

# REDUCING BUILDING DECARBONIZATION BARRIERS IN THE MULTIFAMILY SECTOR USING ADVANCED ANALYTICS

Eric Xu—Pacific Gas & Electric  
Hal T. Nelson, Ph.D.—Res-Intel.

Contact: Hal.Nelson@Res-Intel.com

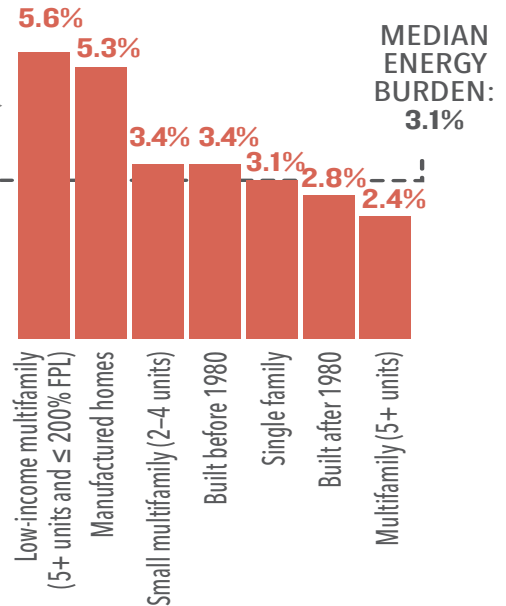


## THE MULTIFAMILY (MF) SECTOR IS VULNERABLE AND UNDERSERVED

- The highest energy burden by housing type
  - Utility bills/household income
- The highest share of households of color



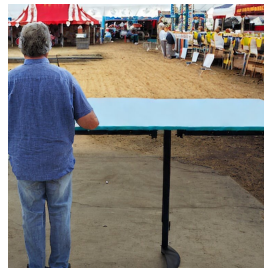
SOURCE: Drehoobi, A., Ross, L., & Ayala, R. (2020). How high are household energy burdens. An Assessment of National and Metropolitan Energy Burdens across the US.



## EQUITABLE BUILDING DECARBONIZATION IS DIFFICULT:



1. The lack of whole building energy data



2. High customer acquisition costs



3. Ensuring participant cost savings

## UTILITIES HAVE ACCESS TO VAST DATA RESOURCES



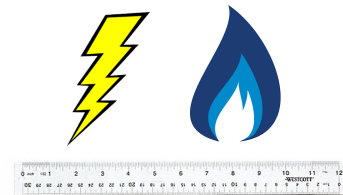
Aggregate county assessor properties into sites

+

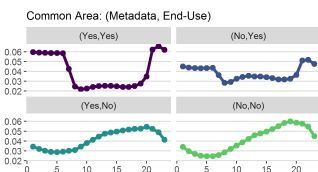


Map utility meters to sites

+



Calculate Energy Use Intensity



Machine learning energy disaggregation

+



Existing equipment predictions

+



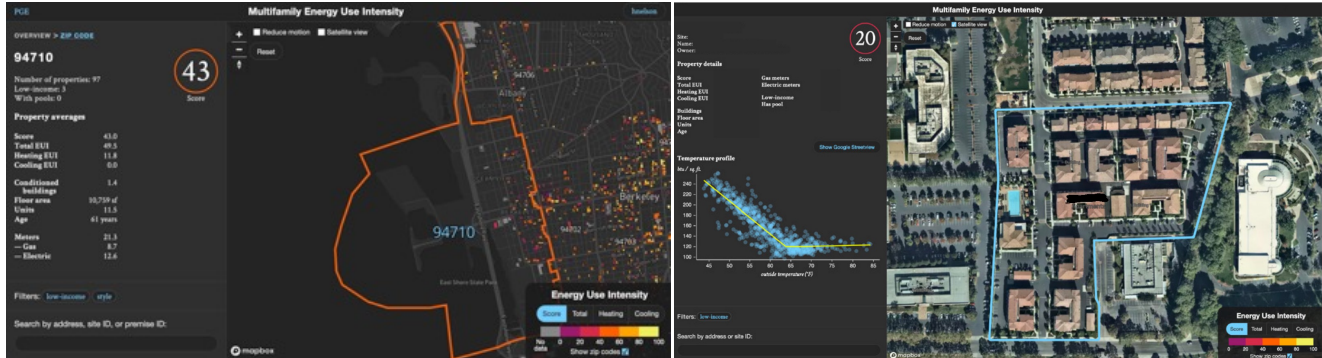
Energy efficiency & DR recommendations

Over

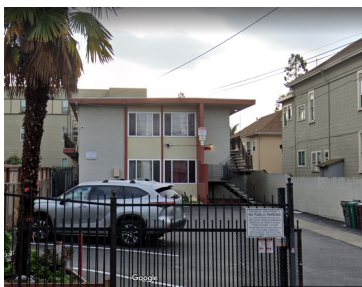
# REDUCING BUILDING DECARBONIZATION BARRIERS IN THE MULTIFAMILY SECTOR USING ADVANCED ANALYTICS

Eric Xu—Pacific Gas & Electric  
Hal T. Nelson, Ph.D.—Res-Intel

## SECURE BUSINESS INTELLIGENCE DASHBOARD



## USE-CASES FOR EQUITABLE DECARBONIZATION ANALYTICS



1. Targeting residential properties with a high share of income-eligible residents



Sites

Water Heat  
Space Heat

8,250  
4,448



Sites

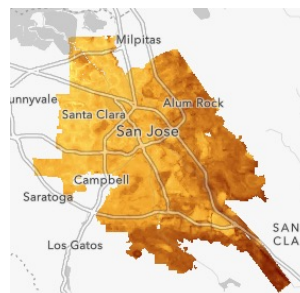
22,750  
26,552

2. Market assessments of heat pump technologies by community / climate zone

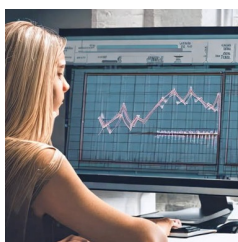
600 Amp  
200 Amp  
100 Amp



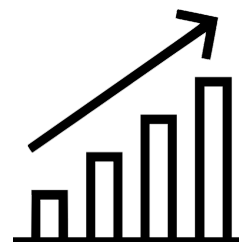
3. Electrical panel upgrade requirements



4. Resilient energy retrofits for heat islands



5. Remote energy audits and improved customer engagement



6. Increased retrofit conversion rates