

# Electrification Programs

A nighttime photograph of a city skyline with several illuminated skyscrapers. The buildings are lit up with various colors like yellow, blue, and purple. In the foreground, there are dark silhouettes of trees and a road. A decorative graphic consisting of several wavy, overlapping lines in shades of red, orange, and yellow runs across the bottom of the image.

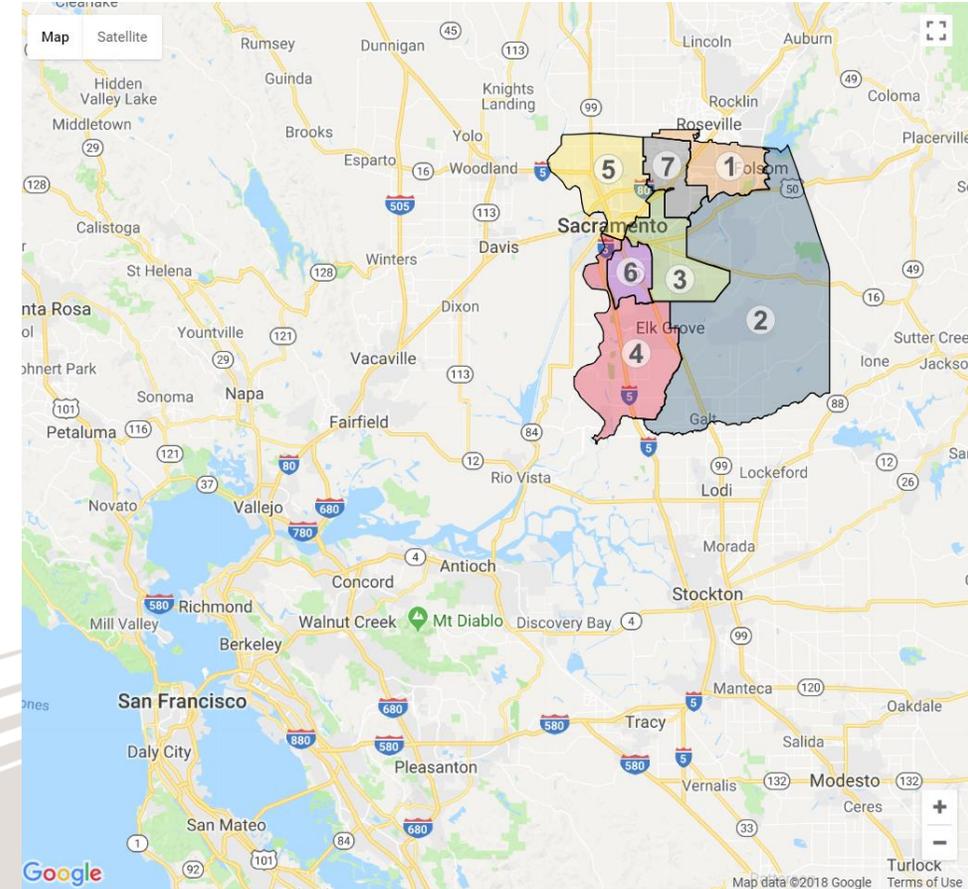
Scott Blunk  
September 26, 2018

Powering forward. Together.



# Sacramento Municipal Utility District (SMUD)

- Electric utility
- Community-owned not-for-profit
- Established 1946
- Population 1.5 million
- 2,219 employees
- 50% carbon free electricity
- 626,460 accounts



# Benefits of Building Electrification

---

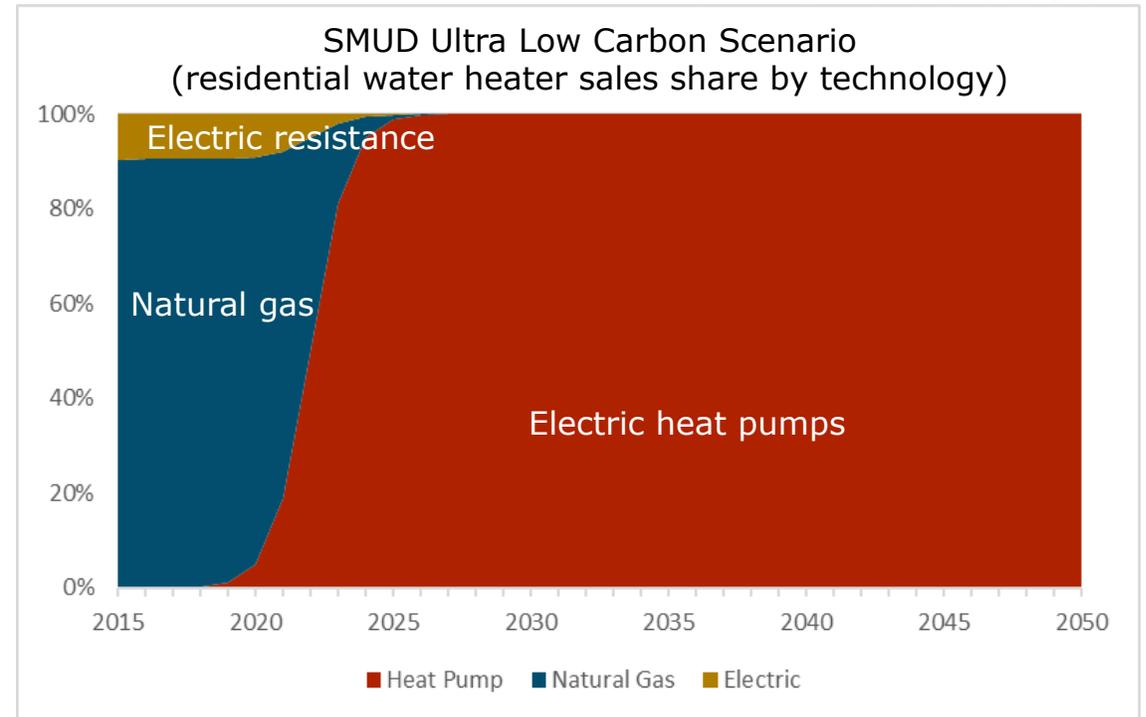
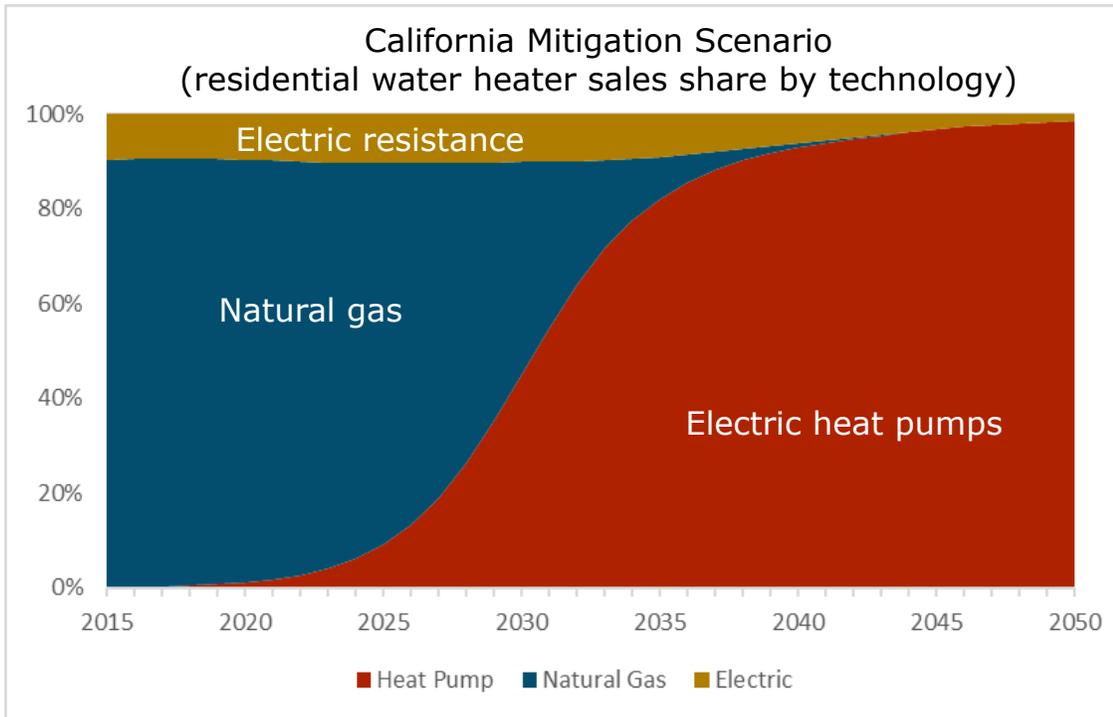
- Reduce Customer's Energy Bills
- Create Local Jobs
- Improve Regional Air Quality
- Future Prepping our Buildings
- Downward Pressure on Electricity Rates
- Fewer Green House Gas Emissions





# Rapid Transition To Electric Heat Pumps – New Sales

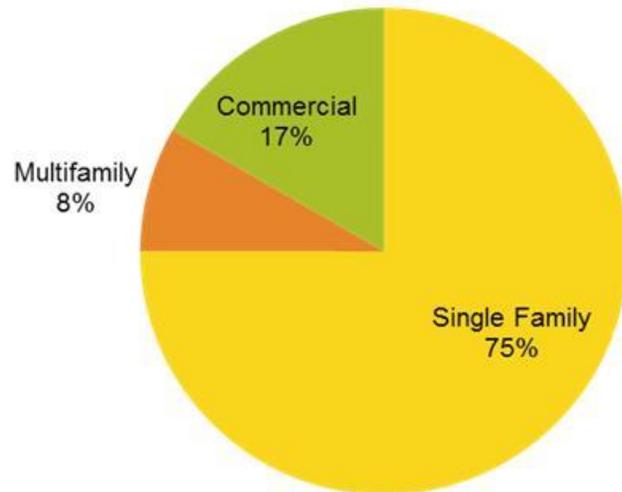
- + **California Mitigation Scenario is more consistent with an incentive-based market-transformation effort – 100% of new sales are electric by ~2040**
- + **The Ultra Low Carbon Scenario would need all-electric building code and a ban on gas water heater sales starting in 2027**



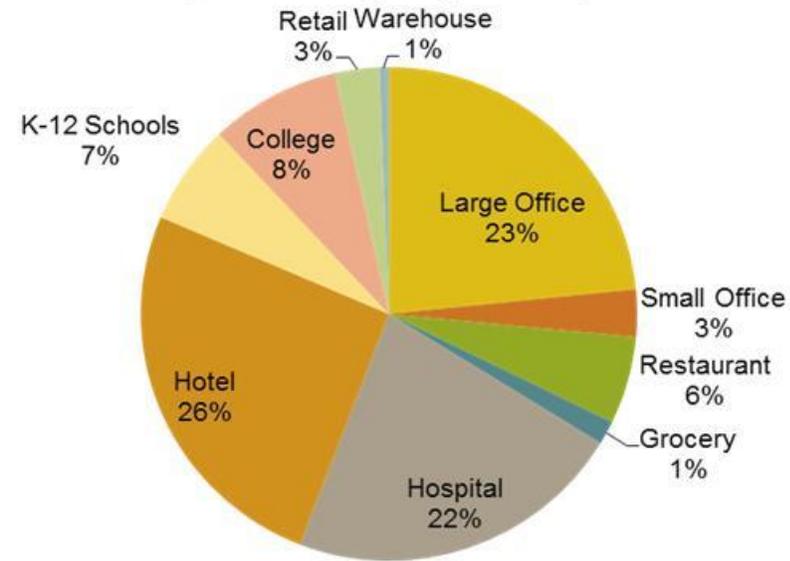
# Electrification Market Potential

Reflects site gas use for water heating and space heating only

### Electrification Potential (Existing, by kWh)



### Commercial Potential (Existing, by kWh)

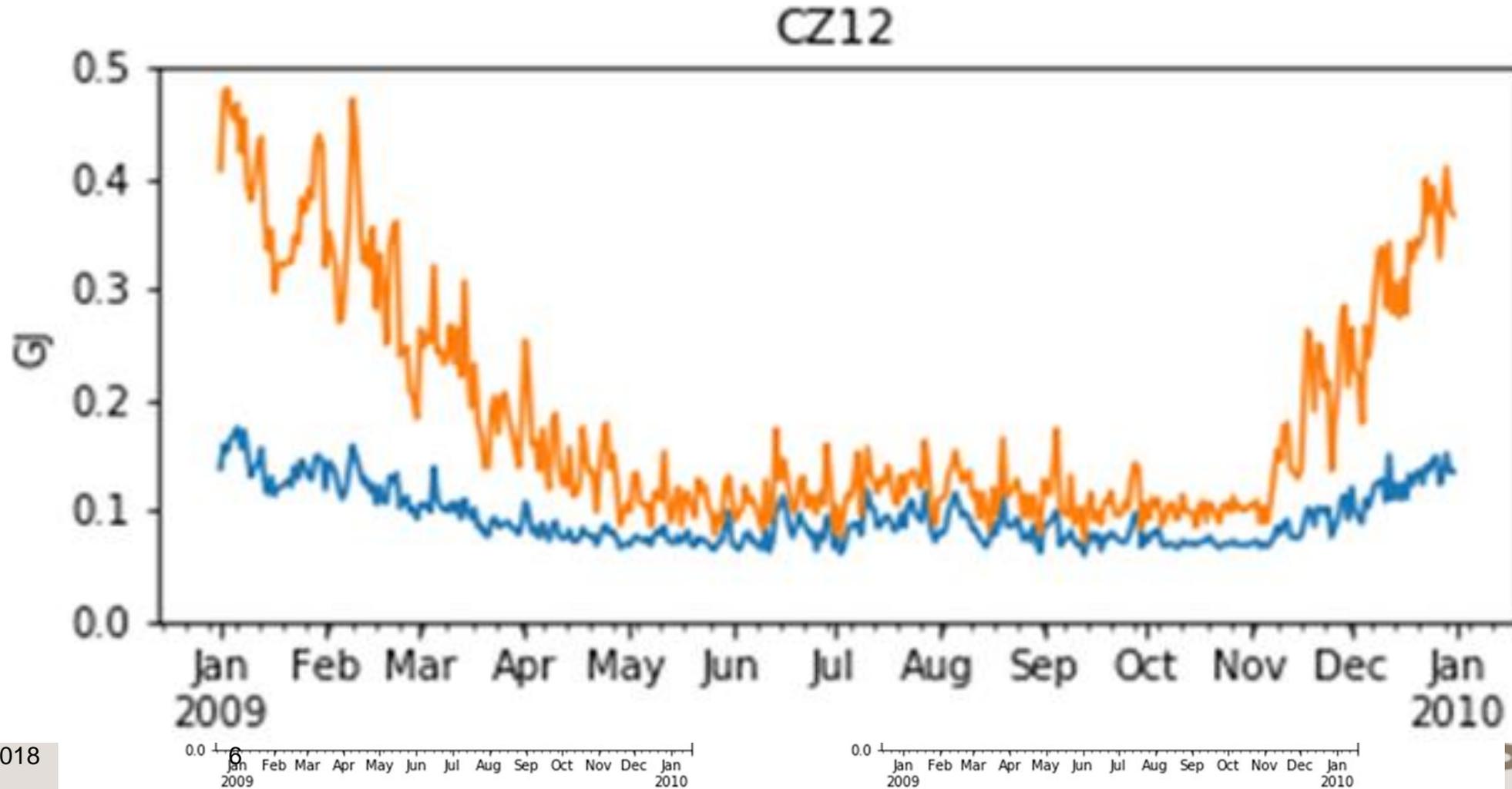


# Hints of Grid Impacts

— All-Electric home  
— Mixed-Fuel Home

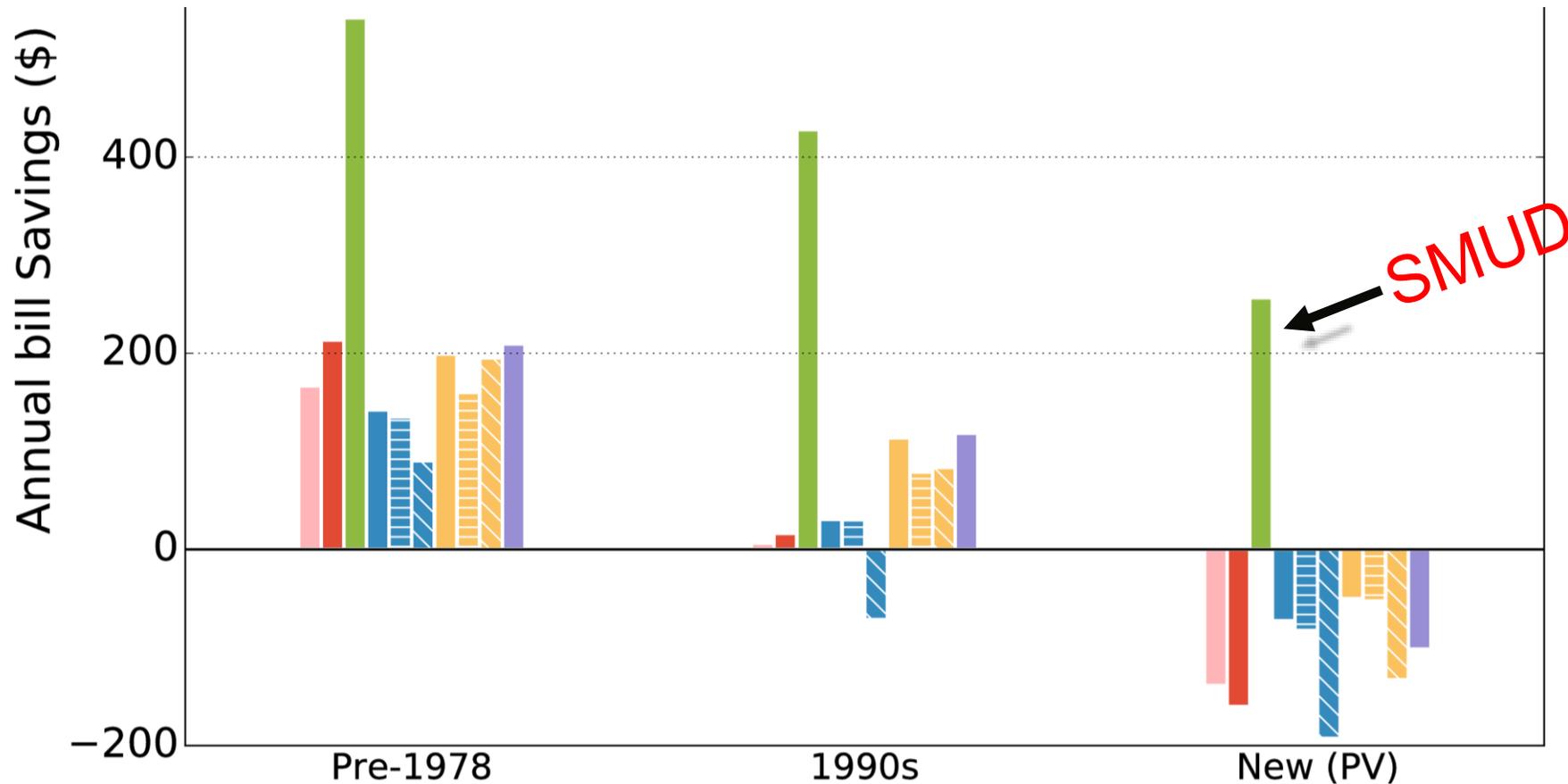
DRAFT

New Single Family House: Total Energy Consumption



# Single Family Homes: Bill Impacts of All-Electric Home. *Sample of CA Climate Zones*

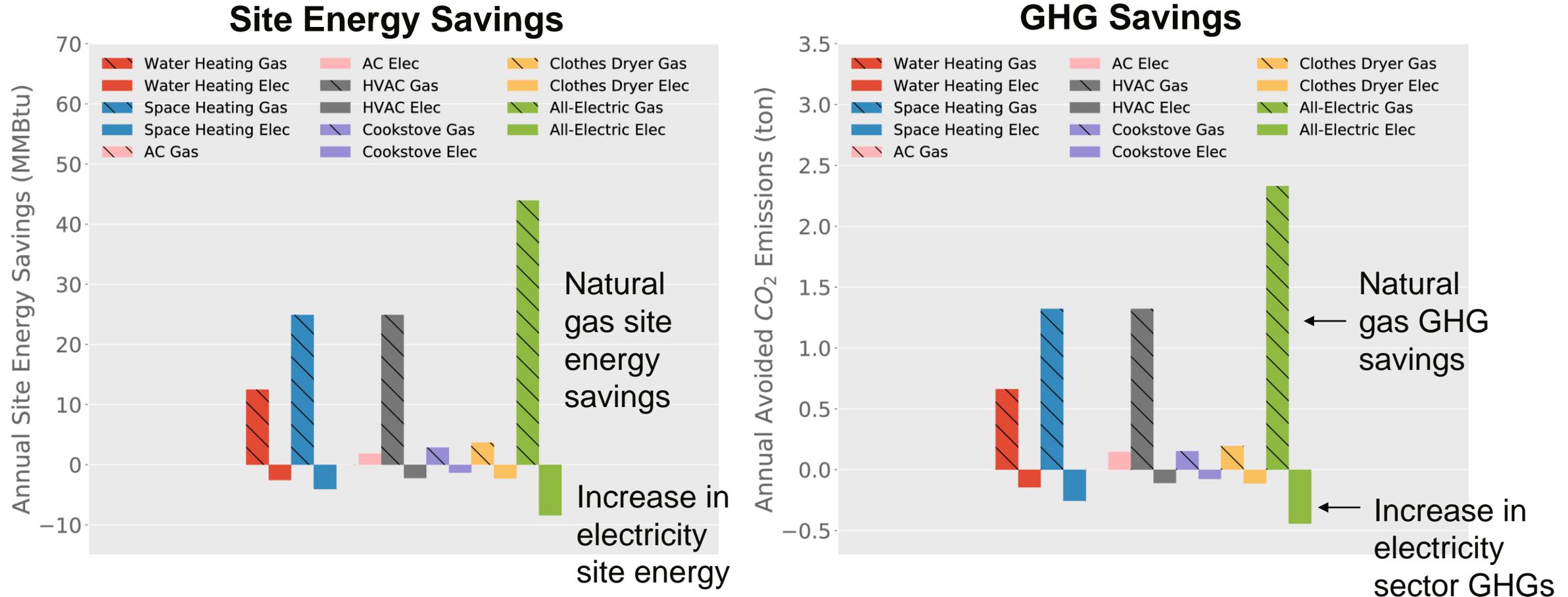
DRAFT



- Electrifying older vintages shows bill savings across nearly all regions;
- All-electric new construction show modest bill increases, except in Sacramento

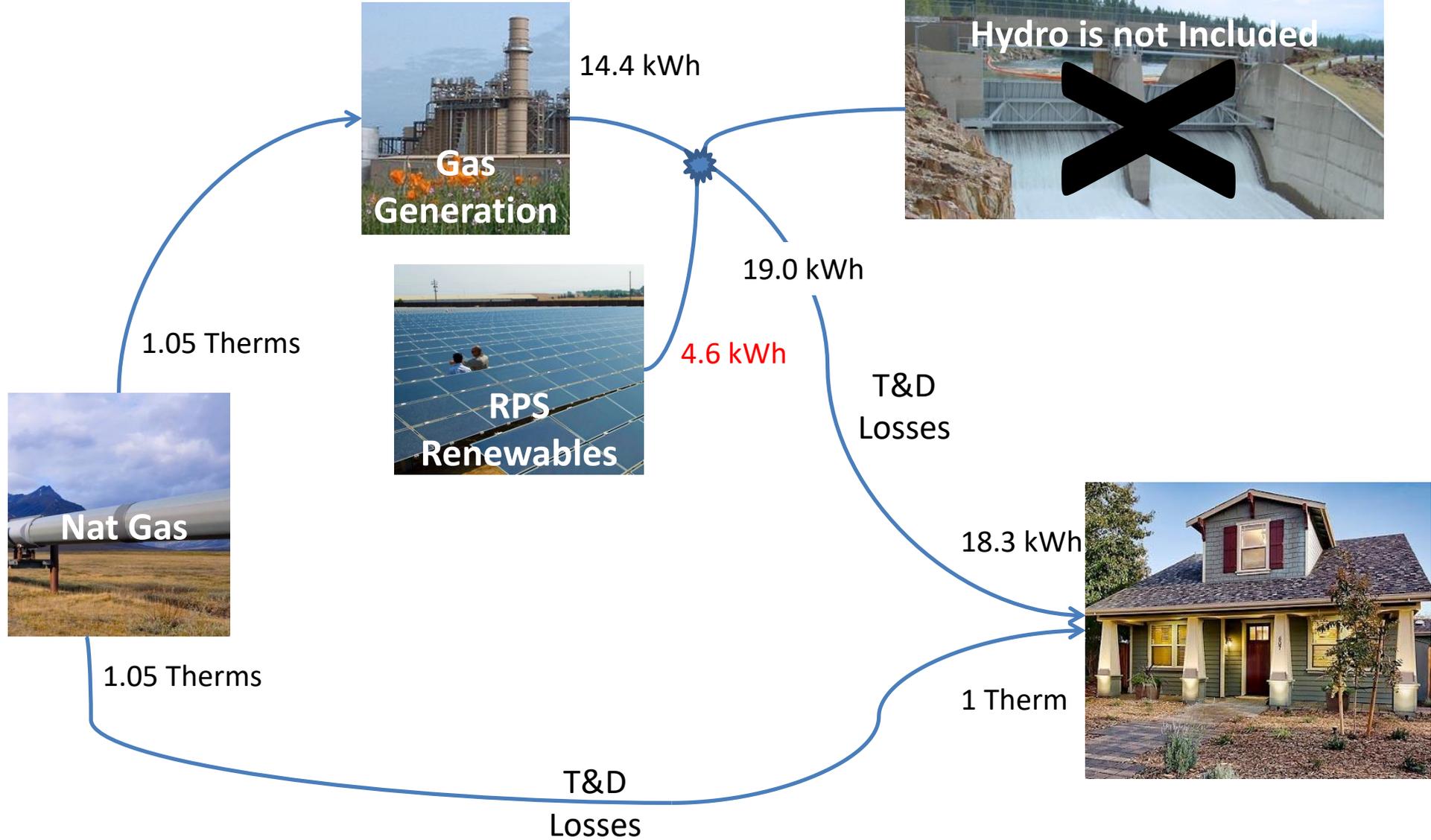


# Site Energy Savings and GHG Savings using 2020 “Mid” Short-run Marginal Emission Factors: 1990s SF Homes, Sacramento



- GHG savings are roughly commensurate with site energy savings.

DRAFT



**At 90% RPS 1 Therm = 138 kWh**

**Source Energy Carbon Content**

# SMUD Electrification Programs

	Launch Date	Total Possible Incentive	Base Incentive	HP-HVAC	HPWH	Induction	Bonus
<b>Single Family New Construction</b>	March 2018	\$5,000	\$3,000	✓	✓	\$1,000	\$1,000 <sup>1</sup>
<b>Multifamily New Construction</b>	March 2018	\$1,750	\$1,000	✓	✓	\$500	\$250 <sup>2</sup>
<b>Single Family Existing</b>	May 2018	\$10,250	n/a	\$4,500	\$3,000	\$250	\$2,500 <sup>3</sup>
<b>HPWH Equipment Efficiency</b>	June 2018	\$3,000	\$2,000	n/a	✓	n/a	\$1,000 <sup>4</sup>
<b>HPWH Midstream Incentive</b>	October 2018	\$1,000	n/a	n/a	✓	n/a	x
<b>Multifamily Existing</b>	December 2018	\$2,250	n/a	\$1,000	\$1,000	\$250	x
<b>HP-HVAC Equipment Efficiency</b>	1 <sup>st</sup> Quarter 2019	\$4,500	\$1,500	\$2,500	n/a	n/a	\$500 <sup>5</sup>
<b>HPWH Direct Install Program</b>	2nd Quarter 2019	\$3,000	n/a	n/a	✓	n/a	x

# Existing Single Family Examples

---

- Homeowner A: Calls for AC replacement upon breakdown
  - Gas HVAC Replacement: \$10,812 after rebates
  - HP HVAC + HPWH + Induction: \$10,432 after rebates
- Homeowner B: Calls to electrify the home
  - Minisplit (2 head) + HPWH + Induction: \$2,435 after rebates
- Homeowner C: Calls to electrify space heating
  - Contractor spends an hour trying to dissuade the homeowner



# Questions?



**Scott Blunk**

(916) 826-9369

[scott.blunk@smud.org](mailto:scott.blunk@smud.org)

9/26/2018



# SMUD Electrification Programs

	Launch Date	Total Possible Incentive	Base Incentive	HP-HVAC	HPWH	Induction	Bonus
<b>Single Family New Construction</b>	March 2018	\$5,000	\$3,000	✓	✓	\$1,000	\$1,000 <sup>1</sup>
<b>Multifamily New Construction</b>	March 2018	\$1,750	\$1,000	✓	✓	\$500	\$250 <sup>2</sup>
<b>Single Family Existing</b>	May 2018	\$10,250	n/a	\$4,500	\$3,000	\$250	\$2,500 <sup>3</sup>
<b>HPWH Equipment Efficiency</b>	June 2018	\$3,000	\$2,000	n/a	✓	n/a	\$1,000 <sup>4</sup>
<b>HPWH Midstream Incentive</b>	October 2018	\$1,000	n/a	n/a	✓	n/a	x
<b>Multifamily Existing</b>	December 2018	\$2,250	n/a	\$1,000	\$1,000	\$250	x
<b>HP-HVAC Equipment Efficiency</b>	1 <sup>st</sup> Quarter 2019	\$4,500	\$1,500	\$2,500	n/a	n/a	\$500 <sup>5</sup>
<b>HPWH Direct Install Program</b>	2nd Quarter 2019	\$3,000	n/a	n/a	✓	n/a	x

Footnotes:

1. Completion in 2018
2. With the addition of a mixing valve
3. Triggered by changing 3 of the following 4 (HPWH, HPSH, Induction, Panel Upgrade to 200Amps)
4. \$1,000 "Bonus" come from the HPWH Midstream Incentive Program
5. Airflow bonus if total system airflow is > 400 cfm/ton