

UCSF Parnassus Campus Central Utilities Plant



PCUP Steam Condensate Recovery Effort



Steam Trap Project



- Funds Became Available to Renew traps, valves, fittings. (approx. 564 devices)
- Water and Thermal costs drove the management of steam usage and condensate recovery. (Steam quality improvements)

Building Condensate Meters



SFPUC Non-Residential Water Rates

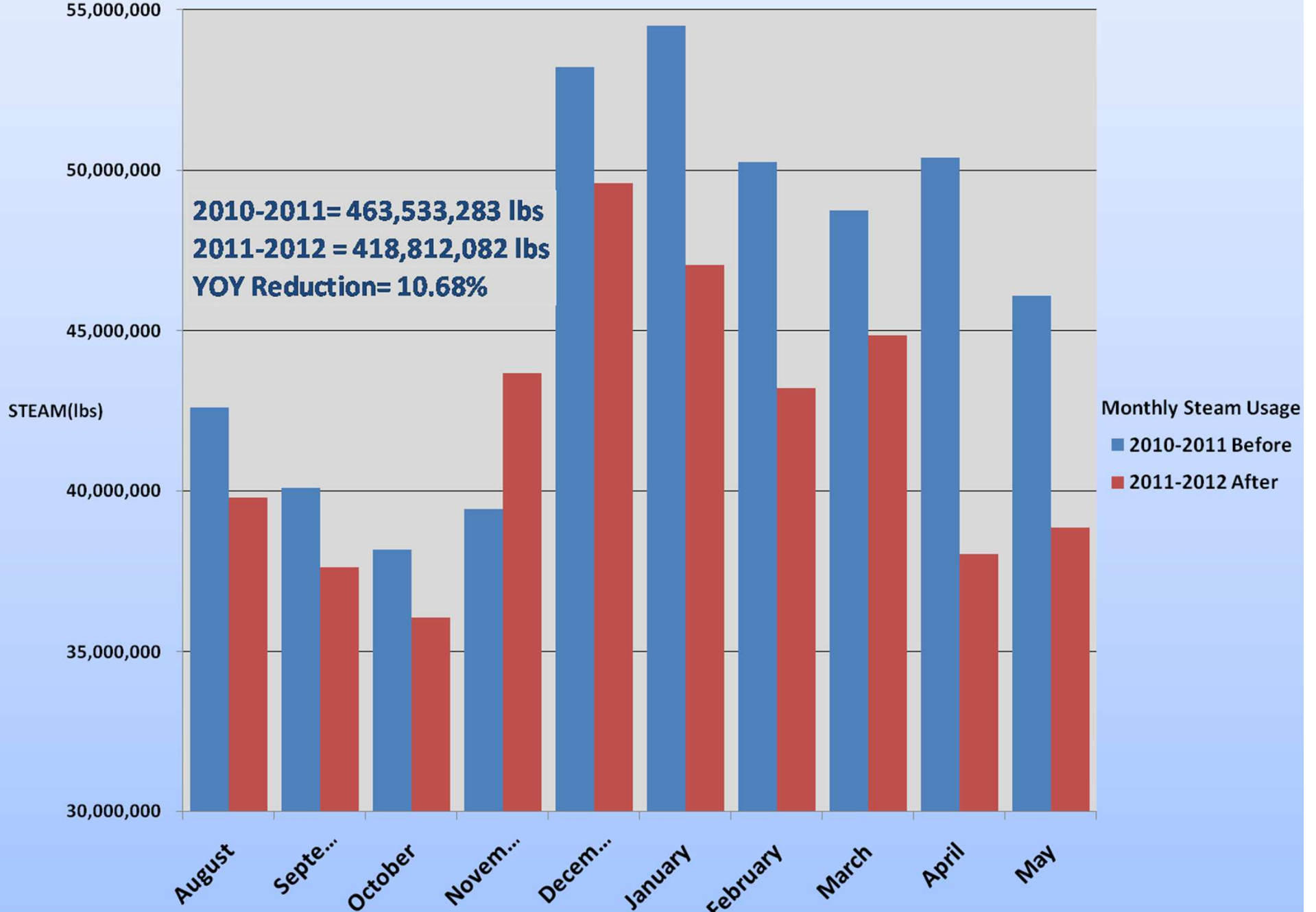
- Charge per CCF 7/1/12 \$5.10
- Wastewater per CCF 7/1/12 \$6.55

- **Plus**
- Suspended solids discharged per lb. \$0.88
- Oil/grease discharge per lb. \$1.10
- Chemical Oxygen demand per lb. \$0.215

SF Water Department Sample Stations



UCSF Parnassus Steam Conservation





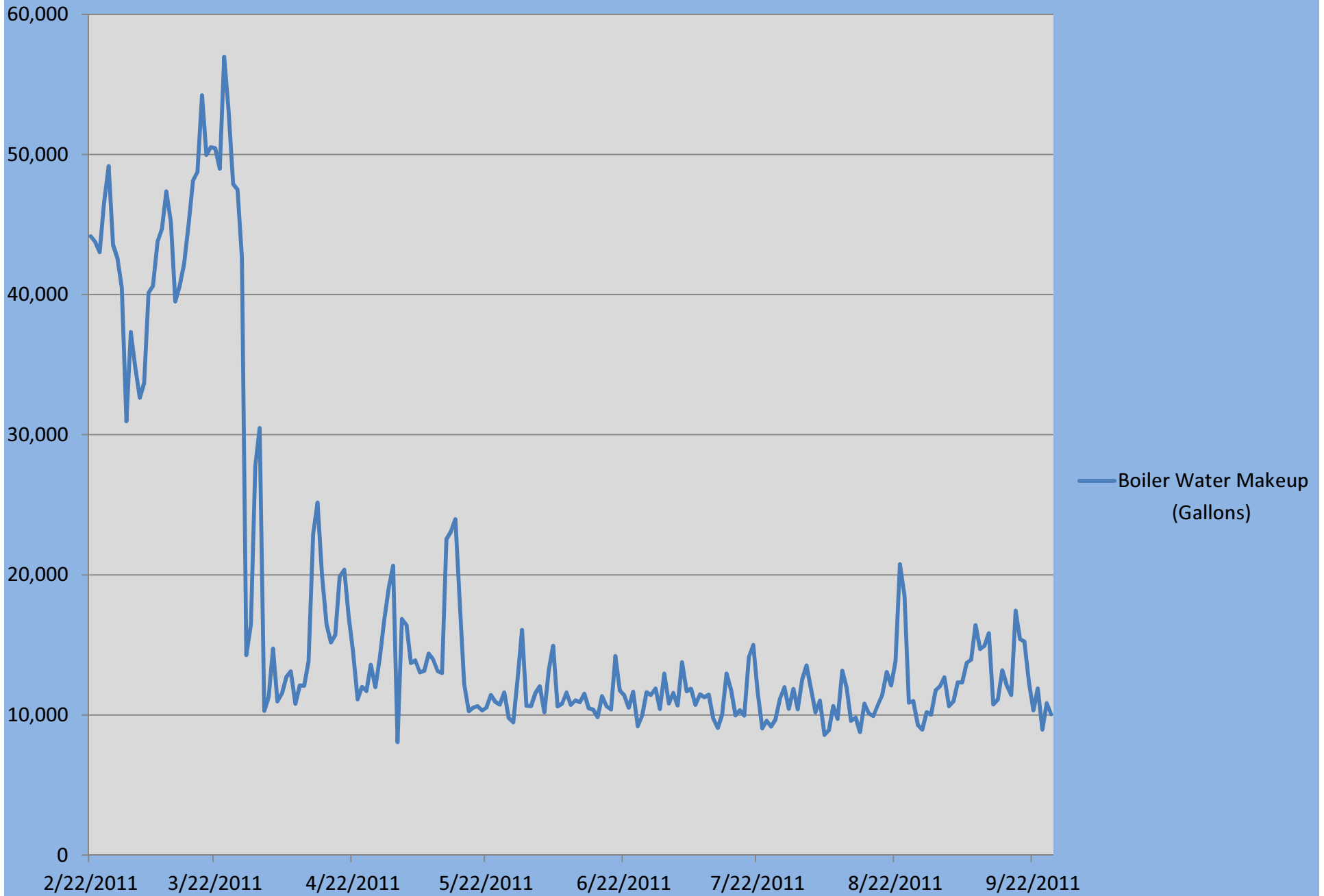
Steam Conservation Savings

- ❖ Average Pounds of Steam Saved Per Month = 3,726,766 LBS
- ❖ Total Pounds of Steam Saved Per Year = 44,721,201 Pounds
- ❖ Steam Production Cost Per Thousand Pounds = \$18.29

\$817,950 Steam Conservation Savings Annually



UCSF Parnassus Condensate Return Recovery



Condensate Return Recovery Savings

Fuel Savings

96,620,948 lbs Water

11,613,095 gallons saved X 8.32 pounds/gallon



110 BTU's/lb

(Condensate 180 F - Makeup 70 F) X 1 BTU/lb/deg F
Temp Temp



132,853 Therms Gas

$\frac{96,620,948 \text{ lbs Condensate} \times 110 \text{ BTU's/lb}}{100,000 \text{ BTU's per Therm} \times 80\% \text{ Boiler Efficiency}}$



\$79,711 Natural Gas
Fuel Savings Annually

Water Savings

31,817 Gallons/Day

Average Daily Gallons Before 44,316 - After 12,499



11,613,095 Gallons/Year

(Condensate 180 F - Makeup 70 F) X 1 BTU/lb/deg F
Temp Temp



\$13.85/ccf Water Cost

Commodity/ccf \$5.10 + Wastewater/ccf \$6.55 + Sample
Adder/ccf \$2.20



\$215,028 Water Savings
Annually

Total Annual Reductions

- **\$1,112,689 Operating Cost**
- **6.9 Million Pounds CO2 Emissions**
- **11.6 Million Gallons of Water**

Items under current investigation/consideration

- Auto-clave quenching water reduction
- Installation of remote water main metering
- Leakage reporting
- Ultra pure water systems
- Restroom Fixture replacements
- Demand based irrigation controllers

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