

Who are the “Low Users” and What Can We Learn from Them?



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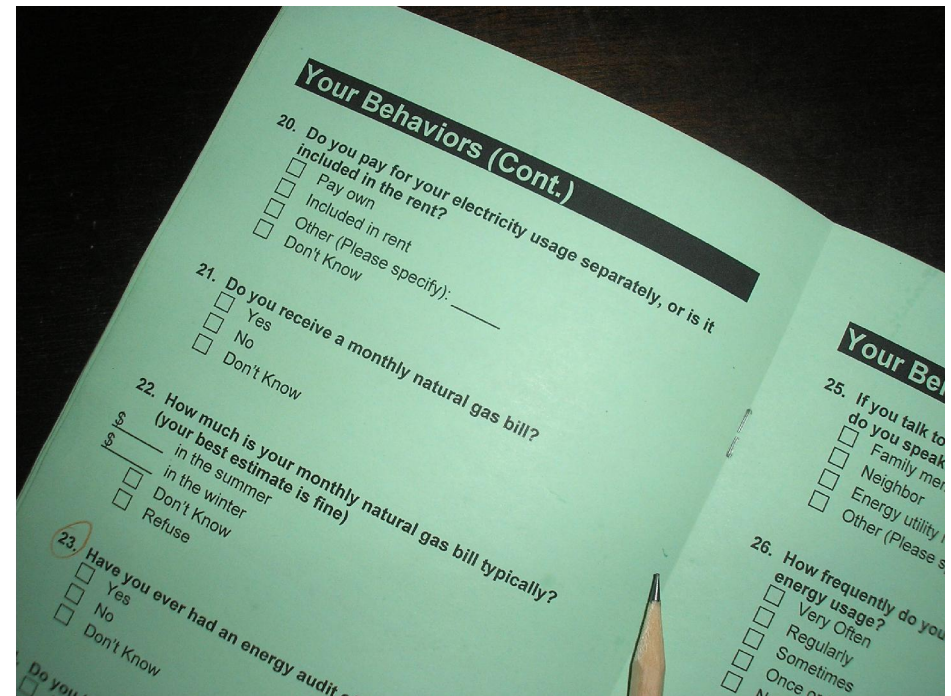
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Overview

Why study low electricity users?

Findings: demographics, behaviors, profiles

Conclusions: How can insights about low usage inform policy?



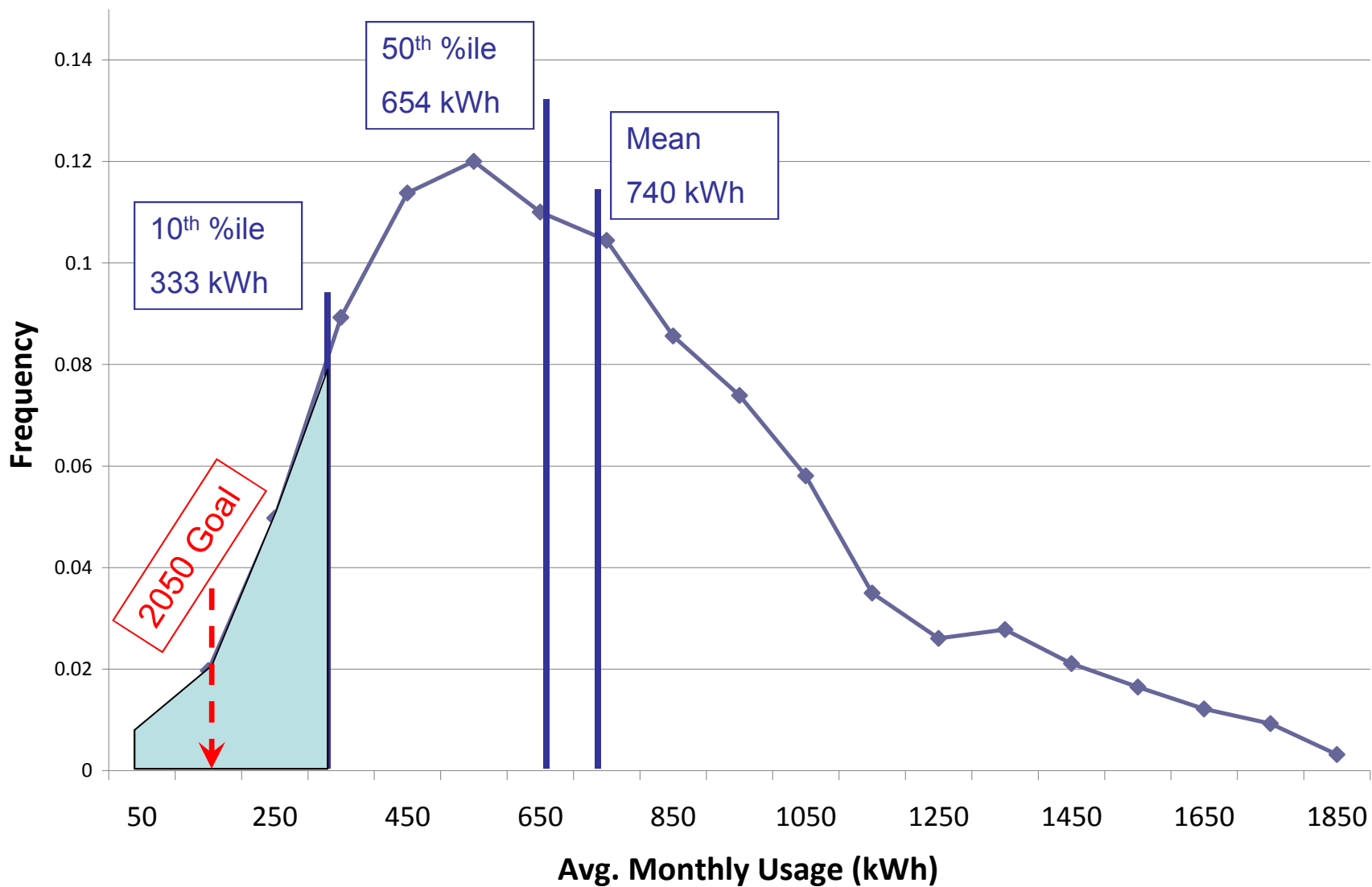
Why study low users?

- **~80% GHG emissions reductions: we better consider all options**
- **Standard approaches focus on energy supply & hardware**
- **What is usually skipped over:**
 - **People** (behavior, habits, variation) and
 - **Energy Demand** (consumption levels treated as exogenous)
- **Lowest users offer Natural Experiment**
 - **What is possible now? w/ current infrastructure, technology**
 - **Crowdsourcing:** experts ask the public how they do it

Why study low users?

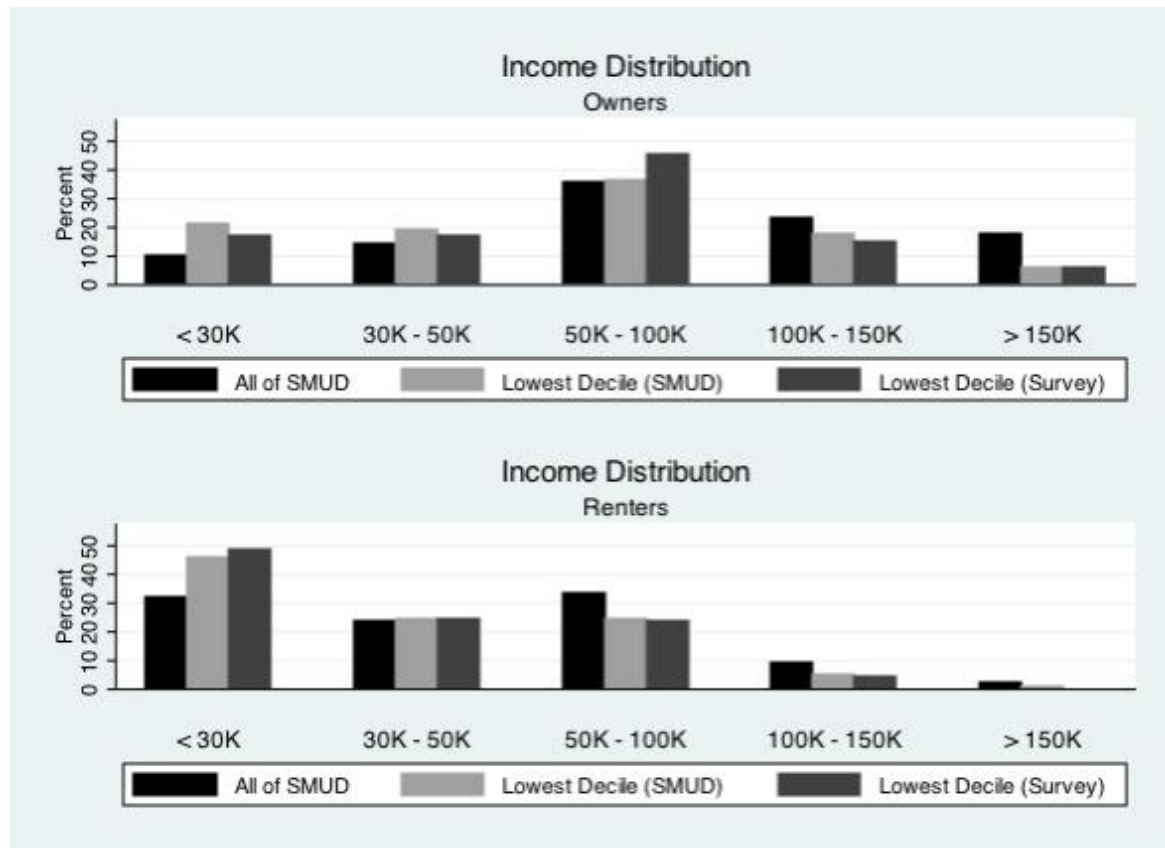
- **Misconception/untested hypothesis** of who low users are:
Poor, miserable, live alone, or not home.
“They are not like us. There is nothing to learn from them.”
- How does this presumption arise?
 - Averages obscure variation, low users
 - Energy consumption treated as a *normal good*
- **Low Users = Unaverage**

Residential electricity consumption distribution in SMUD territory



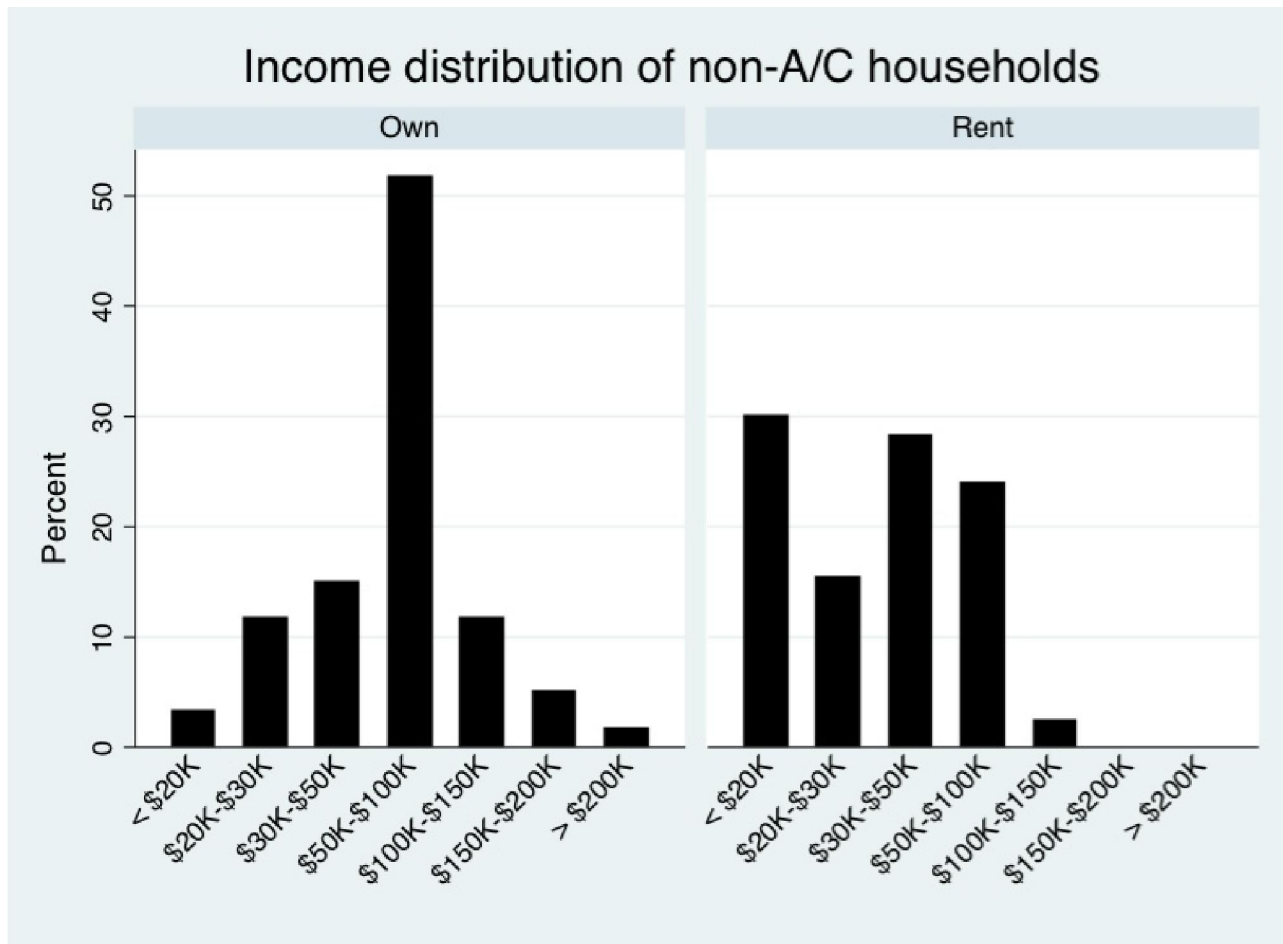
Findings - demographics

- + Low usage is real; people are home (15% - 18% response rates)
- + Demographically diverse low user population
(Income, Age, Race, Education, Floor area)

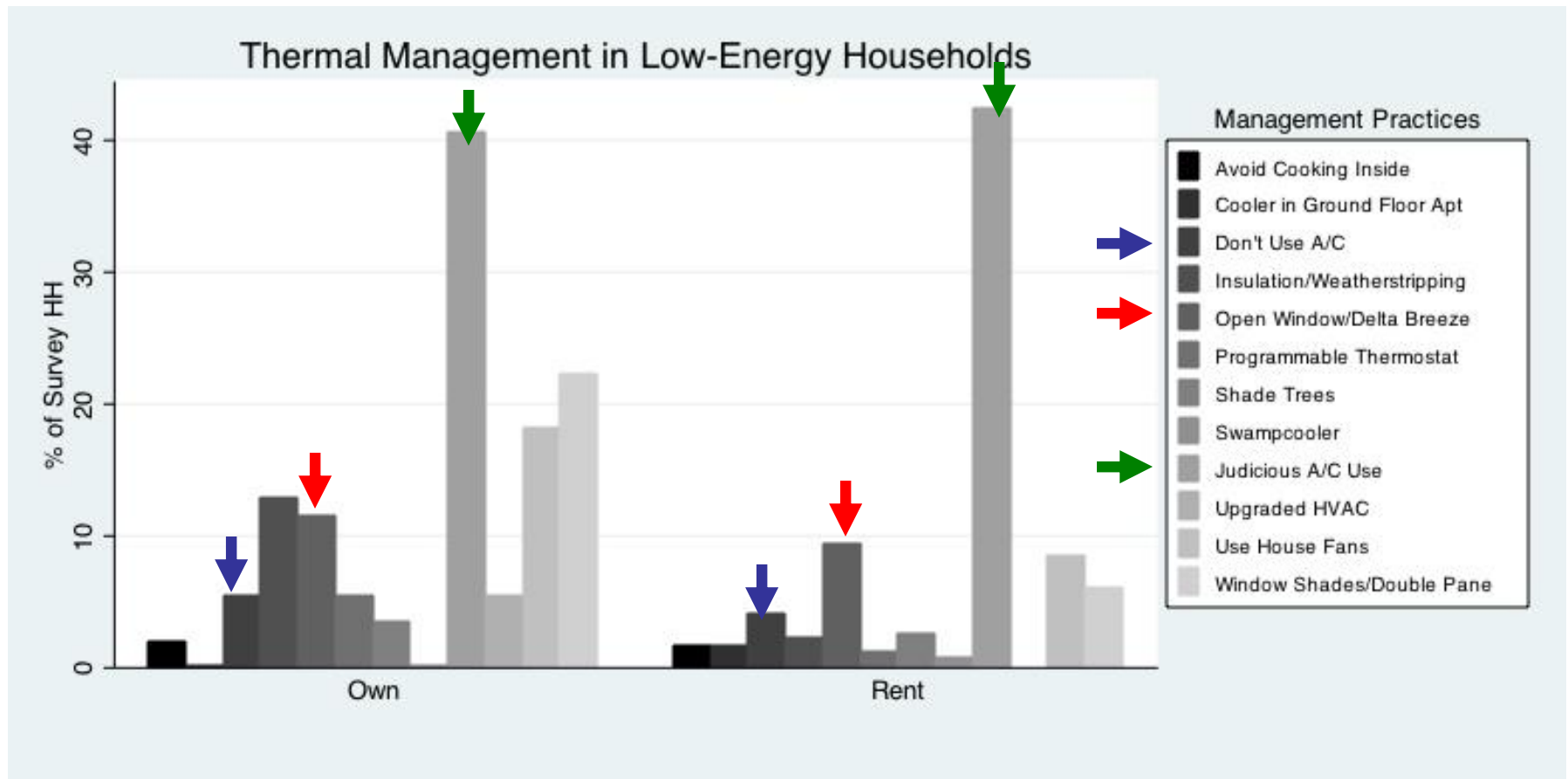


Findings – strategies, behaviors, attitudes

+ Air conditioners: ownership and use, and attitudes about heat and keeping cool



Cooling strategies – what low users say they have done to reduce their energy consumption



Low use pathways: A typology of functional equivalence

Parameter	Principles	Examples	Result
Space	Match scale to task	Space heater vs. furnace; microwave vs. oven; el. blanket vs space heater, fan vs. A/C	Reduced electricity
	Optimize physical space	Insulate, keep sunlight out, open windows	
Time/ Scheduling	Operate for shorter duration/ less frequent	Manual AC control; use timers; power strips, turn off (when gone, at night, not in room), shift to off-peak,	
	Run only full loads	Dishwasher, laundry, shower sequentially	
Sufficiency	Adequacy	Wash laundry cold	No electricity for that function
	Manual alternative	Line dry clothes	No electricity
	do without	Get rid of AC, TV, clothes dryer	
Efficiency	Upgrade to more EE version	Replace A/C, windows, CFLs, appliances	Reduced electricity

Types of low users

Types of Low Users

Descriptions

Actions

Energy Efficiency

Actively engaged on energy, self-motivated (combinations of behavior and efficient technologies)

Thermal mgmt routines, upgrades

Non-Use

Actively engaged on energy, prefer to have and use less stuff

Turn off/don't have/don't use

Just How It Is

No special efforts mentioned, and little self-awareness about energy

x

Constraints

Low energy use attributed to budget, living alone, not home much, or small apt.

Not emphasized

Six customer profiles

1. Well Off and Energy Efficient (19%) \$\$

2. Excellent Quality of Life (24%) ++

3. Thermally Unflappable (16%)



4. Ultra-low Users (33%)



5. Sacramento Average (22%)



6. Unhappily Low Energy (5%)



Well off and energy efficient

Well off and energy efficient (51 out of 277 = 18.5%)

- Quality of Life - Above Average or Excellent
- Education - At least a 2-year college degree
- Income - \geq \$50,000
- Home Size - $>$ 1,000 ft²
- Own all of the following electric appliances:
refrigerator, washing machine, dryer, electric water heater,
central A/C, dishwasher, microwave, TV, DVD, computer
- Have done something to improve their energy efficiency

Profile overlap:

	Well off and efficient	Unhappily low energy	Thermally Unflappable	Sac Average	Ultra-low	Excellent QoL
Well off and efficient	51					
Unhappily low energy	0	23				
Thermally unflappable	5	0	53			
Sac Average	2	0	7	103		
Ultra-low	12	3	31	29	208	
Excellent QoL	25	0	18	0	50	158

Conclusions:

How can insights about low usage inform policy?

1. Everyone's doing it: very low usage is not something that requires heroics or unhappiness or lots/lack of money.
2. Because the social, demographic, and possibly motivational, distances between low users and the rest of the public is much smaller than imagined, need not **convince** but **demonstrate and communicate examples of low usage that might resonate**.
3. People are important to making low usage happen. Very low usage isn't typically something you buy or hire someone to do.
4. Expand the Conversation:
 - Celebrate lowest users
 - Crowdsource/invite public to co-produce climate solutions
 - Catalogue behavioral practices
 - Use consumption figures not energy savings
 - Set ambitious goals

Full Report: <http://www.arb.ca.gov/research/apr/past/09-326.pdf>