



DRIVING TRANSFORMATION

Behavior, Energy & Climate Change (BECC) / November 12-15, 2023 / Sacramento, CA

Co-Convened by

Stanford

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Targeting Residential Electrification in Southern California Using Electricity Consumption Data

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Decarbonization and TECH Clean California

California's goal to decarbonize all homes by 2045 requires replacing natural gas water heaters and furnaces with **electric heat pumps** by ~2032

Heat pumps are used for space and water heating in <5% of CA homes

TECH Clean California is our state's \$265M flagship heat pump market transformation initiative

California Heat Pump Goals



Heat Pump
Water Heating



Heat Pump
HVAC

**6 million heat pumps
installed by 2030**

Climate ready homes:

- 3 million by 2030
- 7 million by 2035

50% of funding
delivered to low-income
households or
disadvantaged communities

Source: California Office of Governor website. July 2022.
"Governor Newsom Calls for Bold Actions to Move Faster Towards Climate Goals"

For a complete overview, check out <http://techcleanca.com>



BECC Proven Methods Work for Electrification

1. Utility partner emailed personalized promotional content to customers
2. We retargeted customers with online media promoting heat pumps tailored to segment

→ 56% open rate for personalized email campaign
→ 24% increase in favorability for electrification

The goal is not to test if tailored outreach works.
The goal is to make it ethical for electrification.

Subject: You're Paying More to Be Cool – Now Save Up to \$3,000



Now is a Great Time to Upgrade Your Comfort

An update to your heating and cooling system can make big impacts.
And right now, you can get up to \$1,000 incentive and a \$2,000 tax credit to upgrade to a high-efficiency heat pump system.

Based on your monthly electricity use, you are paying more than other homes like yours to cool your home.



SUMMER 

Heated Air
Cooled Air
Outside Air
Warm Air
Thermostat

WINTER 

Cooled Air
Heated Air
Outside Air
Cooled Air
Thermostat



Why De-Risk Electrification Targeting?

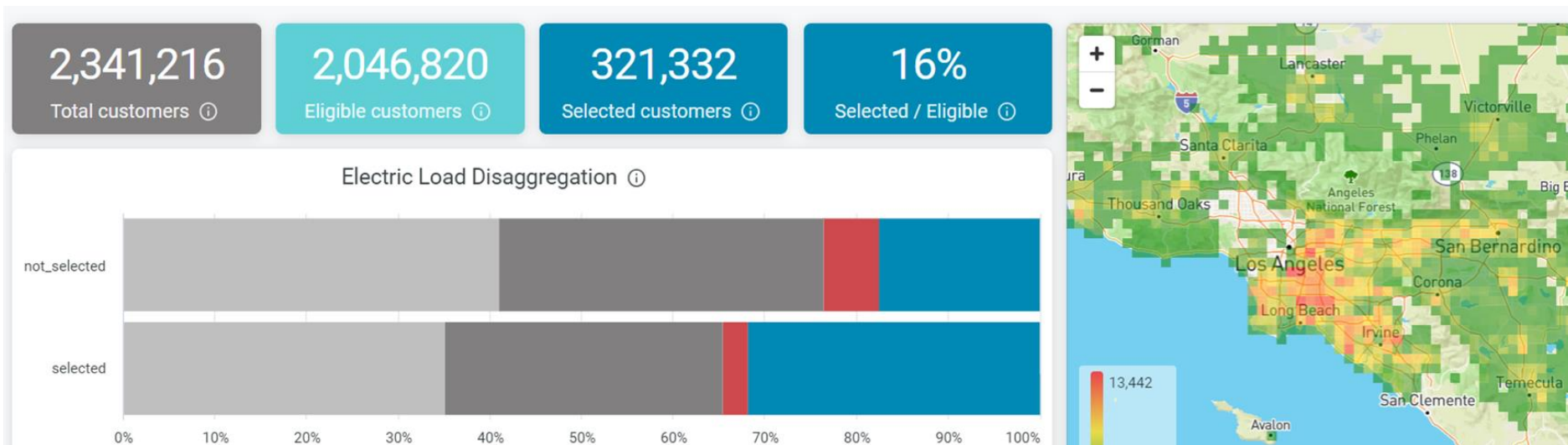
- **Varying customer outcomes** means we should not promote electrification to energy-burdened customers that may end up with even higher utility bills (or we should identify whom to offer bill protections).
- **Varying grid outcomes** means we should not promote electrification to customers most likely to increase peak period demand on the grid.
- **Market transformation** is behavior change at scale. People with the best outcomes are the most likely to tell their neighbors.



Finding the Best Heat Pump HVAC Customers in Southern California

Recurve uses open-source OpenEEMeter methods to analyze historical electricity and gas consumption in **every home** and identify great heat pump candidates.

Here we selected people who both use the most total electricity and who use more of that electricity for cooling than the rest of the population.



#BECC2023



In Conclusion

Using meter data to target electrification:

- Directs the power of behavior influencing to an ethically targeted population
- Improves cost-effectiveness of marketing and outreach
- Drives market transformation through positive outcomes
- Avoids increasing energy burdens and grid stress

We should target

- Heat pump customers targeted based on energy use are twice as likely to save on utility bills than customers chosen randomly

We did target

- We've promoted heat pumps to over 1 million SCE customers most likely to save on their bills

You can target

- Any utility can use open-source OpenEEMeter methods to find the best electrification candidates



Thank you

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