



Metro Nashville
DISTRICT ENERGY SYSTEM

DES Customer Meeting

Spring FY19

May 23, 2019



Agenda

1. Welcome!
2. Historical Customer Expenses
3. Historical Customer Consumption
4. Historical System Costs
5. Natural Gas and Propane Pricing
6. DES FY19 and FY20 Budgets
7. Chilled Water Leak
8. DES Projects
9. Questions and Answers
10. Adjourn

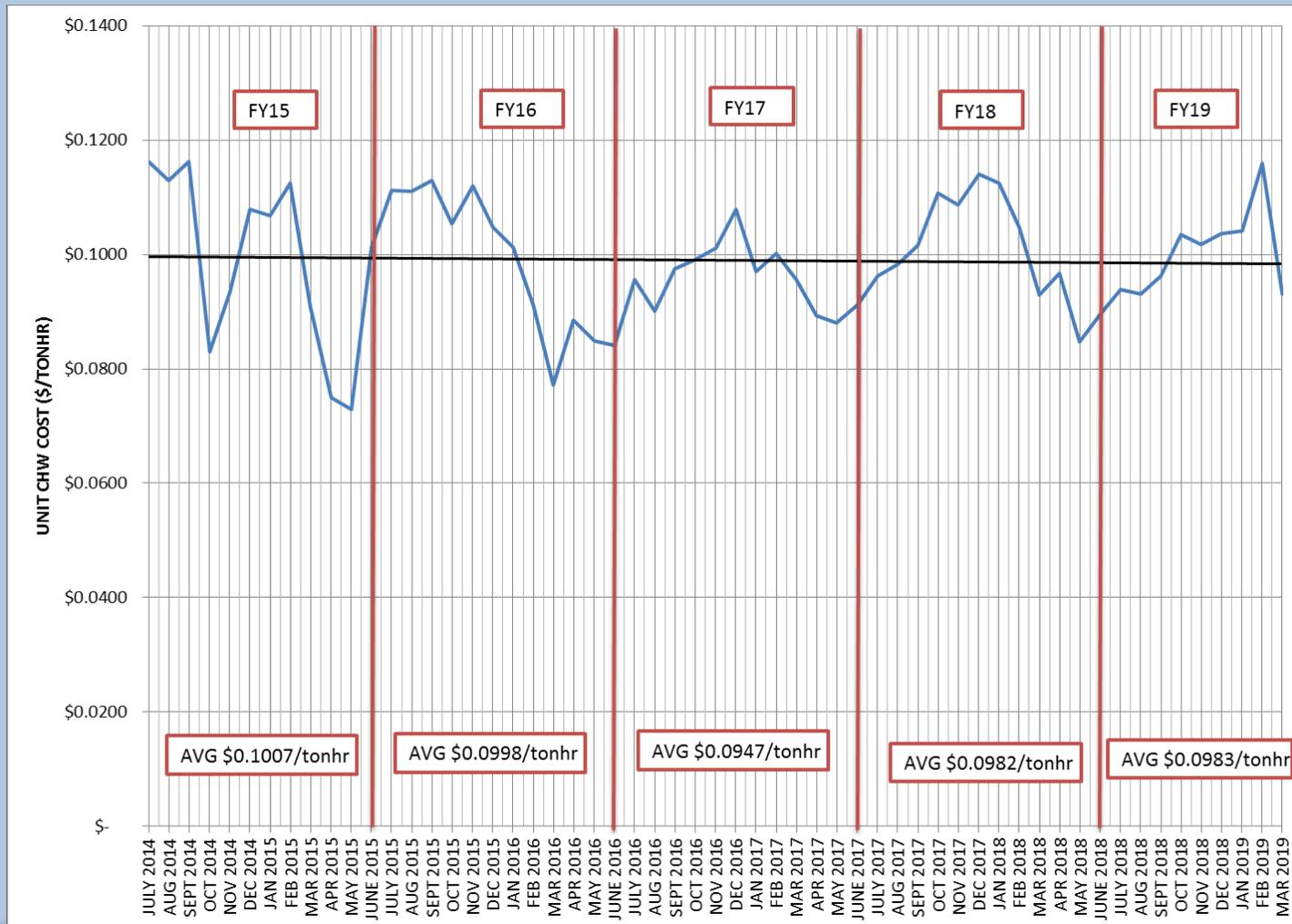
1. Welcome DES Customers!



2. Historical Customer Expenses

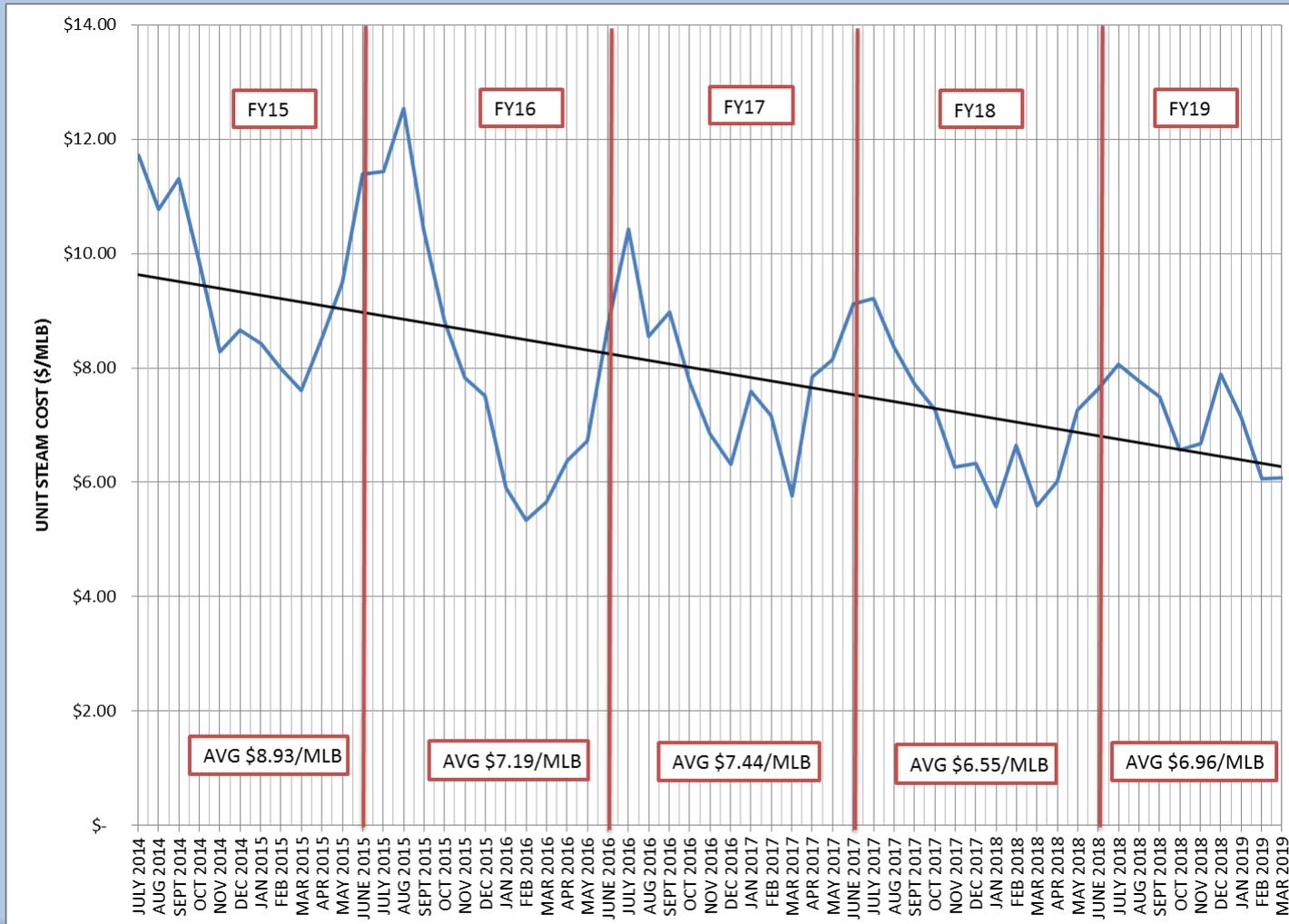
- ❖ Figure 2A. Historical Chilled Water Unit Costs of Pass-Throughs
- ❖ Figure 2B. Historical Steam Unit Costs of Pass-Throughs
- ❖ Table 2. Rolling Twelve Month Expenses

Figure 2A. Historical CHW Unit Costs of Pass-Throughs



Includes water, sewer, electricity, chemicals, EDS electricity and FEA

Figure 2B. Historical Steam Unit Costs of Pass-Throughs



Includes water, sewer, electricity, chemicals, EDS electricity, FEA, gas consultant, natural gas and propane

Table 2. Rolling Twelve Month Expenses

		Steam - Rolling 12 Month			Chilled Water - Rolling 12 Month		
		Apr 2017 - Mar 2018	Apr 2018 - Mar 2019	% Diff.	Apr 2017 - Mar 2018	Apr 2018 - Mar 2019	% Diff.
Private	Cost	\$ 1,441,097	\$ 1,535,640	6.56%	\$ 3,561,185	\$ 3,833,961	7.66%
	Usage (lbs or tonhrs)	97,795,089	102,772,921	5.09%	17,809,005	20,131,792	13.04%
State	Cost	\$ 1,753,367	\$ 1,902,823	8.52%	\$ 3,323,812	\$ 3,353,126	0.88%
	Usage (lbs or tonhrs)	108,058,112	123,187,618	14.00%	13,455,673	14,043,048	4.37%
Metro	Cost	\$ 1,913,849	\$ 1,977,403	3.32%	\$ 5,052,810	\$ 5,216,003	3.23%
	Usage (lbs or tonhrs)	151,010,797	160,265,362	6.13%	27,076,450	29,132,008	7.59%
Aggregate	Cost	\$ 5,108,313	\$ 5,415,865	6.02%	\$ 11,937,808	\$ 12,403,090	3.90%
	Usage (lbs or tonhrs)	356,863,998	386,225,901	8.23%	58,341,128	63,306,848	8.51%
	Unit Cost	\$ 14.31	\$ 14.02	-2.0%	\$ 0.205	\$ 0.196	-4.25%

Metro Funding not included in values shown

Customer Charges

- Customer charges include fixed and variable costs
- Fixed costs include Capacity Charges that are independent of monthly consumption
 - Contract Capacity Charge (based on contract demand)
 - Fixed Operating Charge (based on contract demand)
 - EDS Improvement Charge (based on contract demand)
 - Metro Incremental (based on contract demand)
 - Engineering (based on contract demand)
 - Insurance (based on contract demand)
 - EDS Maintenance Allocation (based on contract demand)
 - EDS Electricity (based on contract demand)
- Variable costs include utilities and chemicals that vary based on monthly consumption

Customer Charges

- Variable costs vary each month based on actual charges and allocable to customers based on their monthly metered consumption (tonhrs and lbs)
- Capacity Charges + Variable Costs = Total Invoice
- $$\text{Avg Unit Cost} = \frac{\text{Total Invoice}}{\text{Monthly Consumption}} \quad (\$/\text{tonhr or } \$/\text{Mlb})$$
- If consumption is low in a month, variable costs and total invoice will be low but Avg Unit Cost will be high.
- If consumption is high, variable costs and total invoice will be high but Avg Unit Cost will be low.

Customer Charges

Example for chilled water:

Capacity Charges = \$3,500 per month

Variable Costs = \$10,000 per month

Monthly Consumption = 70,000 tonhrs

Total Invoice = \$3,500 + \$10,000 = \$13,500

Avg Unit Cost = \$13,500 ÷ 70,000 = \$0.193 per tonhr

If consumption doubles (140,000 tonhrs), Variable Cost doubles (\$20,000) and Capacity Charges are same:

Total Invoice = \$3,500 + \$20,000 = \$23,500

Avg Unit Cost = \$23,500 ÷ 140,000 = \$0.168 per tonhr

If consumption halves (35,000 tonhrs), Variable Cost halves (\$5,000) and Capacity Charges are same:

Total Invoice = \$3,500 + \$5,000 = \$8,500

Avg Unit Cost = \$8,500 ÷ 35,000 = \$0.243 per tonhr

3. Historical Customer Consumption

- ❖ Figure 3A. Historical CHW Consumptions
- ❖ Figure 3B. Historical Steam Consumptions

Figure 3A. Historical CHW Consumptions

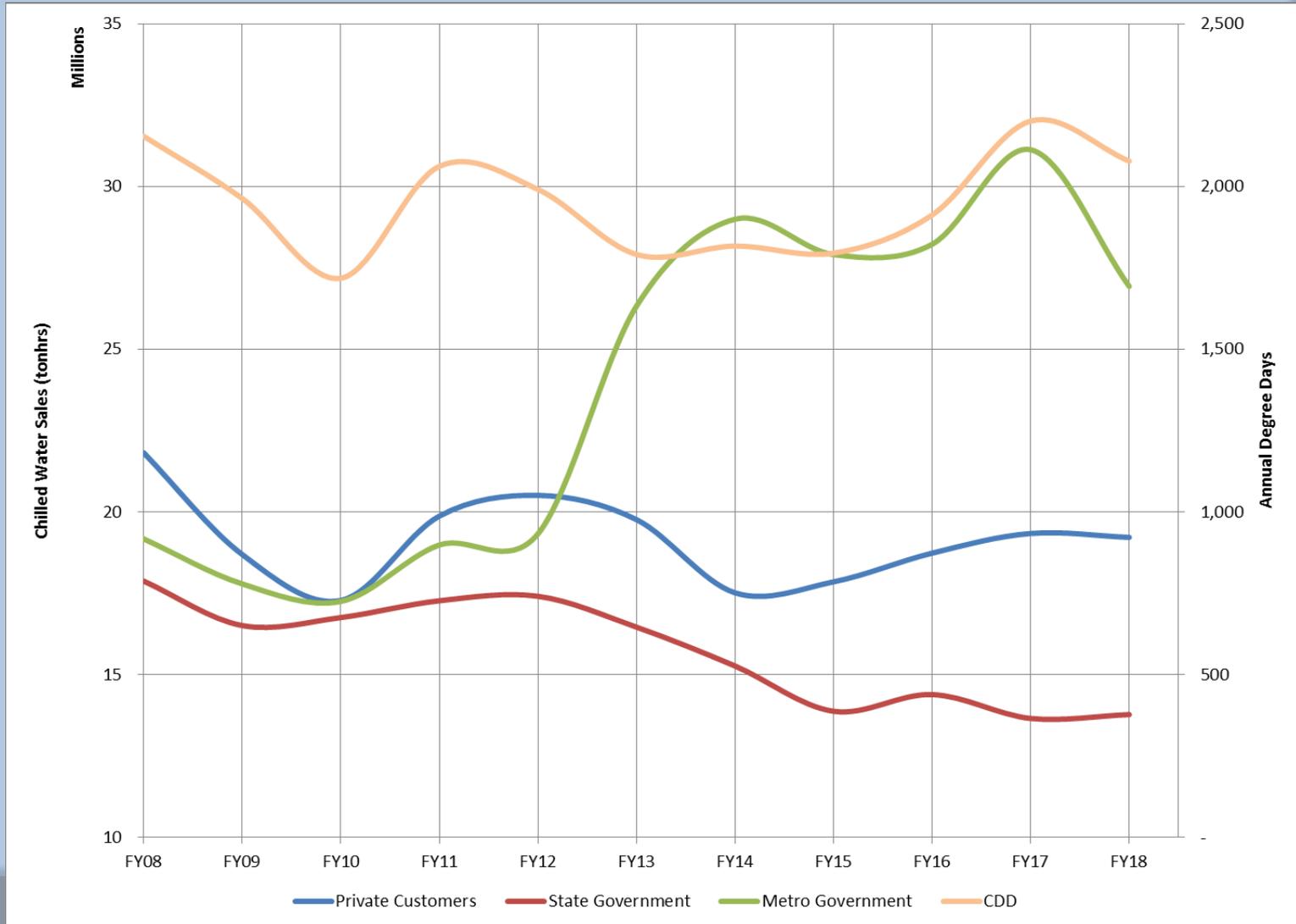
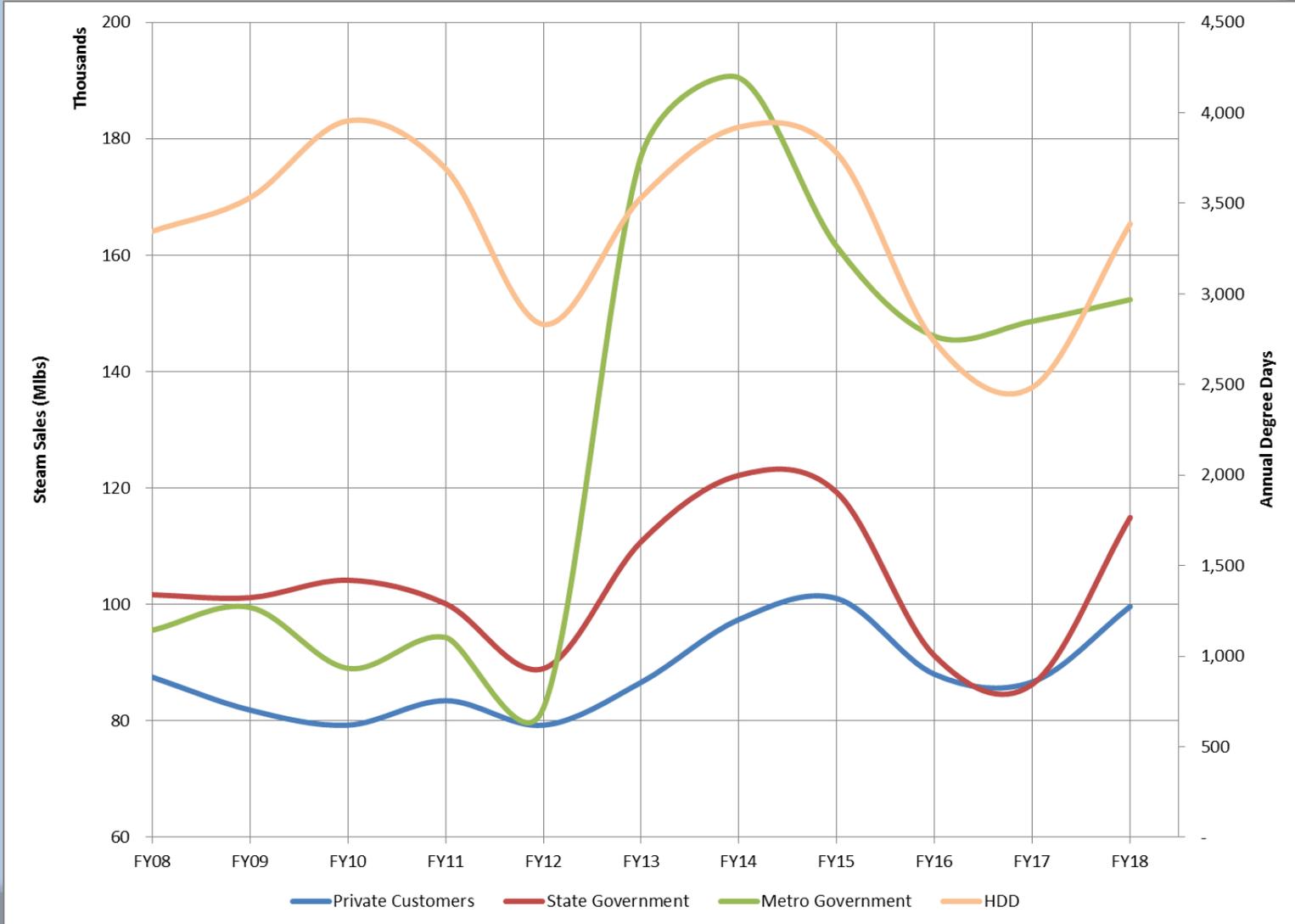


Figure 3B. Historical Steam Consumptions





4. Historical System Costs

- ❖ Figure 4A. Historical CHW Total Costs
- ❖ Figure 4B. Historical Steam Total Costs

Figure 4A. Historical CHW Total Costs

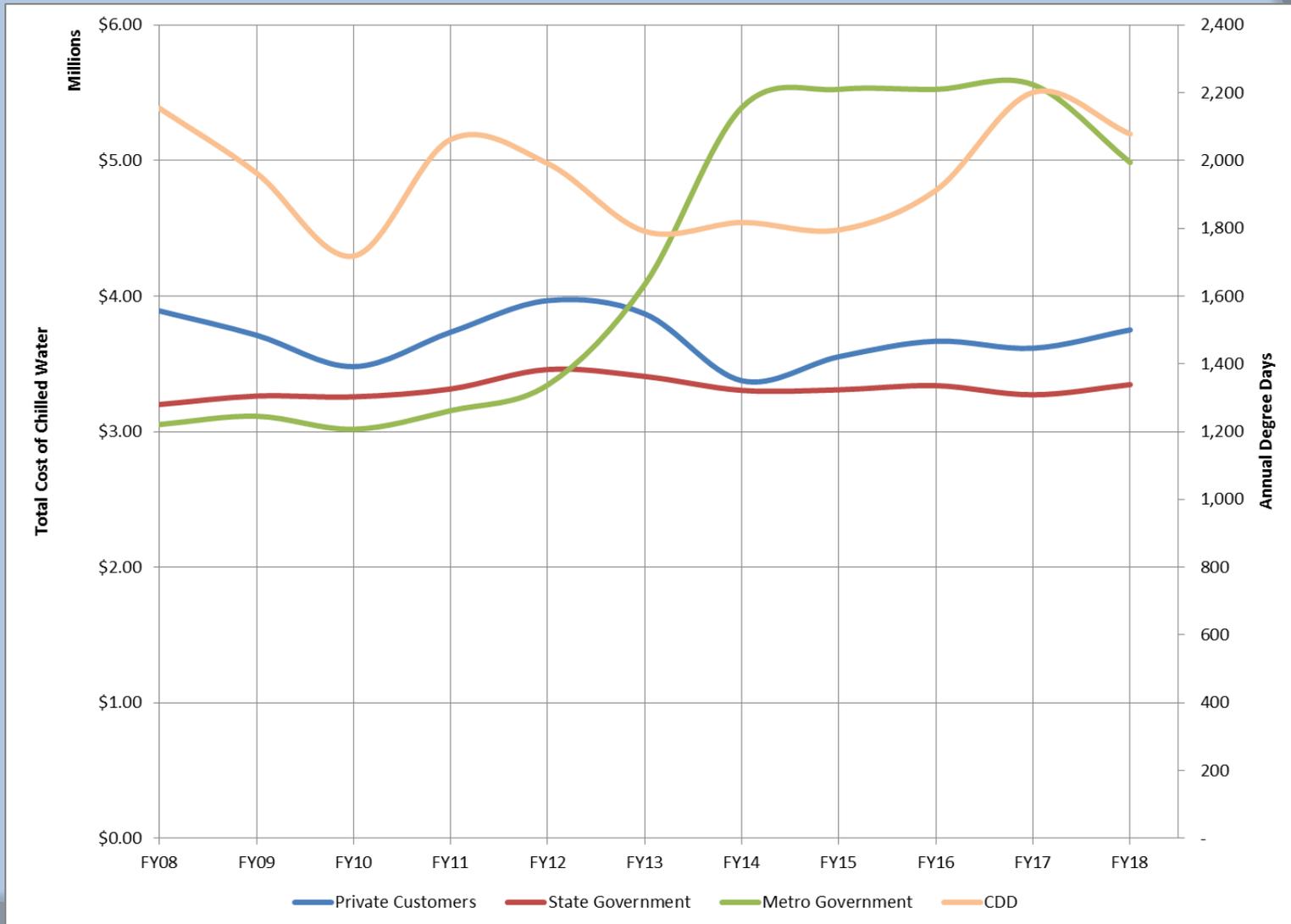
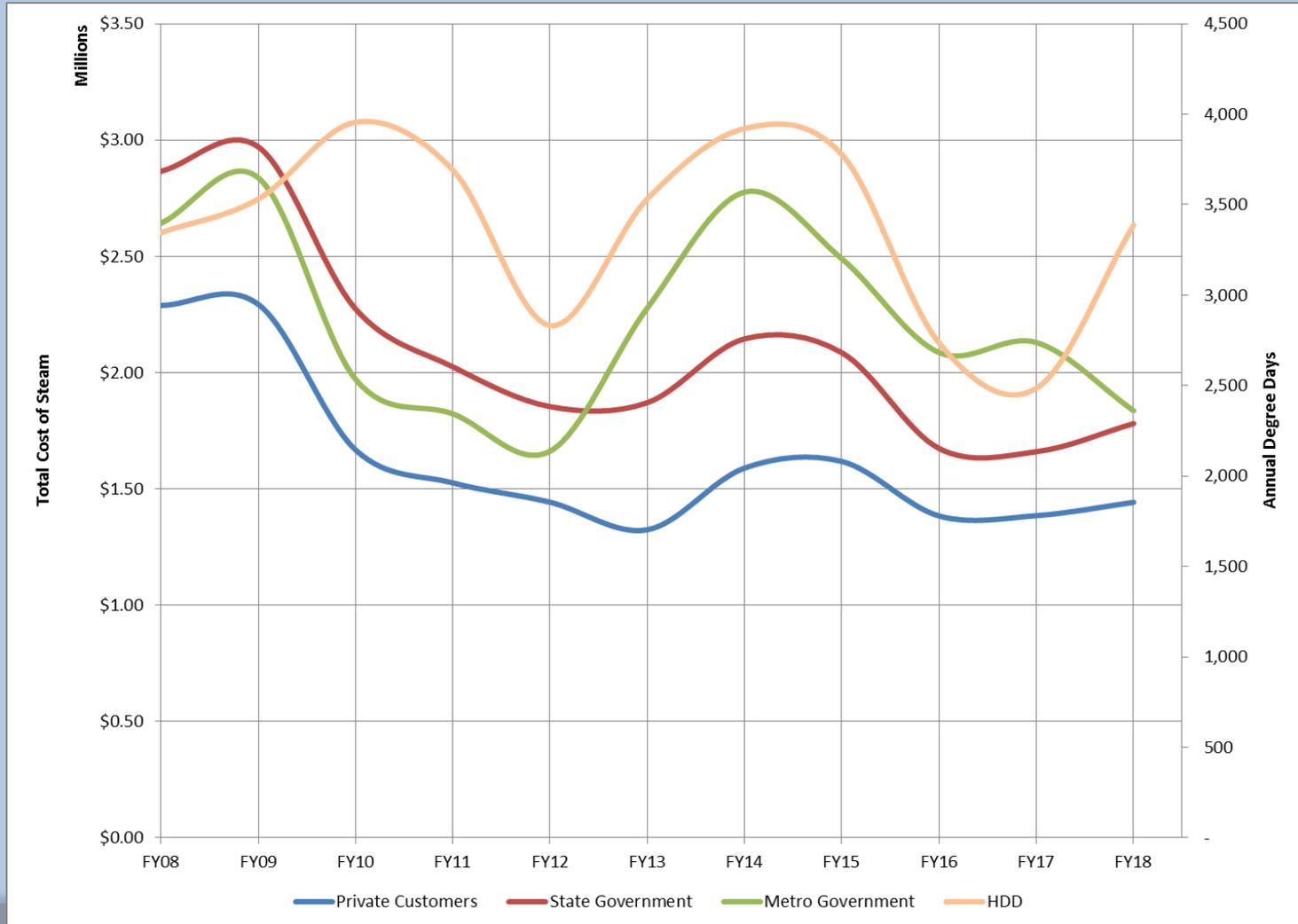


Figure 4B. Historical Steam Total Costs



5. Natural Gas and Propane Pricing

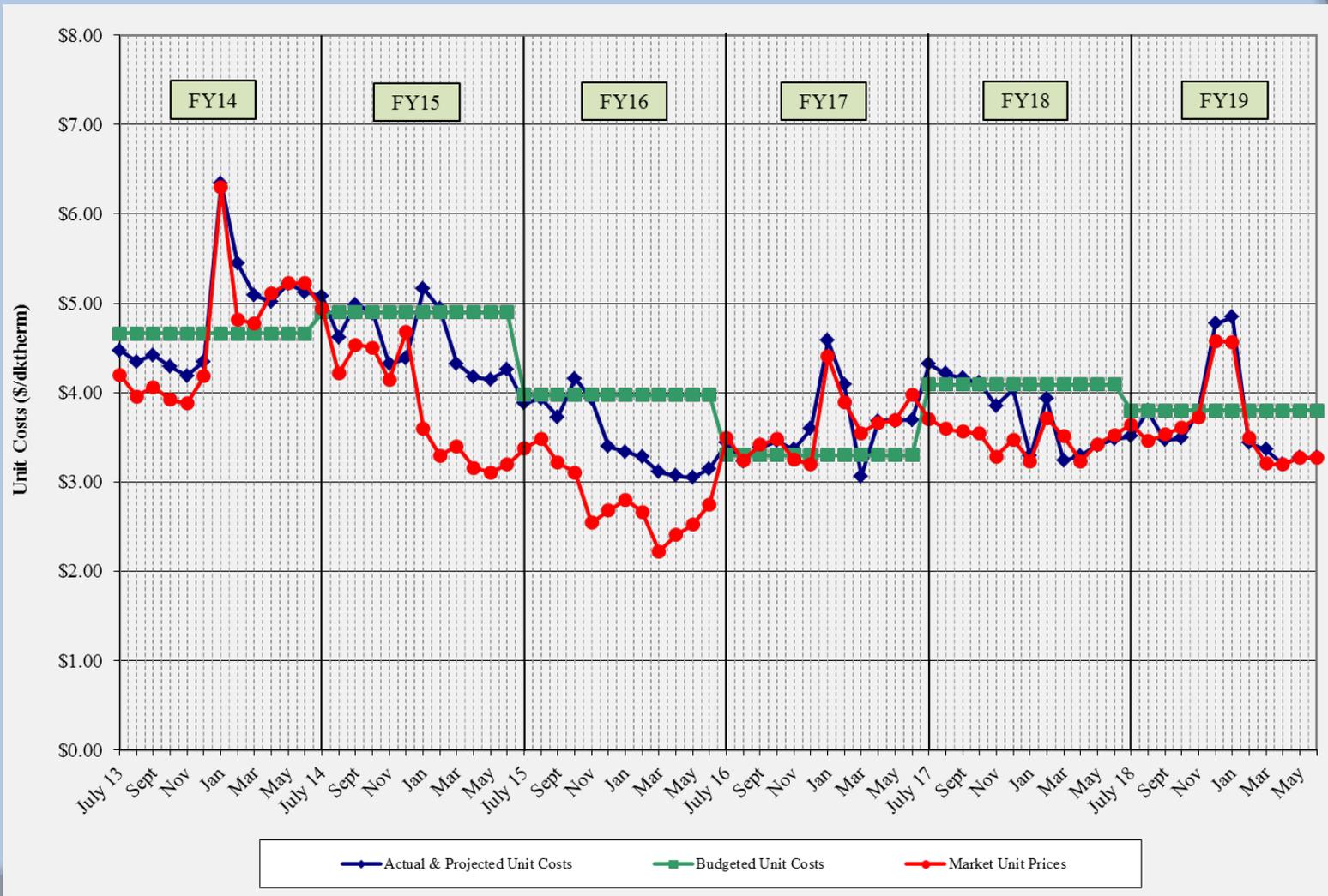


Table 5: FY19 Gas Spending & Budget Comparison

	Actual FY19 To date (Mar 31)	Budget FY19	Percent Difference
Steam Sendout (Mlbs)	361,057	332,820	8.5%
Fuel Use (Dth) (includes propane)	497,161	483,588	2.8%
Plant Eff (Dth/Mlb)	1.377	1.453	-5.2%
Total Gas Cost (includes propane)	\$1,964,096	\$1,866,644	5.2%
Unit Cost of Fuel (\$/Dth)	\$3.951	\$3.860	2.4%

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

6. *DES FY19 and FY20 Budgets*

- ❖ Table 6A. DES FY19 Costs to Date
- ❖ Table 6B. DES FY20 Proposed Budget

Table 6A. DES FY19 Costs to Date

Item	FY18 Actual	FY19 Budget	FY19 Actual to date	Percent of FY19 Budget
FOC's	\$ 4,909,600	\$ 4,804,000	\$ 3,759,000	78.25%
Pass Throughs				
Non-Energy	\$ 1,201,300	\$ 1,140,719	\$ 894,100	78.38%
Water/Sewer	\$ 560,300	\$ 751,900	\$ 463,300	61.62%
Natural Gas Base	\$ 2,105,100	\$ 2,173,300	\$ 2,021,400	93.01%
Natural Gas Contingency	\$ -	\$ 816,381	\$ -	0.00%
Electricity	\$ 5,144,000	\$ 5,685,900	\$ 3,762,100	66.17%
ORF Deposit	\$ -	\$ -	\$ -	
Debt Service	\$ 5,395,400	\$ 5,420,200	\$ 4,550,900	83.96%
Total Expenses	\$ 19,315,700	\$ 20,792,400	\$ 15,450,800	74.31%
Total Revenues	\$ 17,093,000	\$ 19,152,100	\$ 13,689,100	71.48%
Metro Funding	\$ 2,222,700	\$ 1,640,300	\$ 1,640,300	100.00%

Actual Costs to Date includes some 4th Quarter items.

Table 6B. DES FY20 Proposed Budget

Item	FY19 Budget	Proposed FY20 Budget	Percent Change From FY19 Budget
FOC's	\$ 4,804,000	\$ 4,601,600	-4.21%
Pass Throughs			
Non-Energy	\$ 1,140,719	\$ 1,182,900	3.70%
Water/Sewer	\$ 751,900	\$ 714,000	-5.04%
Natural Gas Base	\$ 2,173,300	\$ 2,202,932	1.36%
Natural Gas Contingency	\$ 816,381	\$ 755,468	-7.46%
Electricity	\$ 5,685,900	\$ 5,852,900	2.94%
ORF Deposit	\$ -	\$ -	n.a.
Debt Service	\$ 5,420,200	\$ 5,079,200	-6.29%
Total Expenses	\$ 20,792,400	\$ 20,389,000	-1.94%
Total Revenues	\$ 19,152,100	\$ 18,985,300	-0.87%
Metro Funding	\$ 1,640,300	\$ 1,403,700	-14.42%

7. *Chilled Water Leak*

- ❖ Leak Found and Repaired at 3rd Ave/Charlotte
- ❖ Leak Found and Repaired at 4th Ave/Union
- ❖ Leaks Found and Repaired at Nissan Stadium
- ❖ Suspected Leak near 5th and Union
- ❖ Suspected Leak along 1st Ave North
- ❖ Suspected Leak near 3rd/James Robertson
- ❖ Water Dept also searching for leak in 5th Ave
- ❖ Make-up Down to ~ 33 gpm from ~ 90 gpm
- ❖ ~ \$321,000 spent to date

8. *DES Projects*

Capital Projects

- DES 124: CJC Redevelopment – Bldg construction continues; AA Birch Tunnel repairs completed in March 2019 (DES 165)
- DES 124.4: CJC Reconnection – Reconnection complete; awaiting building completion – construction CHW/steam service active
- DES 133: 5th and Broadway Development – contract signed; taps/valves installed; awaiting meter and instrument installation
- DES 133.1: Site blasting completed early 2018; DES completed repairs due to blasting in March 2019 (DES 164)
- DES 135: CHW Leak at 5th Ave and Union – Found and repaired 4 separate leaks; still looking for leak near JK Polk Bldg

Capital Projects Review

Capital Projects - continued

- DES 143: Manholes N1 and N2 Insulation and Repair – postponed
- DES 144: Manhole 6 Repair – corroded structural steel repaired/replaced; completed November 2018
- DES 146: Ryman Steam Meter Replacement – Work completed May 2018
- DES 148: Site I Development – Blasting completed August 2018; impacts to DES addressed
- DES 149: 1st and Molloy Hot Spot – completed May 2018
- DES 150: Federal Courthouse and 7th Ave Tunnel – Blasting was not needed; project closed

Capital Projects Review

Capital Projects - continued

- DES 151: Manhole 23 Repairs – corroded structural steel and concrete repaired/replaced; completed March 2019
- DES 152: Manhole A and M Paint Repairs – on hold
- DES 153: Manhole L Repairs – corroded structural steel and piping to be repaired/replaced; in design
- DES 154: Manhole K Repairs – corroded structural steel to be repaired; postponed
- DES 155: 7th & Broadway Condensate Leak Repair – Leaking condensate return piping in tunnel; completed December 2018
- DES 156: Broadway Tunnel Anchor Kicker Repair – corroded structural steel on steam/condensate anchor; completed November 2018
- DES 157: Manhole 9 Repairs – corroded structural steel to be repaired/replaced; in design

Capital Projects Review

Capital Projects - continued

- DES 158: Manhole 18A Repairs – corroded structural steel repaired/replaced; completed March 2019
- DES 158 Chg Order: Manhole 18 Anchor Repair – Steam/condensate piping anchor moved; Phase 1 repairs completed March 2019; Phase 2 repairs to be completed during summer 2019
- DES 159: Manhole B2 Repairs – corroded structural steel to be repaired; in design
- DES 160: 5th & Broadway Service Connection – new CHW service; completed March 2019
- DES 161: Manhole S6 Insulation – in design
- DES 162: 3rd & Molloy Hotel CHW Service – developing preliminary service pricing; anticipate contract signature by end of June 2019
- DES 163: Service to Lot K – early stage of service negotiations

Capital Projects Review

Capital Projects - continued

- DES 164: Broadway Tunnel Repairs – repairs related to 5th & Broadway Development blasting; completed March 2019
- DES 165: AA Birch Tunnel Repairs – completed March 2019
- DES 166: Misc Tunnel Repairs – 4th Ave and 7th Ave Tunnels required maintenance repairs; completed coincident with Broadway and AA Birch tunnel repairs in March 2019
- DES 167: EDS Tunnel Fiber Optic Installation – install fiber optic cabling in Broadway Tunnel to service NFL Draft; NFL opted for alternative routing
- DES 168: 1st and KVB New Hotel – negotiating with new hotel development for service

Capital Expenditures

	Spent to End of FY18	FY19 Spending	Balance to Date (04/22/19)
R&I Projects	\$3,353,083	\$336,342	\$2,694
49109-2010 Bond	\$2,497,999	\$90,806	\$17,111
49107-DES Infrastructure Fund	\$8,466,205	\$31,573	\$2,221
49116-DES Infrastructure Fund	\$0	\$378,379	\$1,381,621
Total	\$14,317,287	\$837,100	\$1,403,647

RFP Update

DES 139

- Metro issued RFP to seek a new Operations Partner and/or buyer for the DES
- As a result of the process, Metro issued intent to award letter to Engie North America for the sale of the DES
- Engie and Metro are in the Due Diligence Process
- Engie has met or is planning to contact and meet with all DES customers
- In order to proceed with sale, Customer consent of the sale is required
- Metro Council approval of the sale is required

10. Questions and Answers

Please complete and submit survey

11. Adjourn