

# ***Socially Rational Actors:*** ***Behavior Energy and Climate Change*** ***Conference Insights for Market Transformations***

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Presented at:

*ACEEE's Market Transformation Conference*  
**Using Market Transformation  
to Address Climate Change**

*Washington, D.C.*  
*April 1, 2008*

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***Karen Ehrhardt-Martinez***



# The 2007 BECC Conference

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## Goals:

- Increase our understanding of decision-making and behavior for both individuals and organizations, and
- Facilitate the application of that knowledge to accelerate our transition to an energy-efficient and low-carbon future.

## Topics:

- Policies and programs
- Individuals, households, businesses, government and orgs.
- Opinions, knowledge, habits/practices/lifestyles, technologies

# *Guiding Questions*

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What insights have we gained from the BECC Conference?

- Make Energy and Efficiency **Visible**
- Understand Individuals/Consumers Better
- Strengthen Trade Allies Linkages
- Maximize Program Effectiveness

# Making Energy and Efficiency More Visible

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- Your Average Kilowatts of Electricity per Month/Year?
- National and Regional Averages?

# Making Energy and Efficiency More Visible

**Table 5: U.S. Average Monthly Residential Electricity  
Consumption by Region, 2006**

Census Division Region	Number of Consumers	Average Monthly Consumption (kWh)
New England	6,056,160	640
Middle Atlantic	15,392,413	698
East North Central	19,472,313	798
West North Central	8,846,054	940
South Atlantic	24,899,810	1,137
East South Central	7,791,650	1,255
West South Central	13,860,466	1,165
Mountain	8,518,567	885
Pacific Contiguous	16,970,544	703
Pacific Noncontiguous	663,094	666
U.S. Total	122,471,071	920

Average Annual Electricity Consumption = 10,664 kWh

**Karen Ehrhardt-Martinez**

Source: EIA



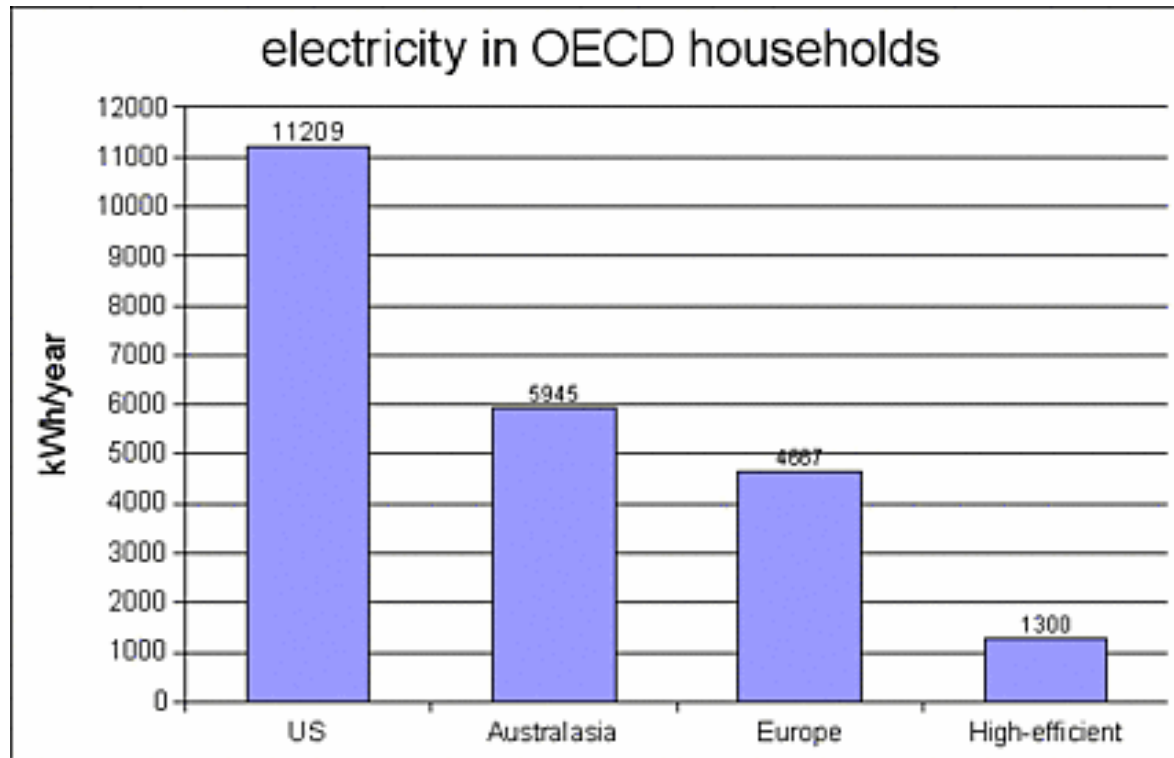
# Making Energy and Efficiency More Visible

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Historically, we have moved from:

- Visible to invisible forms of energy
- Limited use to ubiquitous demand for energy services.
- A focus on expanding energy resources to increasing energy efficiency and reducing our carbon footprint.

# Making Energy and Efficiency More Visible



# Making Energy and Efficiency More Visible

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## Earth Hour

Saturday, March 29<sup>th</sup>, 8pm



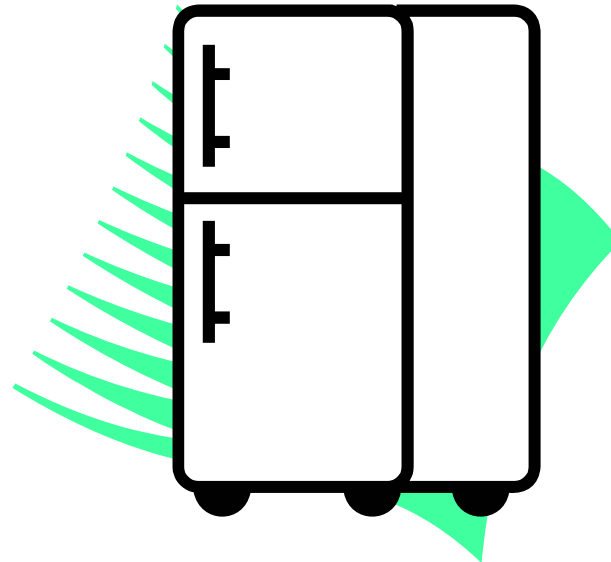
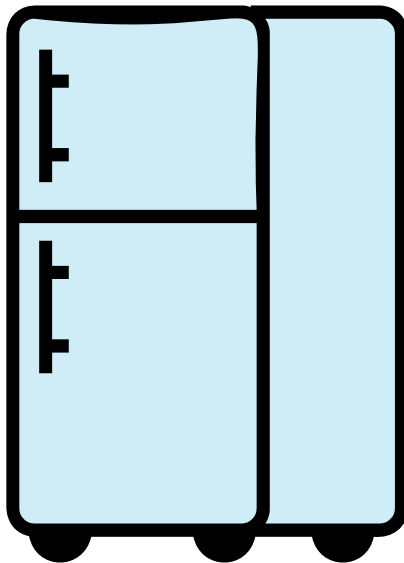
- Turn off lights and non-essential electronics.
- Cut Sydney's electric consumption between 2.1% and 10.2% (for the hour) in 2007
- 2.2 million people (57% of Sydney's residents) took part in 2007

# Understand Individual/Household Decision-Making and Behavior

## Economically Rational Decision-Making 101

Refrigerator A = \$2499

Refrigerator B = \$1500

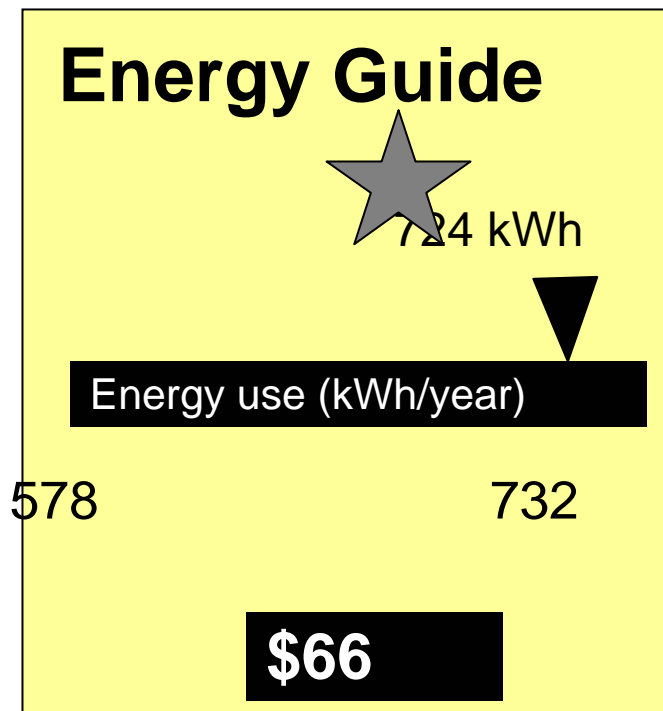
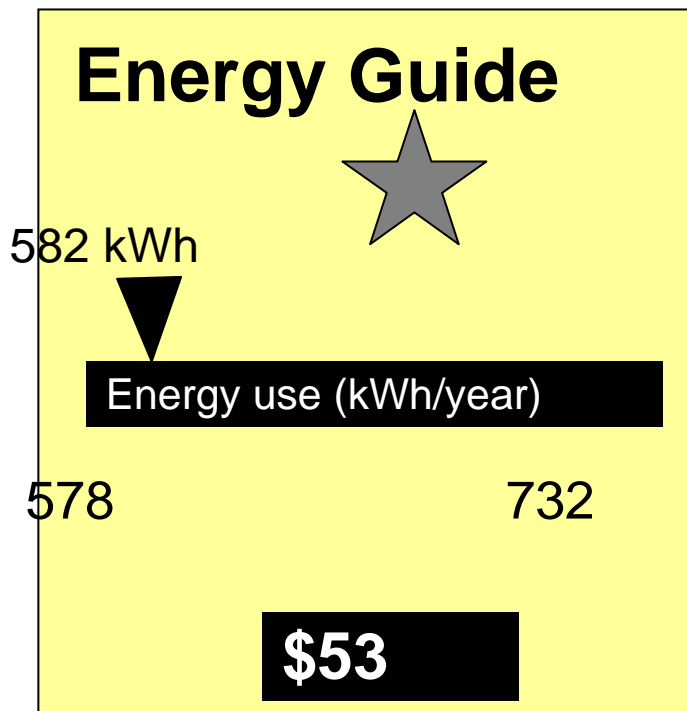


# Understand Individual/Household Decision-Making and Behavior

## Economically Rational Decision-Making 101

Refrigerator A = \$2499

Refrigerator B = \$1500



# Understand Individual/Household Decision-Making and Behavior

Calculate the Life Cycle Cost and Payback.  
Which refrigerator should you buy?

Refrigerator	A	B	A - B
Purchase Price	\$2,499	\$1,500	\$999
Size (Cubic Feet)	26	26	\$0
Annual Use	582	724	-\$142
Energy Star Compliant	Yes	Yes	
Total Elec Cost	[REDACTED]		
Total Life Cycle Cost			

# Understand Individual/Household Decision-Making and Behavior

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Size (Cubic Feet)	26	26	\$0
Annual Use	582	724	-\$142
Energy Star Compliant	Yes	Yes	
Total Elec Cost	\$ 616	\$ 766	-\$150
Total Life Cycle Cost	\$ 3,115	\$ 2,266	\$849

# Understand Individual/Household Decision-Making and Behavior

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What accounts for variation in household energy consumption?

- Features of infrastructure and technology.
- Non-physical factors (3:1 variation)
  - Demographics
  - Lifestyles
  - Habits
  - Values, Beliefs, Norms and Perceptions

# Understand Individual/Household Decision-Making and Behavior


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## Where are the potential savings?

- Potential CO<sub>2</sub> Savings from Residential Efficiency Improvements > 25%
  - Upgrade attic insulation (7%)
  - More efficient HVAC (5%)
  - Replace incandescents with CFLs (4%)
  - More efficient windows (3.7%)
  - Caulk and weatherstrip (2.5%)
- But behavior includes purchasing, maintenance, and daily living.

# Understand Individual/Household Decision-Making and Behavior

Are we economically rational actors?

- People are poor calculators 
- We don't always/often act in economically rational ways
- Our habits, choices, and preferences are often shaped by social influences and the people around us

# Understand Individual/Household Decision-Making and Behavior

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## Socially Rational Actors

- Individuals are influenced by other people
  - Social learning and modeling
  - Social marketing
  - Social norms
  - Social status
  - Identity framing
  - Social networks

# Understand Individual/Household Decision-Making and Behavior

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## Socially Rational Actors

- Ideas from the BECC Conference
  - Public Health and Health Promotion
  - Social Norms, Feedback and Persuasion Theory
  - Social Networks, Diffusion, and Commitment
  - Social Marketing

# Other BECC Lessons

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## Information and Feedback

- Carbon labels, footprint analysis and smart meters

## Trade Allies

- Efficiency as a prominent choice option

## Program Effectiveness

- Process evaluation and program feedback

# Research Paths

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1. Data Collection and Data Availability
2. Lifestyle and Social Diversity
3. Social Context and Social Rationality
4. Embodied Energy and Consumption Choices
5. Symbolism, Identity and Rebound
6. Energy: Visibility and Ubiquity
7. Trade Allies and Choice Points
8. Behavior in Business and Industry
9. Accelerating Technological Solutions

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# CPUC White Papers

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1. Energy efficiency potential of behavior
2. Measurement and evaluation of energy savings and non-energy impacts from energy efficiency behaviors
3. Process evaluation's insights on energy efficiency program implementation
4. Behavioral assumptions underlying energy efficiency programs

# CPUC White Papers

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5. Market segmentation and energy efficiency program design.
6. Experimental design for energy efficiency programs
7. Motivating policymakers, program administrators, and program implementers to pursue behavioral change strategies.
8. Encouraging greater innovation in the production of energy-efficient technologies and services.

# The Next BECC Conference

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**November 16-19, 2008**

Sacramento, CA

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Speakers will be selected:

By competitive abstract review

and by invitation

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# Contact Information

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