

Cultural Factors in the Energy Use Patterns of Multifamily Tenants

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Study Goals

Goals

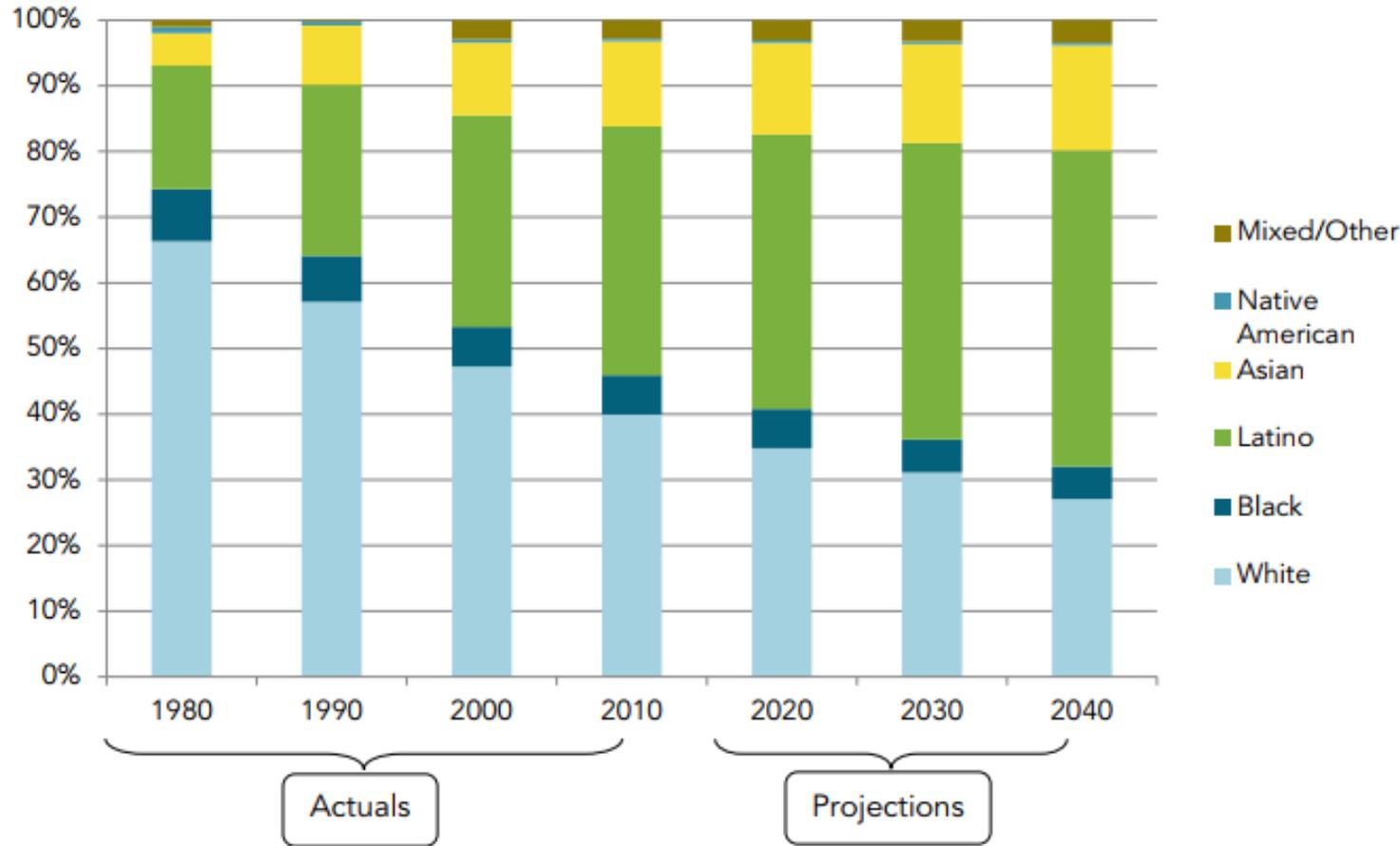
- 1 Understand diversity of circumstances and energy use across multifamily households.
- 2 Develop and test methods to explore relationship between cultural /demographic data and energy use.
- 3 Use findings to inform energy and climate programs and policies.



The Big Picture: CA's Changing Demographics



Racial/Ethnic Composition: California, 1980-2040



- Future programmatic and energy forecasting account for cultural and demographic factors.
- Multifamily segment becoming an increasingly common and essential component of zero-net energy strategy for the state and dynamic changes to the US population.

Understanding the MF Segment: Survey Methods



Design

U.S. Census,
RASS

Household
Characteristics

Demographics

Behavior, Attitudes,
Knowledge

Physical
Characteristics of
Residence

Outreach

PG&E MUP Project

Property Owner
Interview

Tenant Outreach

Pre-set Incentives
for Participation

Engagement

Online and Paper

Onsite Door
hangers

Property
Management &
Maintenance Staff

English & Spanish

Multiple Follow-ups



- Outreach (blue)
 - 49 Sites (4,164 units)
- Participation (orange)
 - 28 Sites (2,130 tenants)
 - 471 Completed
 - 12 Counties
 - Hot (central valley), Mild (Coastal)

Findings

Full Report: https://ww2.energy.ca.gov/publications/displayOneReport_cms.php?pubNum=CEC-500-2018-004

Summary: <https://www.aceee.org/files/proceedings/2018/index.html#/paper/event-data/p392>

Questions?

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Demographics

- Majority households low-income: 71% incomes <\$30K/yr.
- Ethnicity / origin and location are strongly correlated, challenging a quest for independent statistical “factors”

Energy Use

- Electricity use across sample is highly concentrated, with 20% of units accounting for 43% of total electricity use
- Cluster analysis identified a wide variety of distinct profiles
- Variety of cooling methods, with AC use far higher in Central Valley and 60% indicating they are too hot

Plug Loads

- Significant energy use in multifamily buildings
- Average household loads clearly correlated with number of plug load devices