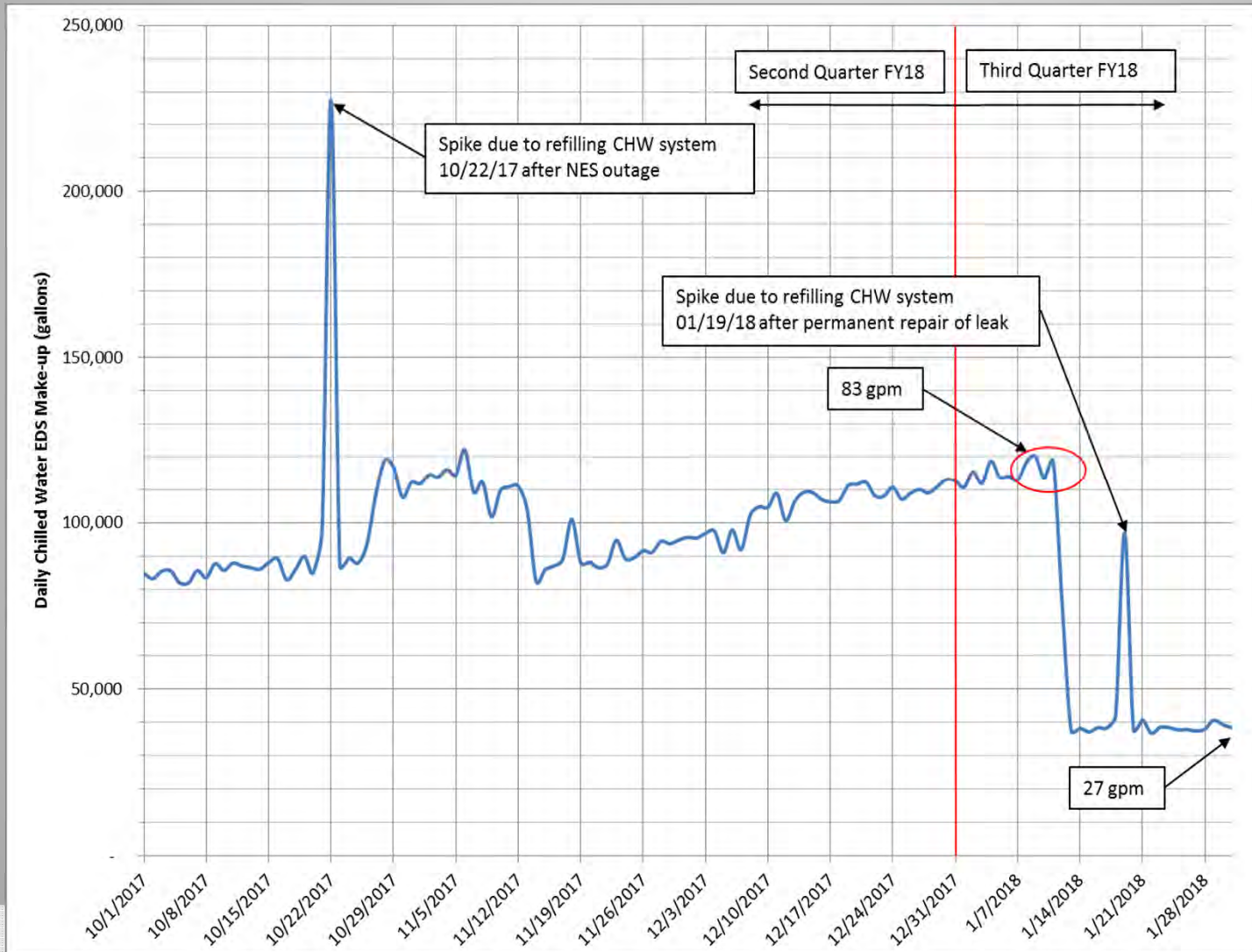





Figure 3B: Daily Chilled Water EDS Make-up



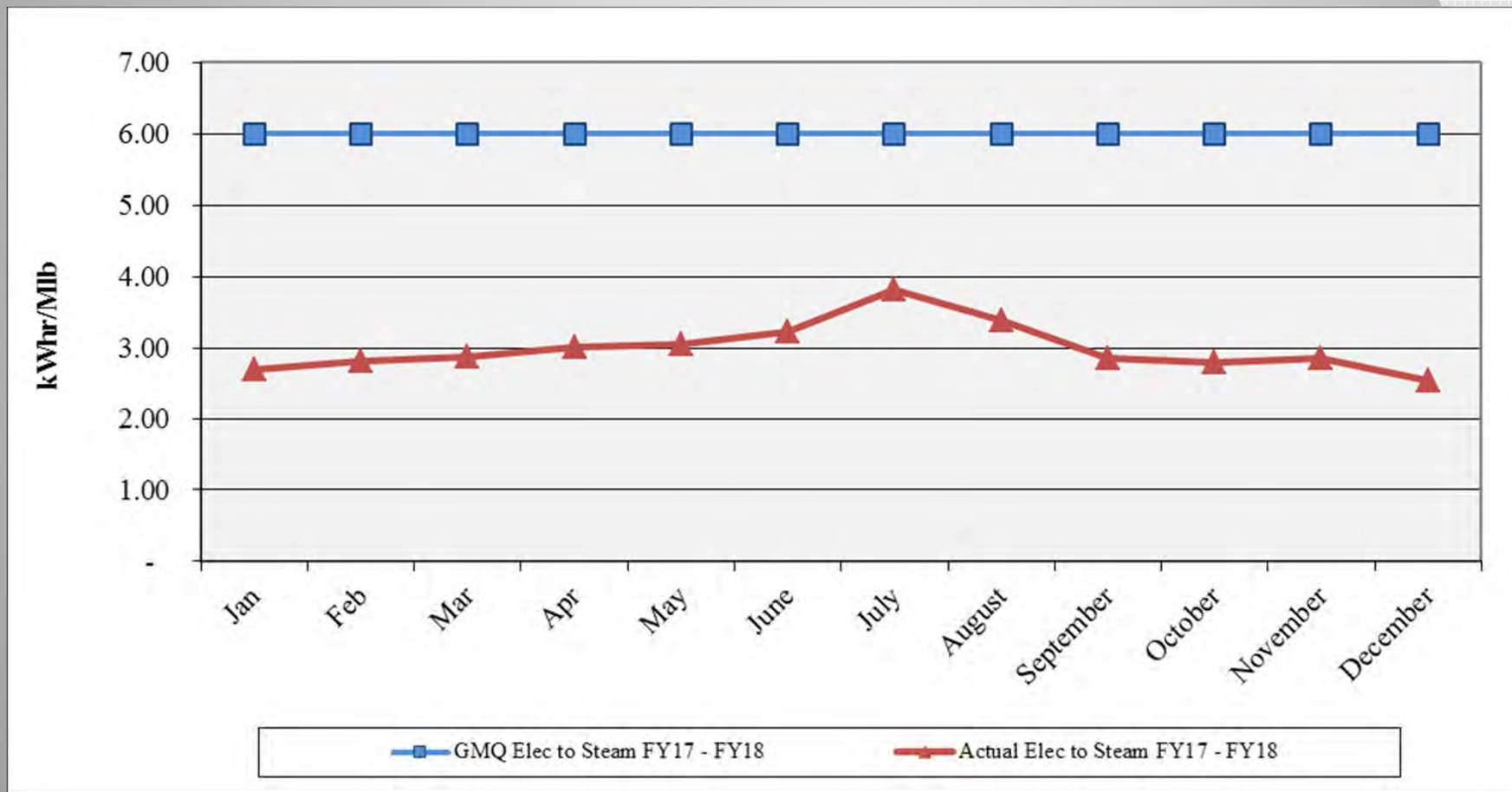
## *4. Review of DES Contractor Performance*

Contractor (CNE) is in compliance with their contractual obligations for FY18 to date.

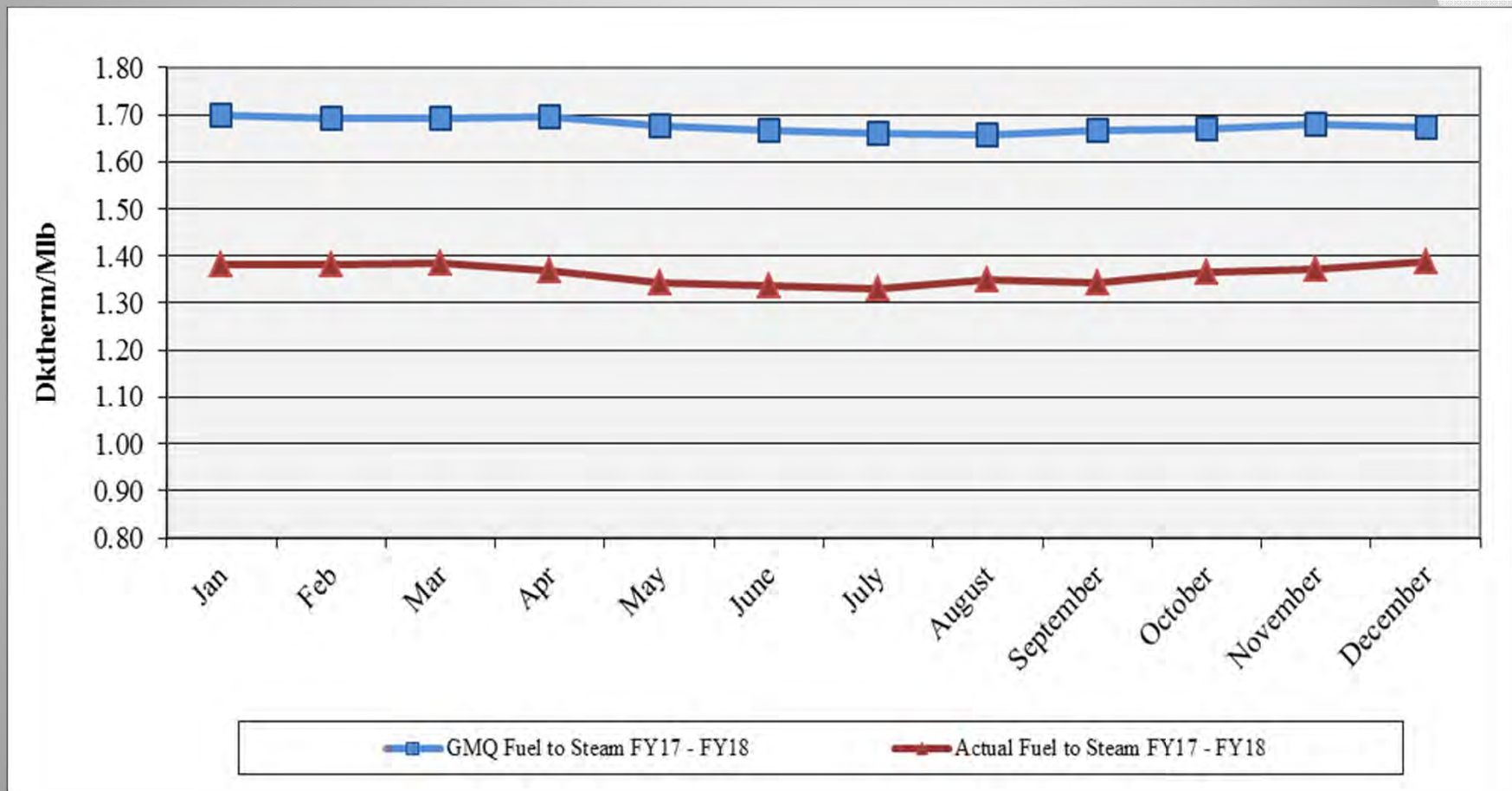
-  Excellent Performance – No Improvement Necessary
-  Satisfactory Performance – Some Improvement Could Be Made
-  Poor Performance – Much Improvement Necessary



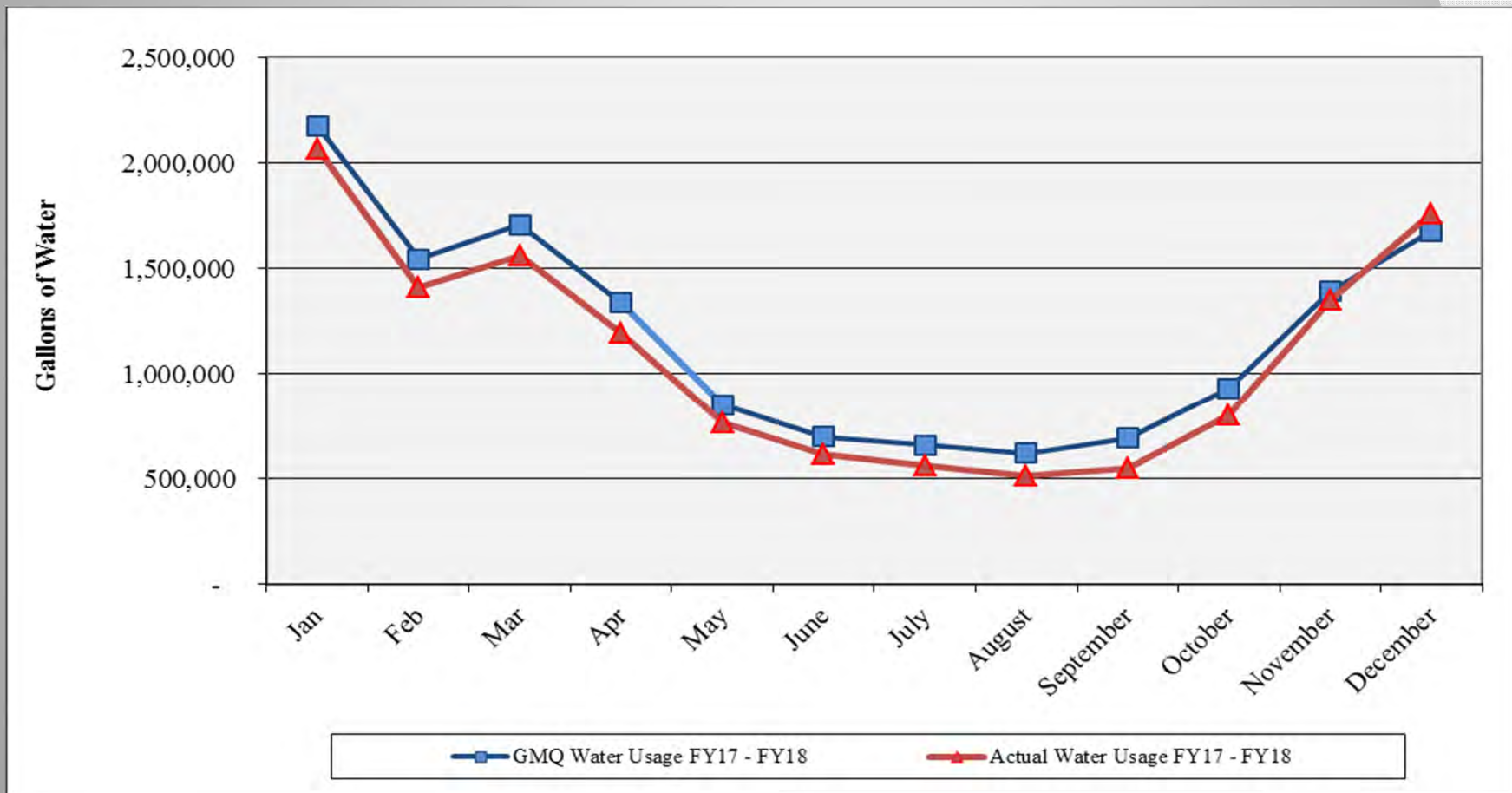
# Performance Measurement FY18: Steam Electric Conversion ●



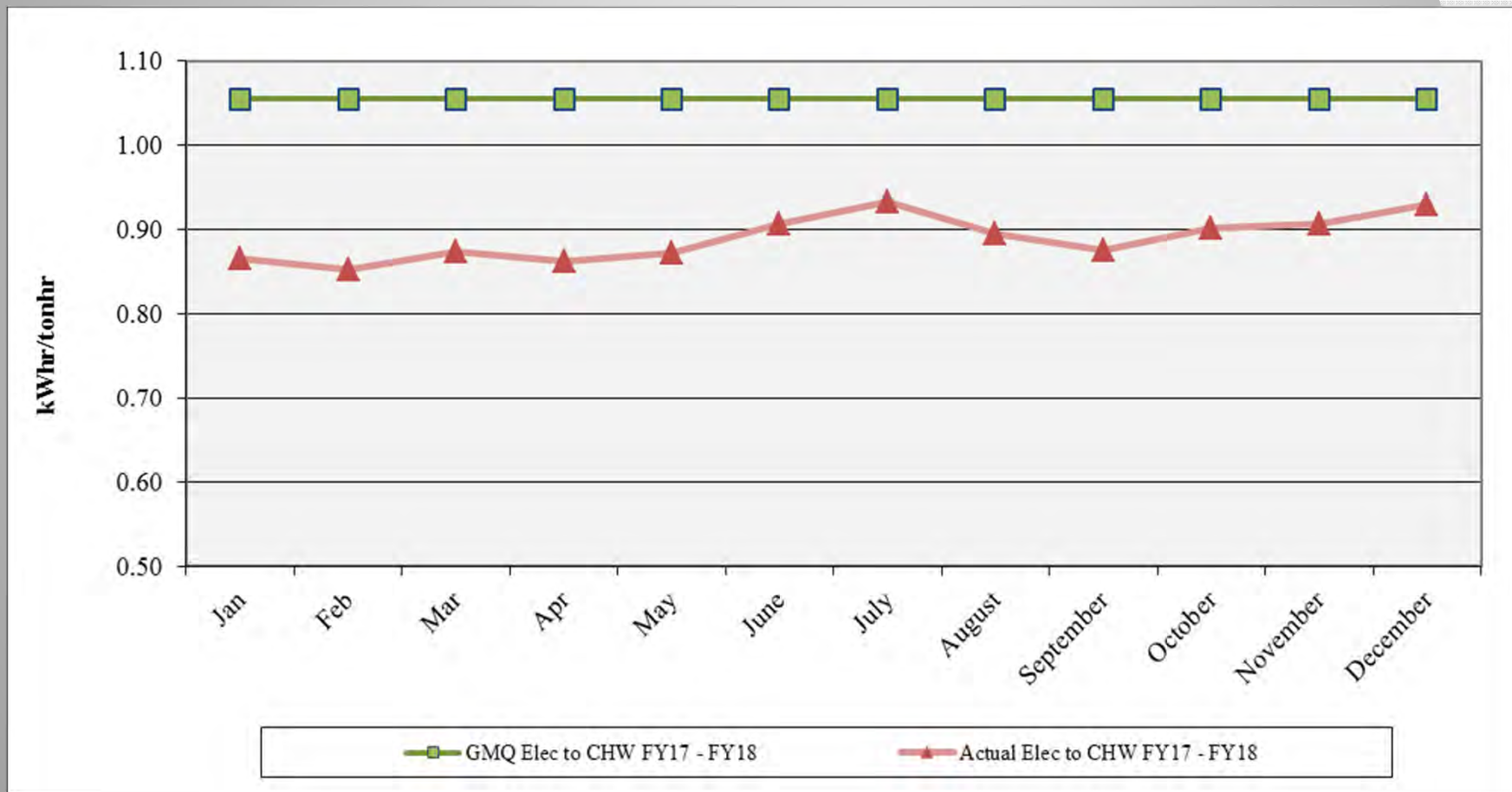
# Performance Measurement FY18: Steam Plant Efficiency



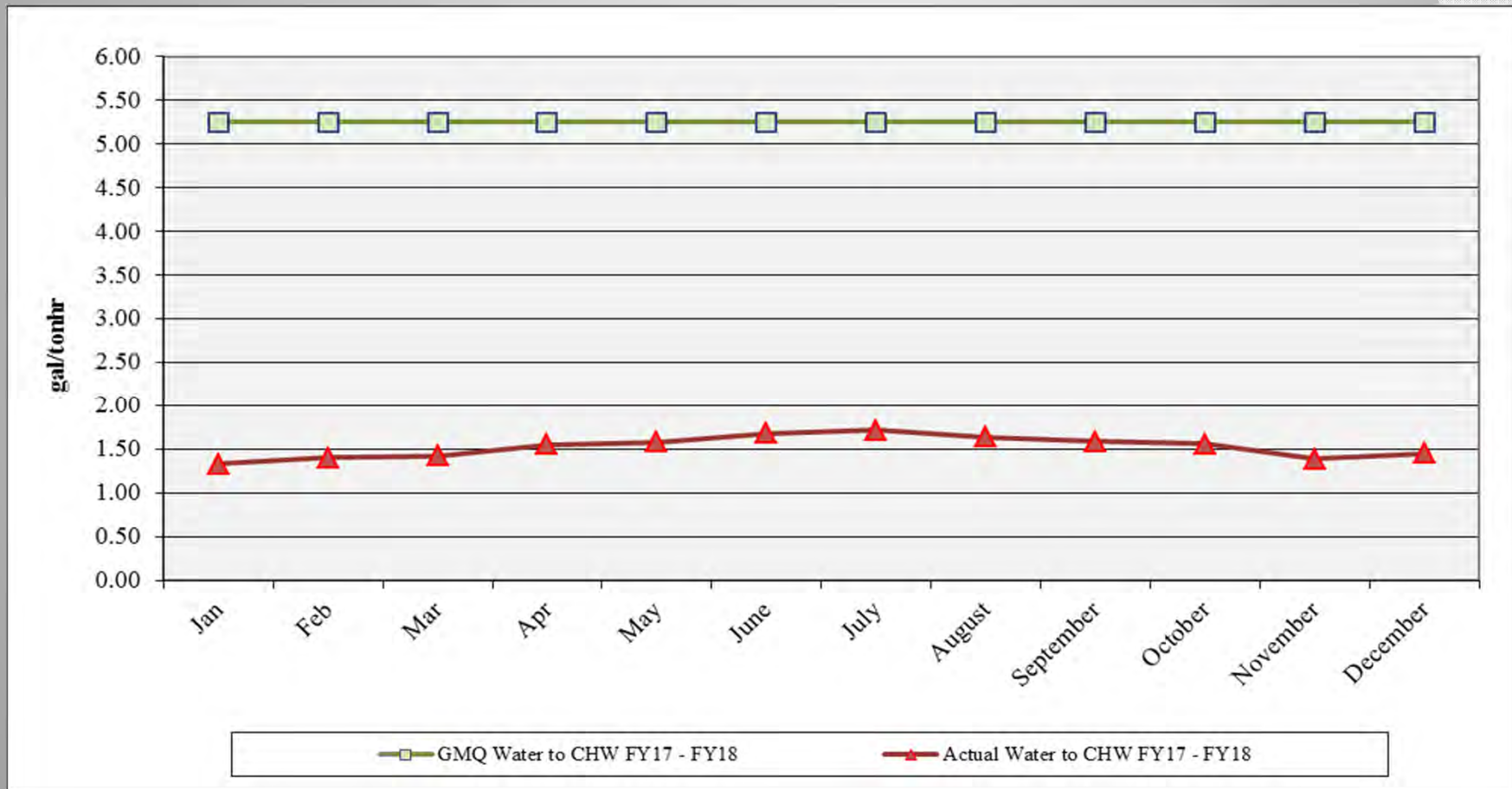
# Performance Measurement FY18: Steam Water Conversion ●



# Performance Measurement FY18: CHW Electric Conversion



# Performance Measurement FY18: CHW Water Conversion ●



# *Water Treatment*

- ❖ Steam and Condensate ●
  - ❖ Corrosion
  - ❖ Iron
  - ❖ Hardness
  - ❖ Chlorine/Sulfite
- ❖ Condensing Water ●
  - ❖ Conductivity
  - ❖ Biologicals
- ❖ Chilled Water ●
  - ❖ Hardness
  - ❖ Corrosion
  - ❖ EGF and Customer Biologicals Good
  - ❖ Deposits – CNE Added Dispersant Q1FY18



# *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*

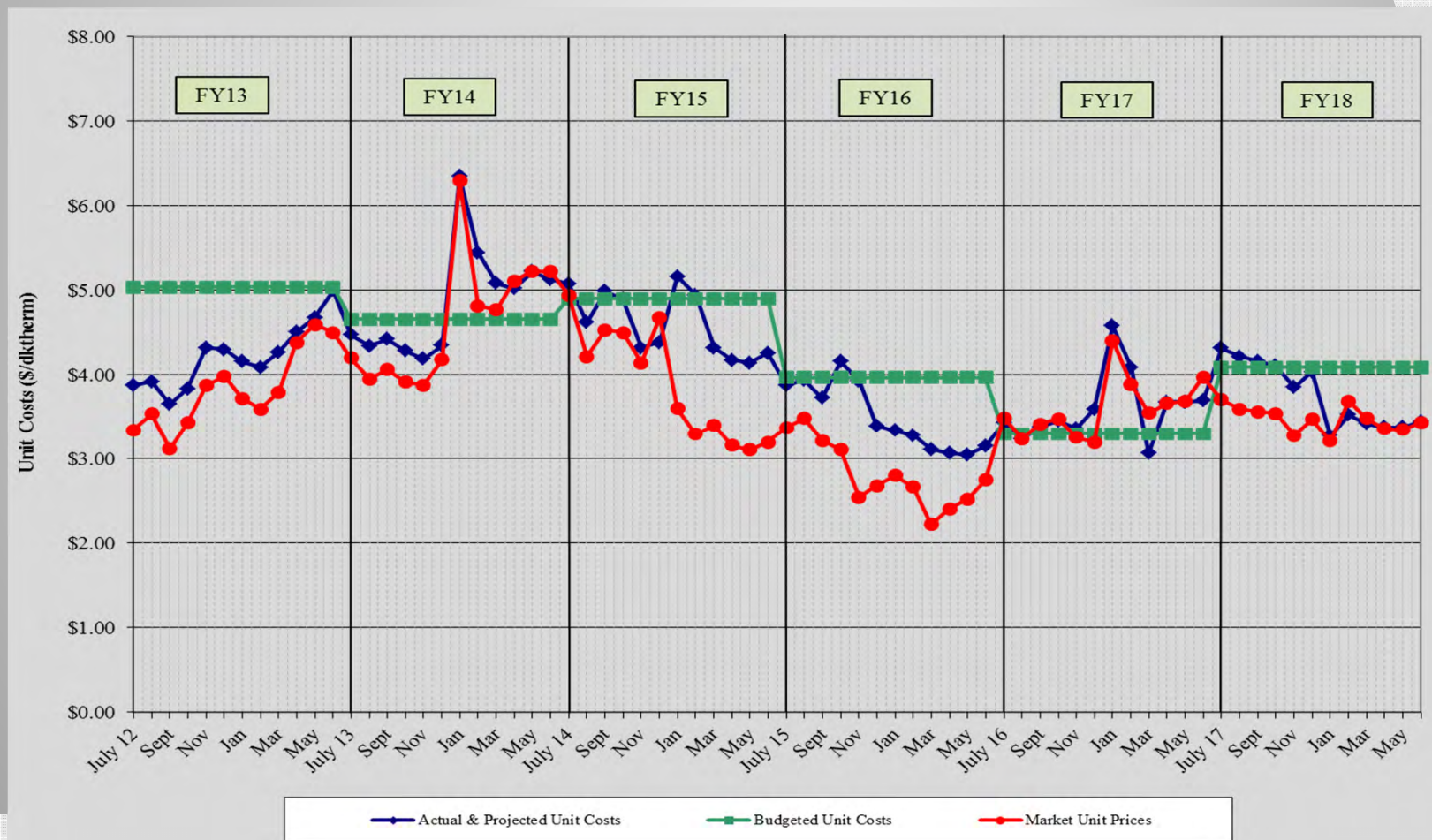
- ❖ Natural Gas Purchasing Review
  - ❖ Table 5: FY18 Gas Spending & Budget Comparison
  - ❖ Figure 5: Actual and Projected Gas Cost Comparison

## Table 5: FY18 Gas Spending & Budget Comparison

		Actual FY18 To date (Dec 31)	Budget FY18	Percent Difference
Steam Sendout (Mlbs)		190,794	175,038	9.0%
Fuel Use (Dth) (includes propane)	●	260,527	255,206	2.1%
Plant Eff (Dth/Mlb)	●	1.366	1.458	-6.3%
Total Gas Cost (includes propane)	●	\$916,264	\$995,815	-8.0%
Unit Cost of Fuel (\$/Dth)	●	\$3.517	\$3.902	-9.9%

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

# Figure 5. Actual and Projected Gas Cost Comparison History



## 6. FY18 Costs to Date

Item	FY17 Actual	FY18 Budget	FY18 Actual to date	Percent of FY18 Budget
FOC's	\$ 4,559,300	\$ 4,695,900	\$ 2,332,100	49.66%
Pass Throughs				
Non-Energy	\$ 1,375,000	\$ 1,114,300	\$ 593,900	53.30%
Water/Sewer	\$ 607,200	\$ 649,300	\$ 383,400	59.05%
Natural Gas Base	\$ 1,912,500	\$ 2,565,500	\$ 1,004,800	39.17%
Natural Gas Contingency	\$ -	\$ 787,200	\$ -	0.00%
Electricity	\$ 5,400,400	\$ 6,002,100	\$ 2,967,100	49.43%
ORF Deposit	\$ -	\$ -	\$ -	
Debt Service	\$ 5,525,000	\$ 5,473,800	\$ 3,359,300	61.37%
<b>Total Expenses</b>	<b>\$ 19,379,400</b>	<b>\$ 21,288,100</b>	<b>\$ 10,640,600</b>	<b>49.98%</b>
<b>Total Revenues</b>	<b>\$ 17,626,400</b>	<b>\$ 19,597,800</b>	<b>\$ 8,875,100</b>	<b>45.29%</b>
<b>Metro Funding Amount</b>	<b>\$ 1,753,000</b>	<b>\$ 1,690,300</b>	<b>\$ 845,150</b>	<b>50.00%</b>

## *7. DES Options Review*

### DES-139

- FVB retained by Metro to review the options for the DES moving into the future.
- Expecting Draft Report February 2018

## 8. Capital Expenditure Update

	<b>Spent to End of FY17</b>	<b>FY18 Spending</b>	<b>Balance to Date (12/31/17)</b>
R&I Projects	\$3,155,808	\$59,620	\$127,232
49109-2010 Bond	\$2,491,290	\$92,042	\$22,583
49107-Customer Connection Fund	\$7,387,802	\$285,318	\$835,880
Total	\$13,034,900	\$436,980	\$985,695
49116-DES CHP (on hold)	\$168,706	\$0	\$25,831,294

# *Capital Projects Review*

## Active Capital Projects

- DES 111: EGF Combined Heat and Power – On hold
- DES 124: CJC Redevelopment – Bldg under construction; AA Birch Tunnel repairs needed – postponed until building roof is constructed
- DES 124.4: CJC Reconnection – Reconnection nearing completion
- DES 130: Manhole B3 Repair – Construction completed; pursuit of reimbursement from contractor responsible for damage handed over to City legal department
- DES 133: 5<sup>th</sup> and Broadway Development – Draft contract issued to OM for review
- DES 133.1: Site blasting continuing through February 2018; DES installed seismographs to better monitor affects of blasting; some fallen rock still being observed
- DES 133.2: Stand-by Equip (rental chillers and boiler) – On-site at Bridgestone Arena since November
- DES 133.3: Tunnel Reinforcement – Reinforcement of sections of tunnel; completed in December

# *Capital Projects Review*

## Active Capital Projects - continued

- DES 135: CHW Leak at 5<sup>th</sup> Ave and Union – Discovered chilled water near 3<sup>rd</sup> & Charlotte in an AT&T vault; conducted exploratory excavation but did not find leak; after additional investigation conducted second excavation near same location and discovered 50+ gpm leak
- DES 138: Manhole D Repairs – In close-out
- DES 139: DES Options Review – Draft report expected in February
- DES 141: EGF Security Cameras – Project completed
- DES 143: Manholes N1, N2 and S6 Insulation and Repair – In design
- DES 144: Manhole 6 Repair – Piping structural steel cleaning, painting and replacement; in design
- DES 145: Manholes 9, 11 and K Repairs – Work completed by Broadway Tunnel contractor to save mobilization costs



# *Capital Projects Review*

## Capital Projects in Close-out/Closed

- DES 134: 401 Union/Fairlane Hotel
- DES 138: Manhole D Repairs
- DES 140: Manhole N2 Fence
- DES 142: Bobby Hotel

# *FY19 Capital Budget Request*

<b>FY 2019 Capital Projects</b>				
<b>Item</b>	<b>Description</b>	<b>Justification</b>	<b>Estimated Cost</b>	<b>Comments</b>
1	EDS Repair & Replacement Projects	Safety & reliability	\$495,000	Infrastructure upgrades, safety grating, ladder cages, guardrails, etc. needed
2	General Tunnel Repairs and Improvements	Safety & reliability	\$935,000	Insulation replacement, structural repairs, corrosion prevention, etc.
3	Service Connections and Renovations	Safety & reliability	\$1,147,300	Service restoration, expansion, repairs and metering modifications
4	Service Connection Renovation for 5th+Broadway	Safety & reliability	\$440,000	Service restoration to 5th + Broadway connection
5	Water Treatment Improvements	System Improvement	\$275,000	Improves system water chemistry and chilled water system performance
	<b>TOTAL</b>		<b>\$3,292,300</b>	

## *10. Other Board Member Items*

## *11. Adjourn*

- *Advisory Board Meeting Schedule*
- FY18 – 3<sup>rd</sup> Quarter Meeting – May 17, 2018
- FY18 – 4<sup>th</sup> Quarter Meeting – August 16, 2018
- FY19 – 1<sup>st</sup> Quarter Meeting – November 15, 2018
- FY19 – 2<sup>nd</sup> Quarter Meeting – February 21, 2019