



Metro Nashville
DISTRICT ENERGY SYSTEM

DES Customer Meeting

Spring FY22

March 3, 2022



Agenda

1. Welcome!
2. Transition to Metro Water Services
3. Historic Customer Expenses
4. Historic Customer Consumption
5. Historic System Efficiency
6. Natural Gas Pricing
7. DES FY21 and FY22 Budgets
8. Chilled Water Leak
9. DES Projects
10. Questions and Answers
11. Adjourn

1. *Welcome DES Customers!*



DES Contacts

- ❖ Constellation – Tim Hestle, General Manager 615-742-1883 (tim.hestle@constellation.com)
- ❖ Constellation – Chuck Tucker, Customer Service 615-742-1883 (chuck.tucker@constellation.com)
- ❖ Constellation – Jimmy Hatcher, Invoicing 615-742-1883 (jimmy.hatcher@constellation.com)
- ❖ Thermal Engineering Group, Inc – Dan Coyle, Contract Administrator 615-264-2611 (dcoyle@thermalegi.com)
- ❖ Metro Water Services – Adrienne Fancher, Metro Liaison 615-862-4820 (adrienne.fancher@nashville.gov)

2. *Transition to Metro Water Services*

- ❖ Metro issued RFP for System Operator with option to purchase the DES (Fall 2018)
- ❖ Metro evaluated bids and awarded the sale of DES to Engie North America contingent on receiving customer consents (Mar 2019)
- ❖ Metro decided that sale of the system was not in best interest of DES (Fall 2019)
- ❖ Metro and CNE entered new Five-Year agreement as System Operator (July 2020)
- ❖ DES moved to MWS responsibility (July 2020)

New Guaranteed Maximum Quantities

- Changes beginning in July 2020 due to CNE Contract Extension
- More stringent performance criteria
- All customers benefit by reduced FEA and improved performance

		Original	Beginning FY21
Steam Elec	kWhr/Mlb sales	6.00	4.50
Steam Plant Eff	Dth/Mlb sendout	Equation	Equation (-18.5%)*
Steam Water	Gallons	Equation	Equation; no change
CHW Elec	kWhr/tonhr sales	1.055	0.930
CHW Water	Gal/tonhr sales	5.25	2.00**

*based on condensate at 180°F with an 80% return (1.668 vs 1.359)

**includes all make-up for CHW except that EDS make-up is capped at 30,000 gal per day

3. Historical Customer Expenses

- ❖ Figure 3A. Historical Chilled Water Variable Unit Costs
- ❖ Figure 3B. Historical Steam Variable Unit Costs
- ❖ Table 3. Rolling Twelve Month Expenses

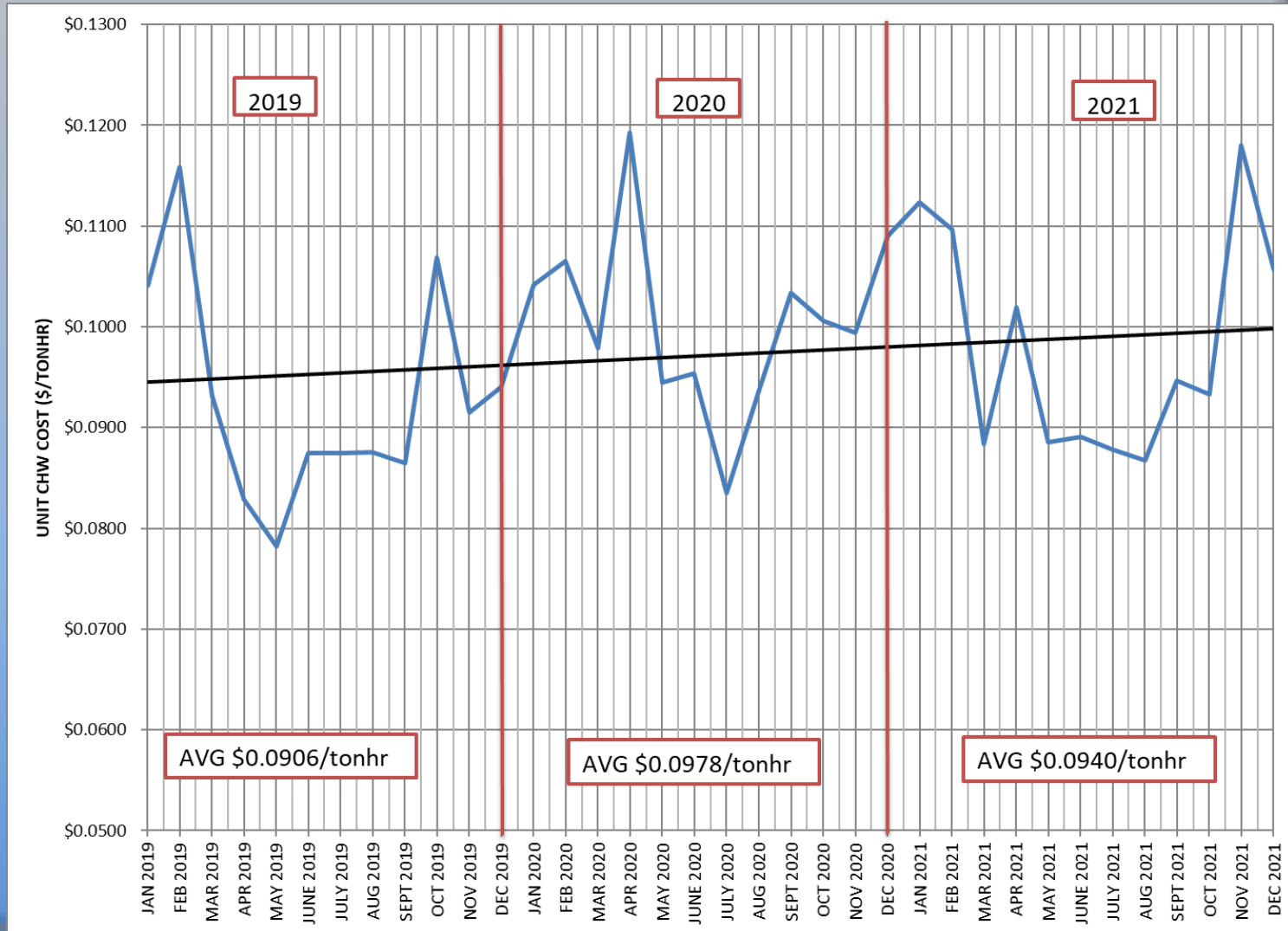
Customer Charges

- 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

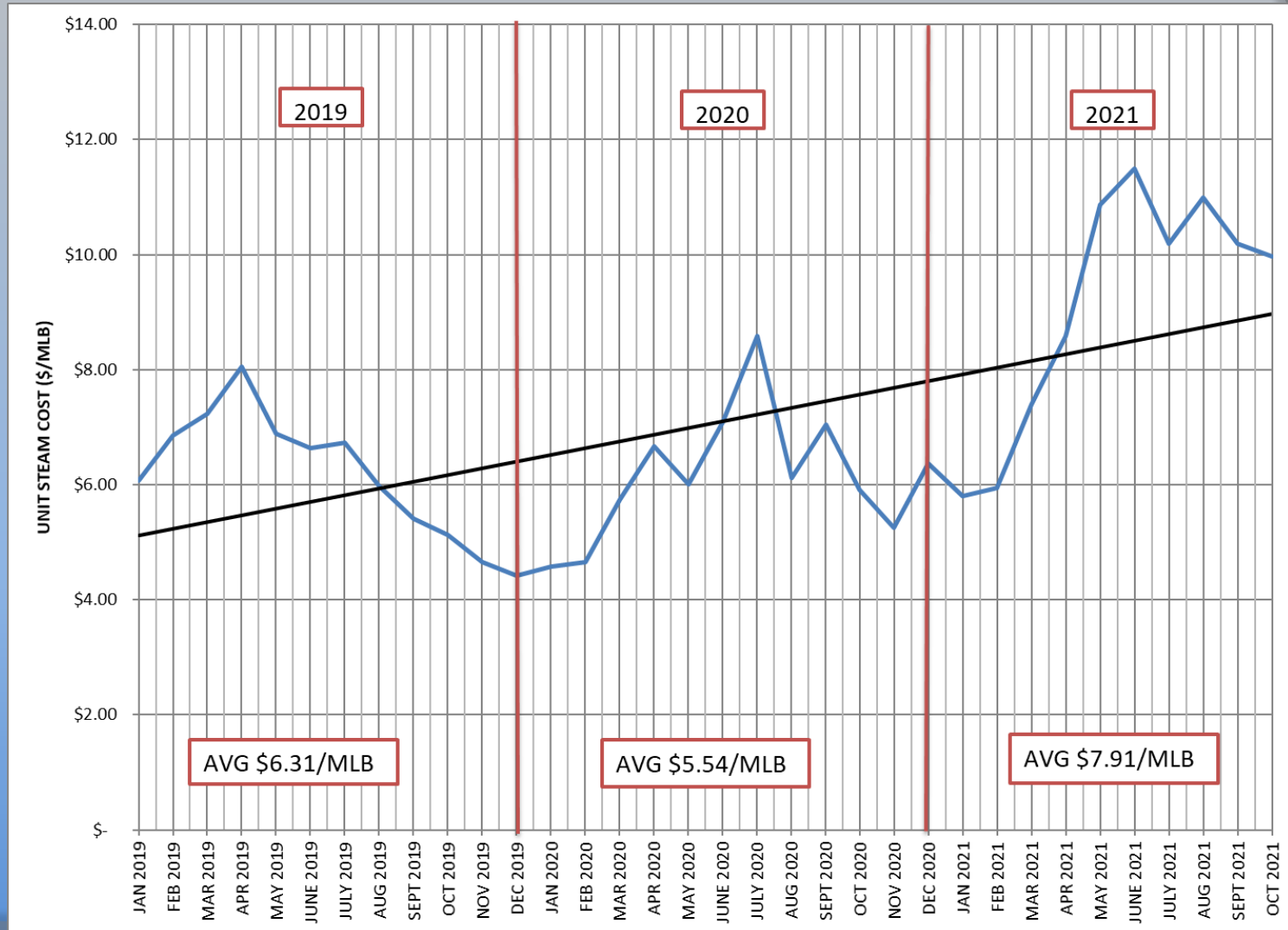
- Variable costs vary each month based on actual charges and allocable to customers based on their monthly metered consumption (tonhrs and lbs)
- Capacity Charges + Variable Costs + Taxes = Total Invoice
- $$\text{Avg Unit Cost} = \frac{\text{Total Invoice}}{\text{Monthly Consumption}} \quad (\$/\text{tonhr or } \$/\text{Mlb})$$
- 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.

Figure 3A. Historical CHW Variable Unit Costs



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

Figure 3B. Historical Steam Variable Unit Costs



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

Table 3. Rolling Twelve Month Expenses

		Steam - Rolling 12 Month			Chilled Water - Rolling 12 Month		
		Jan 2020- Dec 2020	Jan 2021- Dec 2021	% Diff.	Jan 2020- Dec 2020	Jan 2021- Dec 2021	% Diff.
Private	Cost	\$ 1,207,889	\$ 1,446,300	19.74%	\$ 3,627,495	\$ 3,995,366	10.14%
	Usage (lbs or tonhrs)	80,036,285	86,144,540	7.63%	16,122,808	20,802,125	29.02%
State	Cost	\$ 1,617,519	\$ 1,913,293	18.29%	\$ 3,201,903	\$ 3,325,428	3.86%
	Usage (lbs or tonhrs)	101,812,921	110,324,209	8.36%	12,300,061	13,797,249	12.17%
Metro	Cost	\$ 1,547,223	\$ 1,824,604	17.93%	\$ 4,285,387	\$ 4,576,036	6.78%
	Usage (lbs or tonhrs)	135,716,725	129,760,802	-4.39%	20,860,325	24,860,994	19.18%
Aggregate	Cost	\$ 4,372,631	\$ 5,184,197	18.56%	\$11,114,785	\$11,896,831	7.04%
	Usage (lbs or tonhrs)	317,565,931	326,229,551	2.73%	49,283,194	59,460,368	20.65%
	Unit Cost	\$ 13.77	\$ 15.89	15.4%	\$ 0.226	\$ 0.200	-11.28%

Metro Funding not included in values shown

4. Historical Customer Consumption

- ❖ Figure 4A. Historical CHW Consumptions
- ❖ Figure 4B. Historical Steam Consumptions

Figure 4A. Historical CHW Consumptions

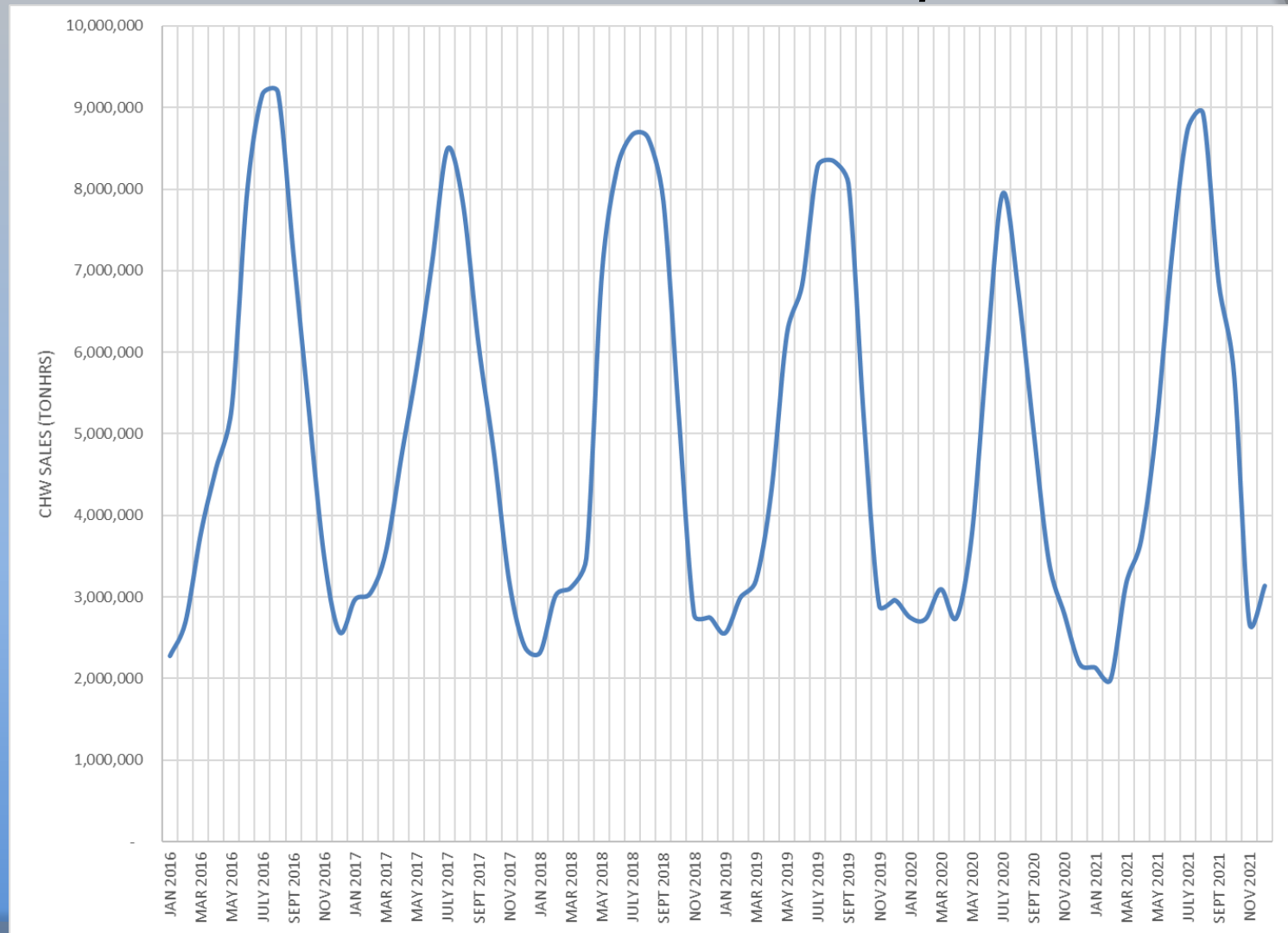
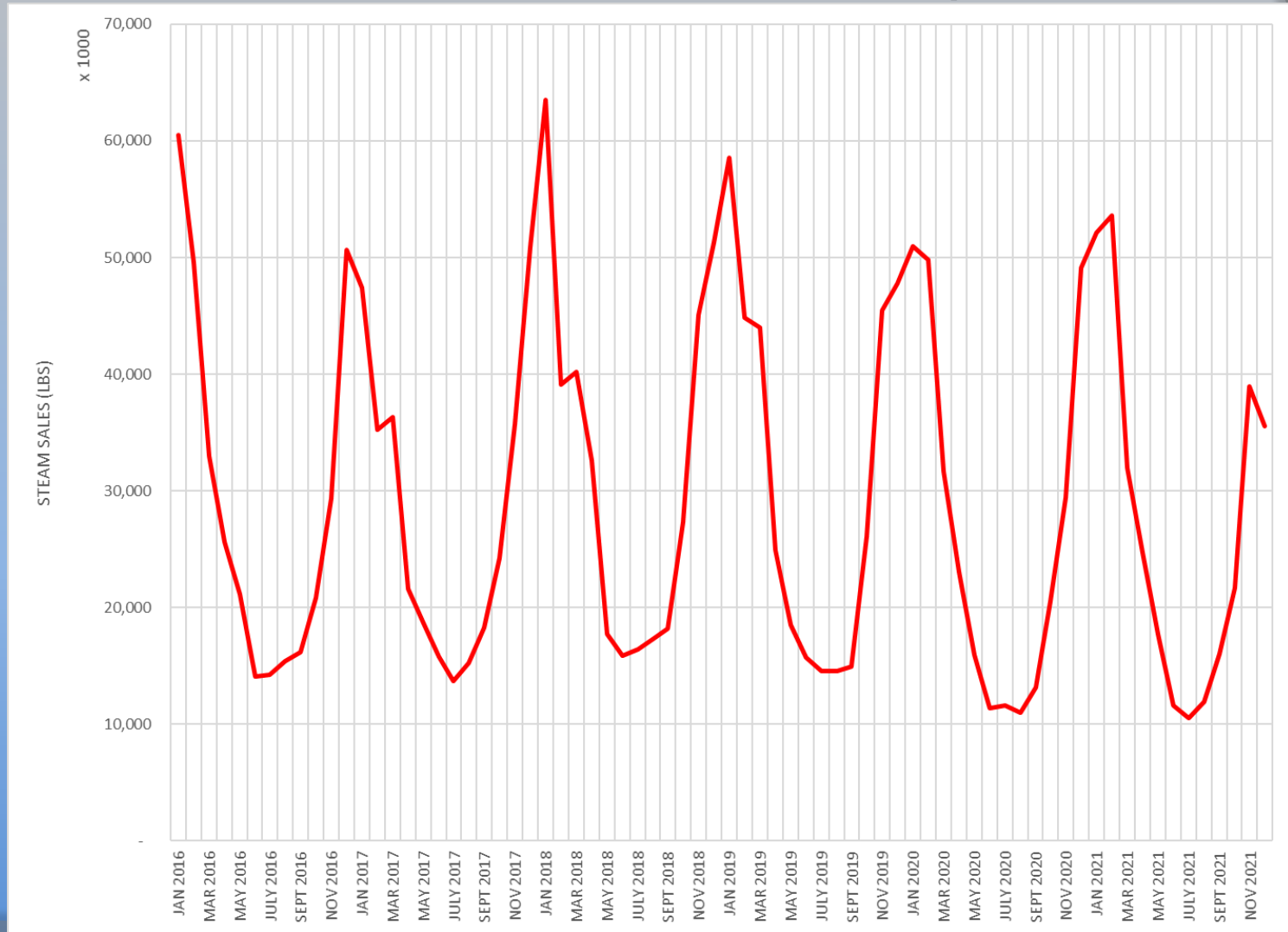


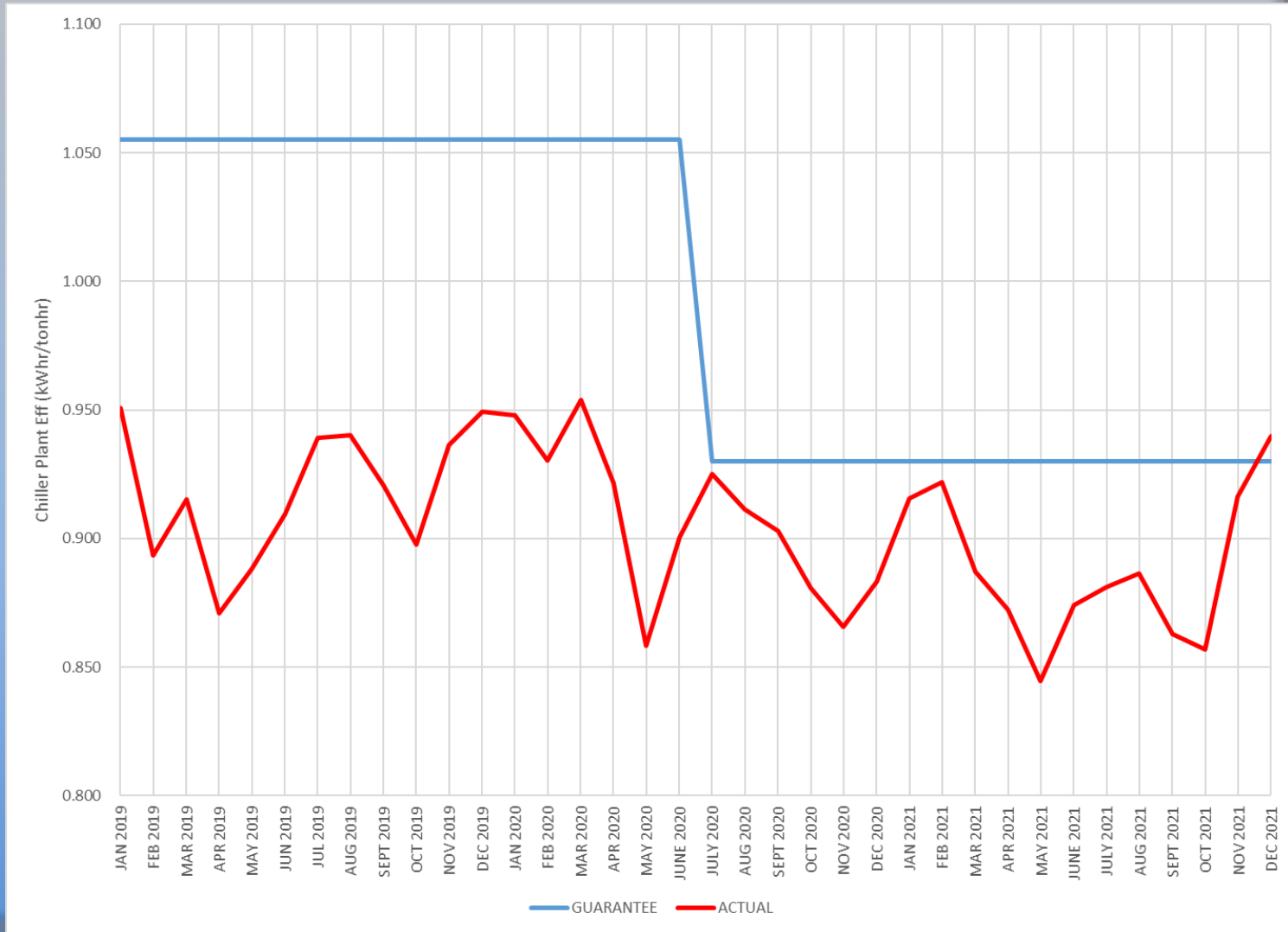
Figure 4B. Historical Steam Consumptions



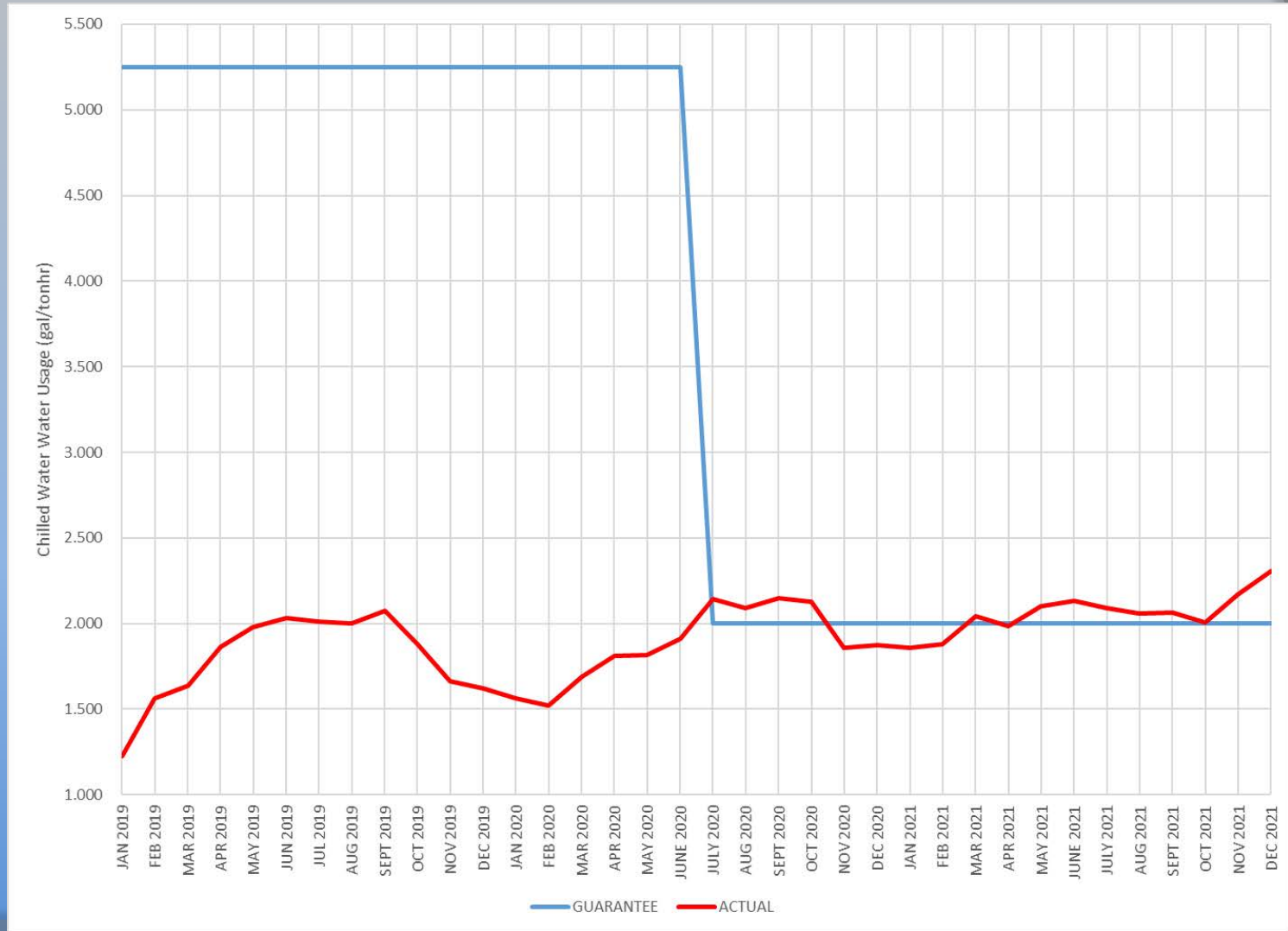
5. Historical System Efficiency

- ❖ Reduction in Guaranteed Maximum Values beginning in July 2020
- ❖ Performance criteria in chiller and boiler plants
- ❖ Cost benefit to customers based on CNE's operation of system – Fuel Efficiency Adjustment
 - ❖ CNE receives “bonus” of 25% of difference in cost for meeting guarantees each month in each category
 - ❖ “Bonus” capped at ~\$190,000 per year
 - ❖ CNE pays 100% of difference in cost for exceeding guarantees each month in each category

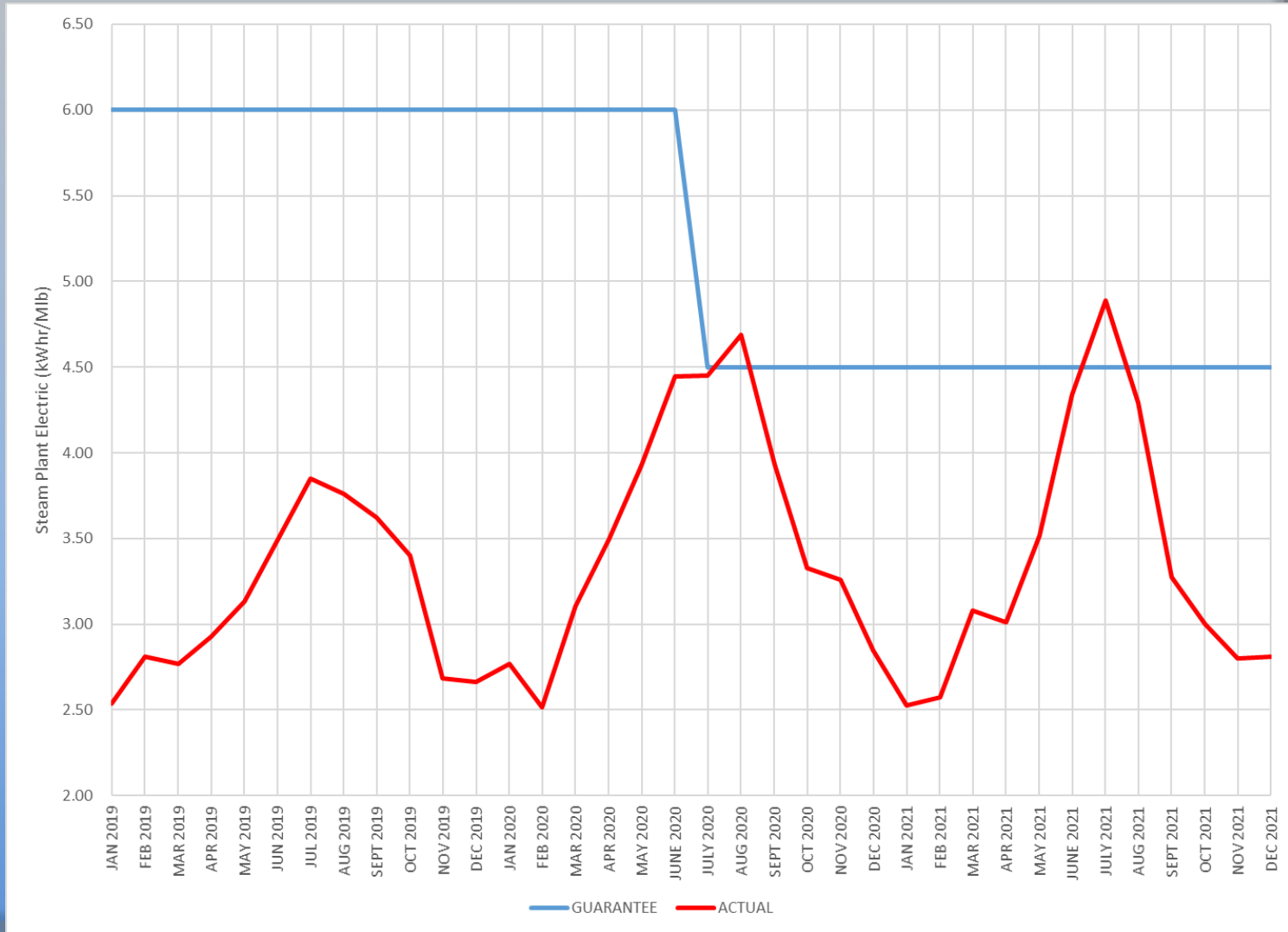
Chilled Water: Electric



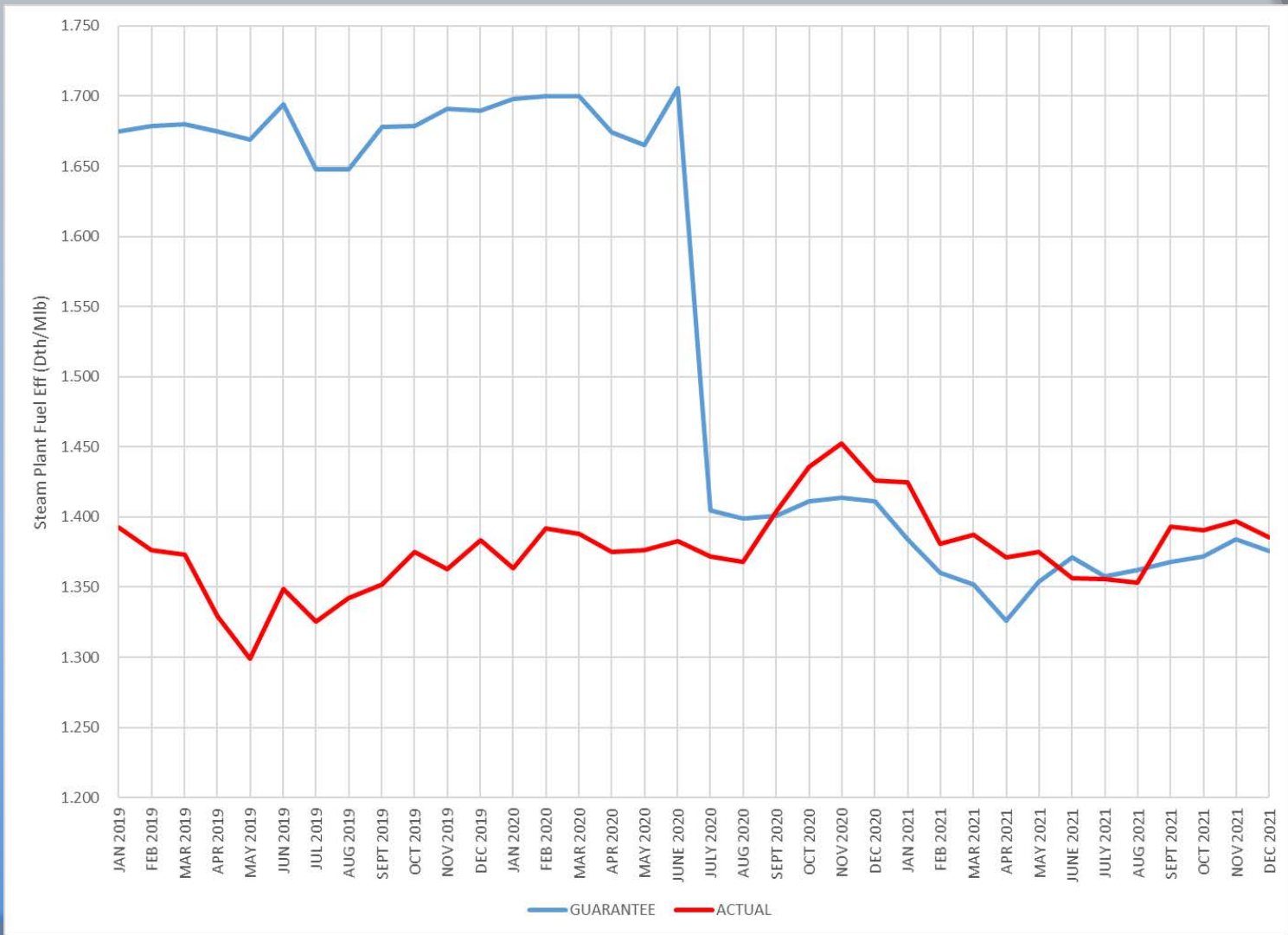
Chilled Water: Water



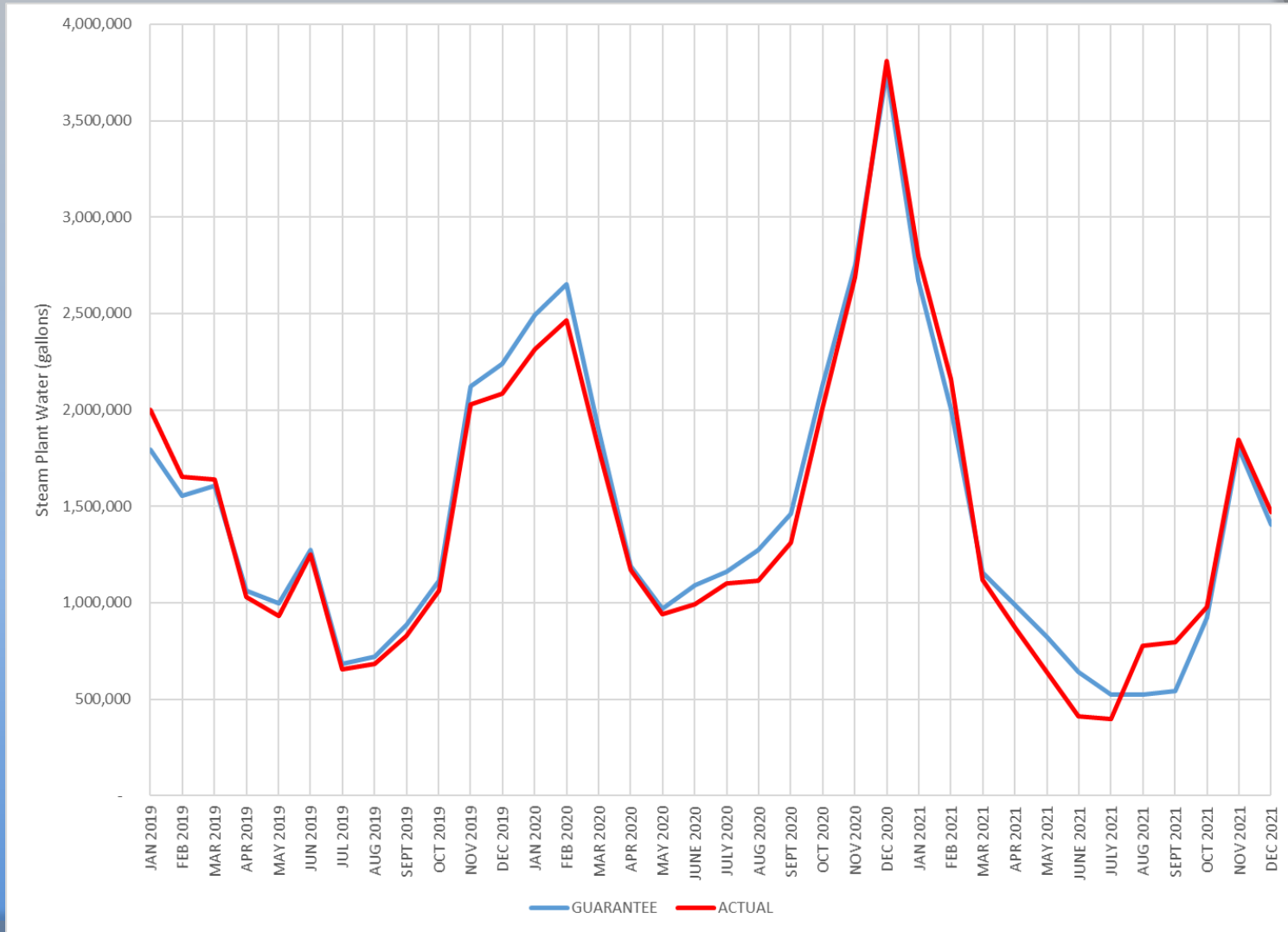
Steam: Electric



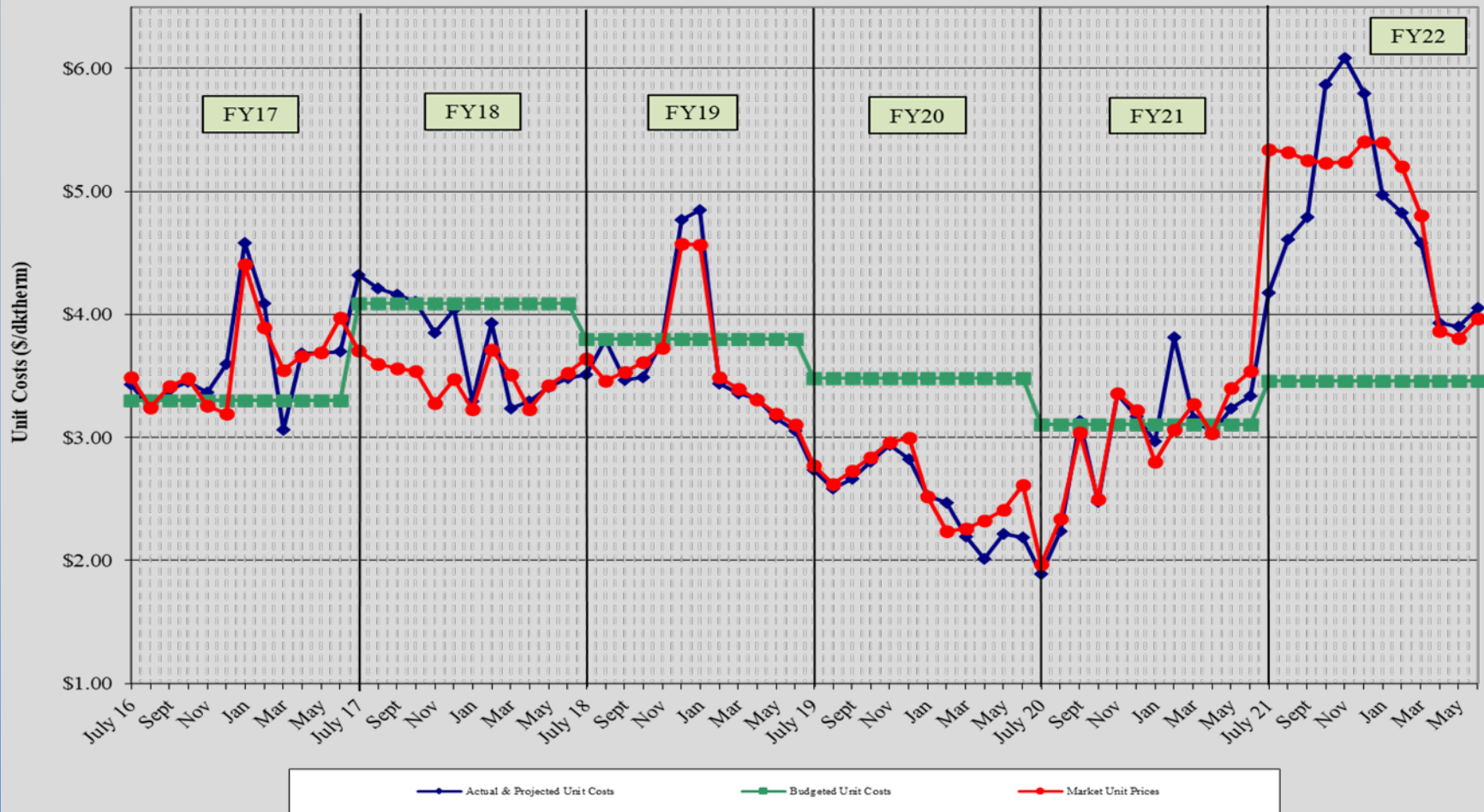
Steam: Fuel



Steam: Water



6. Natural Gas and Propane Pricing



Currently hedging 30% of natural gas through FY22; FY22 futures include hedged price, NYMEX and transportation.

Table 6: FY22 Gas Spending & Budget Comparison

	Actual FY22 To Dec 31	Budget FY22	Percent Difference
Steam Sendout (Mlbs)	168,850	186,127	-9.3%
Fuel Use (Dth) (includes propane)	233,614	270,256	-13.5%
Plant Eff (Dth/Mlb)	1.384	1.452	-4.7%
Total Gas Cost (includes propane)	\$1,275,610	\$899,952	41.7%
Unit Cost of Fuel (\$/Dth)	\$5.460	\$3.330	64.0%

Excludes consultant fees and FEA and budget contingency; Includes transportation and actual propane costs and usages except unused pre-purchased propane

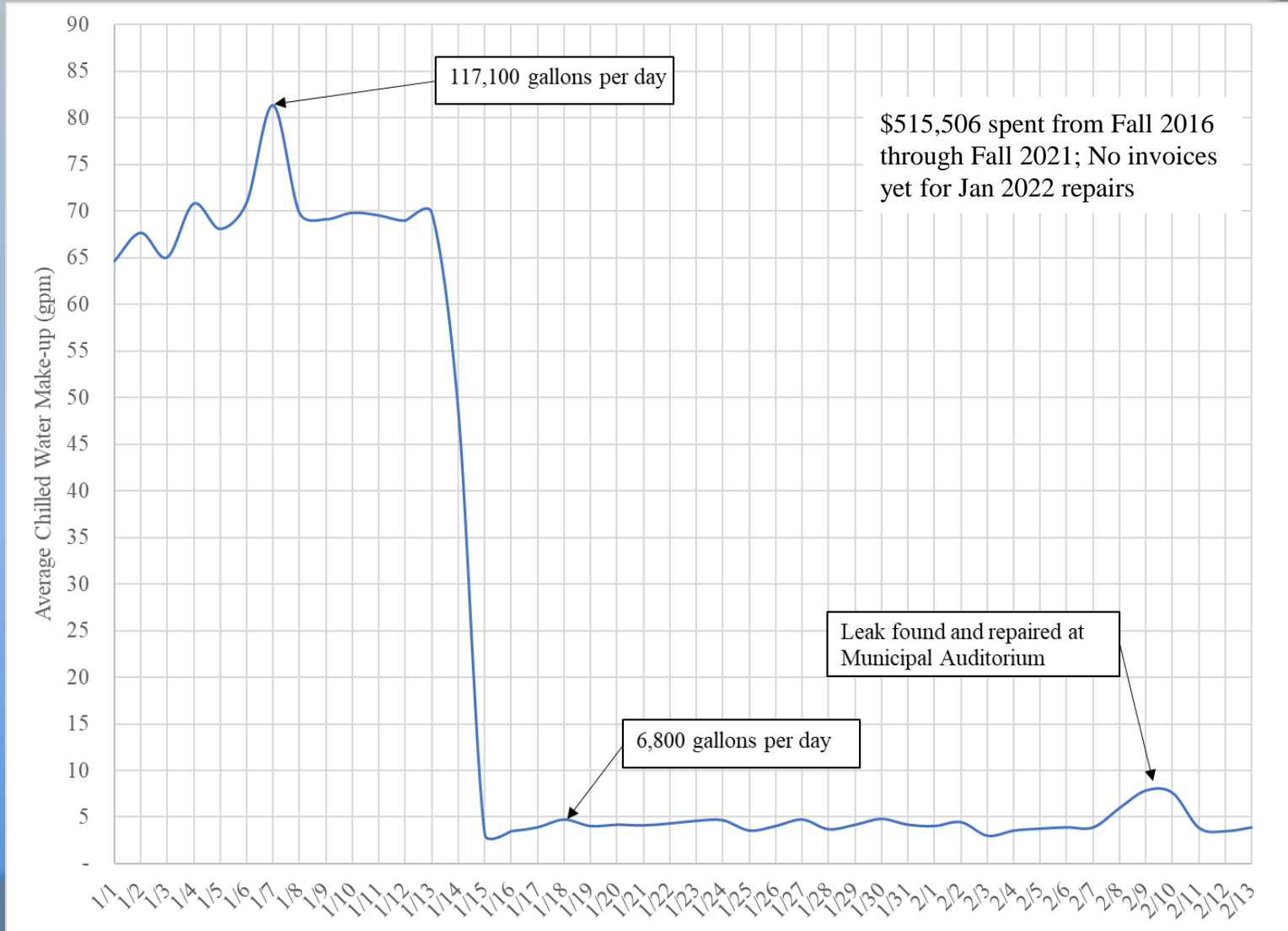
7. DES FY21 and FY22 Budgets

Item	FY20 Budget	FY21 Budget	FY22 Budget	% Change FY20 to FY21	% Change FY21 to FY22
FOC's	\$ 4,601,600	\$ 3,776,800	\$ 3,890,100	-17.92%	3.00%
Pass Throughs					
Administrative Costs	\$ 393,600	\$ 393,900	\$ 459,600	0.08%	16.68%
Chemicals	\$ 253,100	\$ 260,700	\$ 232,200	3.00%	-10.93%
R&I Fund Transfers	\$ 287,600	\$ 291,900	\$ 294,800	1.50%	0.99%
Water/Sewer	\$ 714,000	\$ 624,000	\$ 751,500	-12.61%	20.43%
Fuel Base	\$ 2,575,700	\$ 2,001,900	\$ 2,115,186	-22.28%	5.66%
Fuel Contingency	\$ 507,000	\$ 431,900	\$ 516,814	-14.81%	19.66%
Electricity	\$ 5,977,200	\$ 6,130,100	\$ 6,329,500	2.56%	3.25%
ORF Deposit	\$ -	\$ -	\$ -		
Debt Service	\$ 5,079,200	\$ 5,098,000	\$ 5,083,200	0.37%	-0.29%
Total Expenses	\$ 20,389,000	\$ 19,009,200	\$ 19,672,900	-6.77%	3.49%
Total Revenues	\$ 19,070,500	\$ 18,378,500	\$ 19,042,200	-3.63%	3.61%
Metro Funding	\$ 1,318,500	\$ 630,700	\$ 630,700	-52.17%	0.00%

8. *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
- ❖ Leaks Found and Repaired on 3rd Ave N
- ❖ Suspected Leak near 5th and Union
- ❖ Suspected Leak along 1st Ave North
- ❖ Make-up Down to ~ 6 gpm from ~ 80 gpm After Repairs

Chilled Water Make-up



9. *DES Projects*

Active Capital Projects – General & Marketing

- DES 133.1: Broadway Tunnel Damage Recovery - ongoing
- DES 139: Options Review - ongoing
- DES 163: Peabody Union – ongoing
- DES 192: Peabody St Developments – ongoing

Capital Projects Review

Active Capital Projects – Corrosion Repair/Prevention

- DES 152: MHs A, B & M – under construction; will be completed in 3rd Qtr FY22
- DES 154: MH K Repairs – corrosion/concrete repairs; under construction; anticipate construction completion in 3rd Qtr FY22
- DES 161: MH S6 Insulation – under construction; will be completed in 3rd Qtr FY22
- DES 179: MH 11 Repairs – corrosion/insulation repairs; to be bid/awarded during 2nd Qtr FY22; anticipate completion 3rd Qtr FY22
- DES 188: 4th & Church Bldg Access Tunnel Repairs – tunnel metal liner plates and piping supports corroded; to be bid/awarded during 2nd Qtr FY22; anticipate completion 3rd Qtr FY22

Capital Projects Review

Active Capital Projects – Corrosion Repair/Prevention

- DES 193: MH 13 Pipe and Pipe Support Repairs – needs to be done during summer months (partial condensate return isolation); anticipate to be completed in 4th Qtr FY22/1st Qtr FY23
- DES 194: MH B4 Repairs – cleaning and coating of structural steel; re-insulation of piping; anticipate award and construction beginning during 4th Qtr FY22



Capital Projects Review

Active Capital Projects – Repairs/Modifications

- DES 177: MH B1 Platform & Ladder – bids rec'd; verbal award; dispute over CNE mark-up
- DES 185: 5th Ave N Exploratory Excavation – piping repairs complete; concrete repairs completed late 1st Qtr FY22; awaiting final mill & paving; anticipate close-out during 3rd Qtr FY22
- DES 187: Exploratory Excavation at MH 22B (Metro Public Library) – water flowing through steam casing into MH 22B; excavated and found buried steam & condensate pre-insulated piping in need of repair; piping repaired; awaiting insulation completion; anticipate completion during 3rd Qtr FY22
- DES 191: MH 20 Repairs – condensate return piping leaking (corrosion); ground/surface water collection/diversion needed; new access ladder needed; in design – anticipate bidding during 3rd Qtr FY22, construction late 3rd Qtr/early 4th Qtr FY22

Capital Projects Review

Capital Projects – Anticipated Construction in FY22

- DES 143: MH N1 and N2 Insulation – structural steel to be cleaned/coated and piping insulation to be installed/added
- DES 178: MH 5 Repairs – corrosion/concrete/insulation repairs
- DES 180: State Tunnel Pipe Support Repair – corrosion repairs
- DES 189: MH 4 Structural Steel & Insulation Repair



Capital Projects Review

Capital Projects – Closed/In Close-out

- DES 172: Viridian Service Line Support Repairs
- DES 174: 7th Avenue Tunnel Pipe Support Repairs
- DES 182: MH B10 Exp Jt Replacement
- DES 186: Printers Alley Exploratory Excavation

Capital Expenditures

	Spent to End of FY21	FY22 Spending	Balance to Date (01/31/22)
R&I Projects	\$4,270,639	\$30,201	\$189,716
49116-DES Infrastructure Fund	\$2,824,820	\$818,561	\$1,765,128
Total	\$7,095,459	\$848,762	\$1,954,844

10. Questions and Answers

Please complete and submit survey

11. Adjourn