



**What do we mean by
“behavior and decision
research” and how can it
contribute to California’s
response to climate
change?**

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Topics

1. Why does behavior matter?
2. What has research shown?
3. Making use of what we know
 - *Information*
 - *Incentives & choice*
 - *Social marketing & programs*
 - *Technology*
4. How to use behavioral knowledge to accelerate climate protection

1. Why behavior and climate?

Key drivers of climate change: human use of energy and energy-using technologies (in buildings, appliances, vehicles, households, communities, organizations).

Key human activities in support of significant change: recognition of problems, creation and adoption of new technologies, prudent use of energy, individual and collective action to mitigate and adapt to impacts.

What do we mean by “behavior?”

A broad range of human activities.

All of the things that consumers, business, governments, and communities do that produce emissions and climate impacts.

The use of technology and energy is involved.

Behavior is both conscious and unconscious.

Sometimes public and often private.

In the energy case . . .

Different behaviors in identical buildings can result in 300+% differences in energy use

Behavioral response during the 2001 crisis saved the grid

Lifestyles produce vastly different CO₂ levels

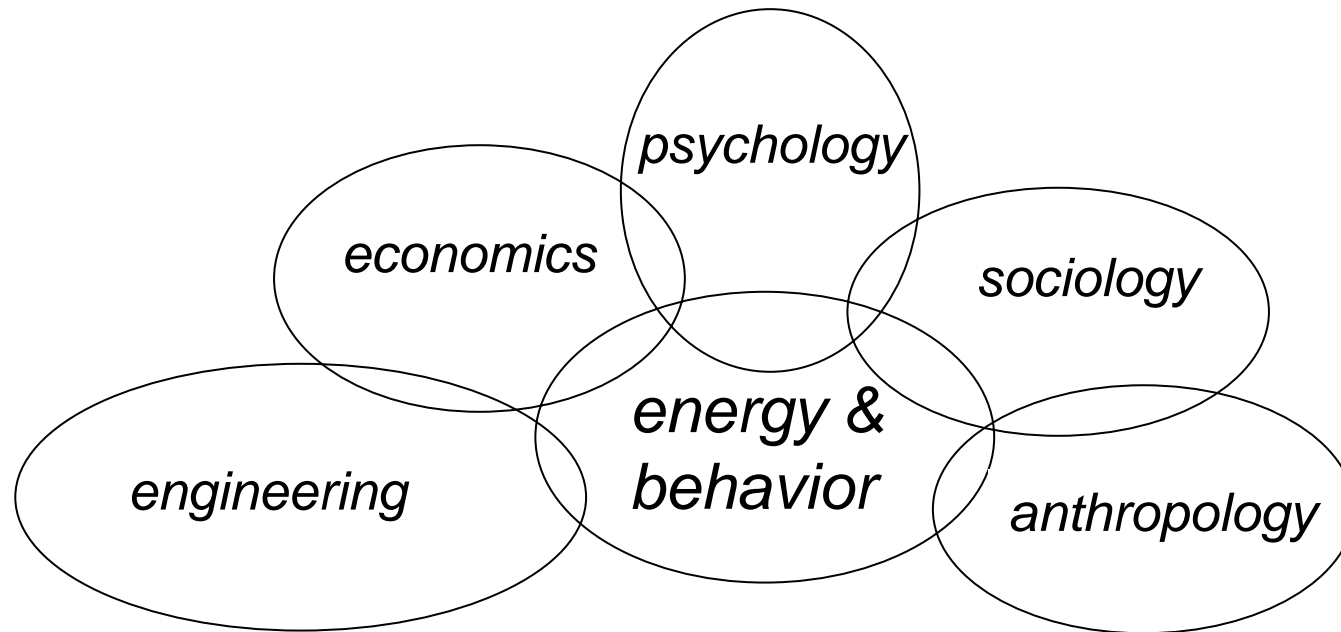
Efficiency gains can be swamped by new consumption behaviors

Application of behavioral knowledge and targeted research can ...

- Help to accelerate technology R&D, commercialization, adoption and appropriate use
- Enable policies and programs to be more effective and less costly
- Encourage and support climate positive actions and decisions by individuals and business
- Improve analytic models on which policy is based to better predict policy impacts

Who's doing the research?

Disciplines & bites of the apple



Interests and perspectives

Sociology	households, organizations, communities, institutions, status, technological change *
Anthropology	cultures, folk models, meanings, practices, habitation *
Psychology	attitudes, motivation, information, perception, behavior change *
Economics	prices, costs, financial incentives, benefits **
Engineering	technologies (hardware & controls), systems **

* Shared interest in norms & group process

** Shared interests in costs/benefits

2. What has research shown?

- We've learned a lot
- Too much to cover here
- Will hit some high points
- Focus (mostly) on consumers
- Some important principles & findings

Starting with research on California consumers...

Californians

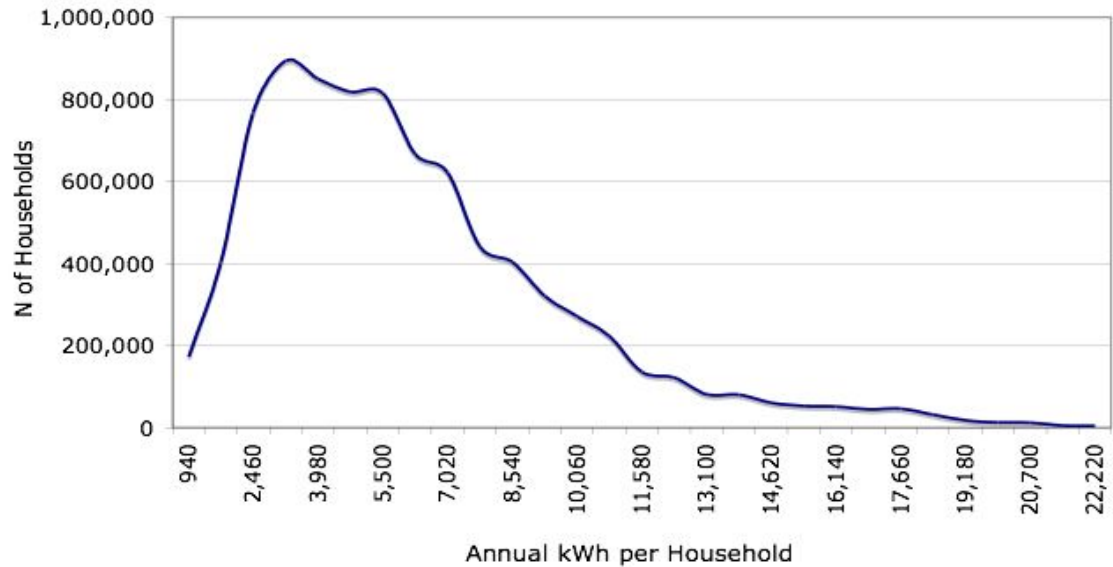
- ✓ Conservation isn't special behavior. It's part of everyday life for many households (and firms).
- ✓ Altruism and sacrifice during the 2001 energy crisis (e.g., not using AC) saved the system.
- ✓ Californians have extremely high levels of support for conservation, renewables, and global warming policies.
- ✓ A majority believes that “current lifestyles can't be maintained” and “energy problems” solved.
- ✓ Energy system has been “problematized” for Californians.

Habit, culture and difference

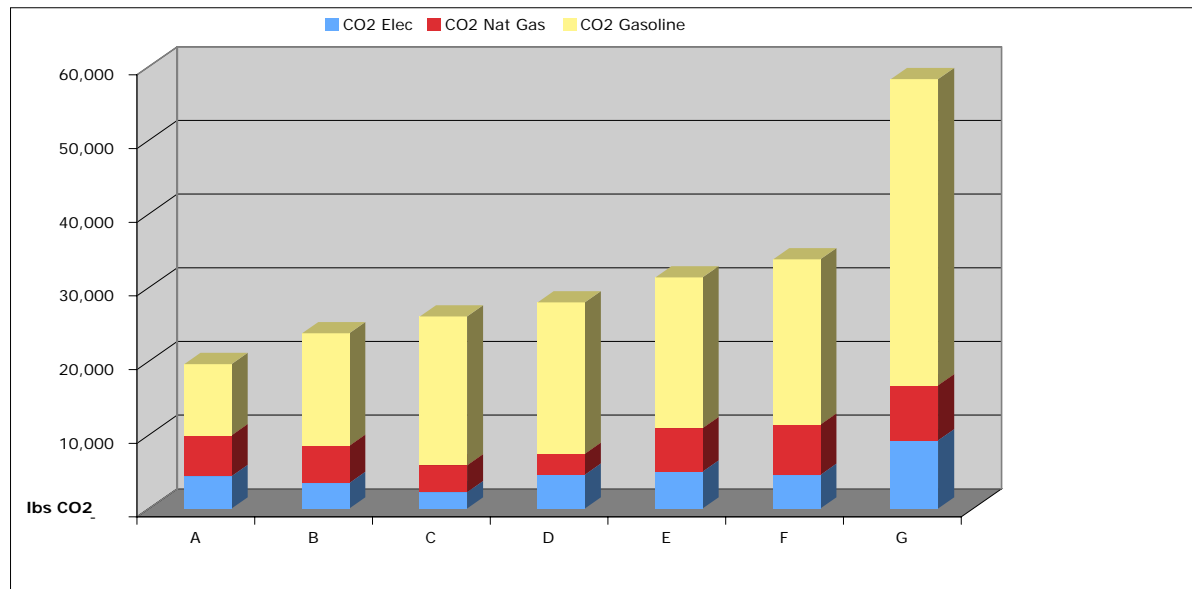
- ✓ Habit is powerful (and not irrational). Perhaps 95% of behavior is unconscious and competent.
- ✓ Groups—not individuals—consume (and conserve) energy.
- ✓ Consumption is structured and fairly routine. It's culturally organized—i.e., technologies, houses, behaviors, people have meaning to persons and groups.
- ✓ Culture evolves and is continually being reinvented. Culture *IS* “doing the right thing.”
- ✓ There is no “average” consumer. Consumption is diverse and levels are highly variable.

California household consumption & emissions

electricity
use



CO₂
emissions



3. Making use of what we've learned

- In providing information
- In incentives & choice
- In social marketing & program implementation
- In technology development & deployment

Providing information: Psychological research on effective information delivery

- ✓ Messenger is important (legitimacy, credibility, trust).
- ✓ Message must be intelligible.
- ✓ Reasonable/accurate/make sense.
- ✓ Action requested is possible, fair/just/equitable.
- ✓ Images more powerful than words.
- ✓ Concrete, vivid, impactful (in whatever form).
- ✓ Messages should be personalized.
- ✓ Related to values and experiences (targets).

Beyond Marketing 101

If this seems like common sense, it's important to remember:

- 1) Not obvious before psychologists studied the processes at work.
- 2) Not at all easy to do (requires considerable knowledge about consumers in general and different audiences in particular).
- 3) Good results demand very careful implementation.

Why information isn't enough

- ✓ Everyone doesn't get the message (media, awareness, attention).
- ✓ Everyone doesn't get the (same) message.
- ✓ When the message is received: fundamental differences in understanding (folk models vs. technical models) (information junkies vs. others).
- ✓ Energy is hard to understand for anyone: it's invisible (walls, machines, bills) & abstract.
- ✓ Technologies are complicated ("black boxes").

Incentives and choices

- ✓ Information is often (ordinarily) asymmetric.
- ✓ Choice applies only in limited situations (most often a major purchase).
- ✓ Non-economic considerations dominate.
- ✓ Choices are rarely carefully considered.
- ✓ Awareness of costs, benefits, pay-backs, rebates, tax credits, etc. is very limited.
- ✓ There are a variety of ways to be rational that don't produce energy efficiency results.

Social marketing and programs

- ✓ Social norms are key anchors for behavior.
- ✓ Norms evolve and can be influenced.
- ✓ Community standards vary.
- ✓ Social networks are conduits for tested and trusted information.
- ✓ Credible leadership can support change.
- ✓ Targeted local interventions can be more effective than efforts to mass produce social change.
- ✓ Some good examples in California and BC.

Technology: Who's really choosing?

- ✓ Efficiency choices are infrequent. Capacity to make effective choices is limited.
- ✓ Little opportunity to develop personal competence. Access to expertise often limited (risk/trust, gender/age). Knowledge of programs, benefits, assistance is low.
- ✓ Consumers use non-energy metrics (visibility, size, \$\$\$) and decision short-cuts.
- ✓ Great importance given to non-energy considerations (size, shape, comfort, convenience, status).
- ✓ Decisions by supply chain actors dominate.

Technology: Behavior in hardwired systems

- ✓ Technology supply systems shape choice and change.
- ✓ Behavior often involves “manning” technologies and buildings that are long-lived and with built-in consumption requirements.
- ✓ Therefore, constraints are often more important than “values” or “value-change.”
- ✓ Patterns of settlement and land use (suburbs, gentrifying neighborhoods, condo/mixed-use) can have huge effects. This is living with past decisions.

4. How can we use behavioral knowledge to accelerate climate protection?

Clear applications in:

- Technology R&D, commercialization, and use
- Targeted, well-designed and effective policies and programs
- Thoughtful support for individuals and business
- Improved analytic models to better predict policy impacts

What's the state of knowledge?

- Significant literatures (25+ years of research)
- Dispersed and somewhat isolated
- Limited research investment in the past
- Policy and research disconnect
- Gaps; progress needed
- Some key efforts to review and synthesize
(Stern, NRC, Lutzenhiser, Vine, Sanstad)

Some ideas: Link behavioral knowledge and research with real-world problems

- Apply existing behavioral knowledge in problem-centered contexts (CEC, CPUC, utilities, etc.)
- New *interdisciplinary* research where behavioral uncertainties can affect R&D and program outcomes.
- Improve behavioral understanding in market assessments.
- Assist policy and program planners, implementers and evaluators to develop realistic program logic models.
- Use behavioral information discovered by program evaluators to “close the loop” and improve programs.

A few more ideas

- Experimental designs for programs → new knowledge and rapid program improvement.
- Identify basic knowledge gaps. Integrate models of technology, climate, behavior, policy and choice.
- Build capacity/new generation of investigators and implementers.
- Facilitate routine collaboration among policy makers, market actors and social scientists.

In order to accelerate the pace of change . . .