



# Water Heaters Emerge from Basements to Prime Time

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# Out of sight, out of mind?

When was the most recent time you saw your water heater?





# Out of sight, out of mind?

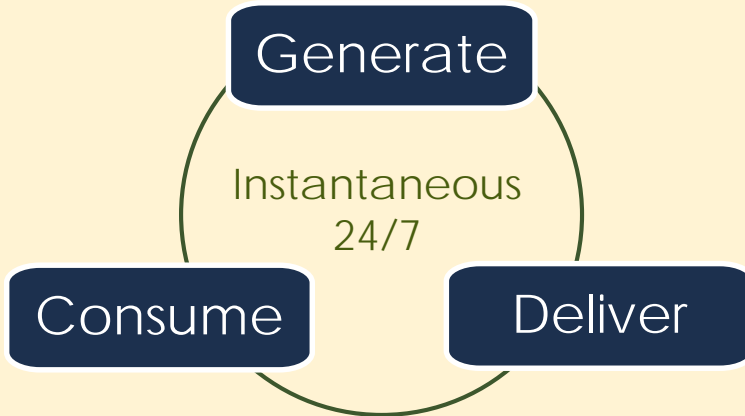
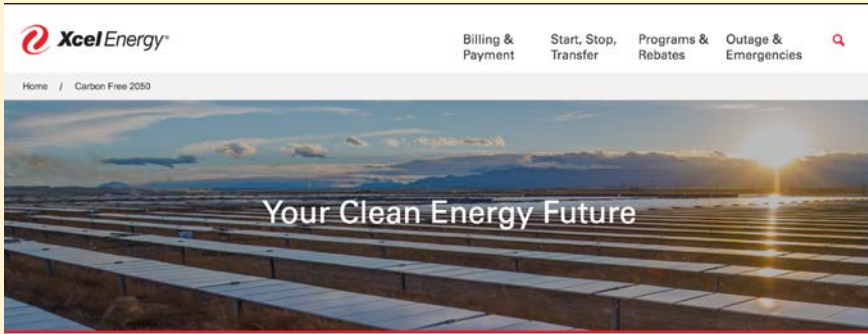
But gaining in importance...

## Agenda

- Context – the challenge
- Context – Xcel Energy
- Consumer research insights



# The Challenge



Your carbon footprint is shrinking.

We've cut our carbon emissions by 38%, but we're not stopping there. We're aiming to achieve 100% carbon-free electricity by 2050.

Year	Carbon Emissions Status
2018	38% Reduction
2030	80% Reduction
2050	100% Carbon Free

Our reductions are your reductions.

To achieve this goal, your energy will be a diverse mix of wind, solar, and other carbon-free resources.

# The Challenge



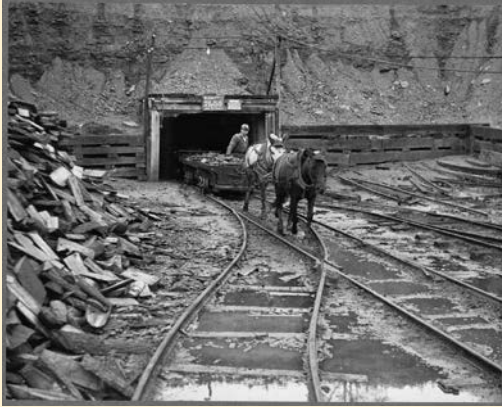
Russell Lee, Mine portal with ponies, S. C. Streams Black Diamond Mine, Creekside, Indiana County, Pennsylvania, 1946. Image courtesy of the National Archives and Records Administration.



Storable

Not storable

# The Challenge



Storable



Not storable

Storable by the customer



# Thermal Electric Storage – Not New, but Evolving

Electric appliance or passive solar

Timer or untimed

Customer controlled

Simple customer incentives

Heat pump appliances or PV  
Algorithms that anticipate need

Sophisticated, communicating controls

Complex rates (CPP, RT pricing)

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**Traditional**

**Future in a world  
of electrification**





# Our Study's Context

## Energy efficiency (CIP) portfolio evaluation

=> Water heater rebates not cost-effective

⇒ Explored strategic opportunities

⇒ Shift toward electric thermal storage

### Focus

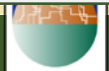
- Simple timers, fixed off times
- Understanding likely consumer reaction
- Exploratory and qualitative

### Methods

- Secondary research
- Participant interviews (40)
- Focus groups (2, 19 participants)

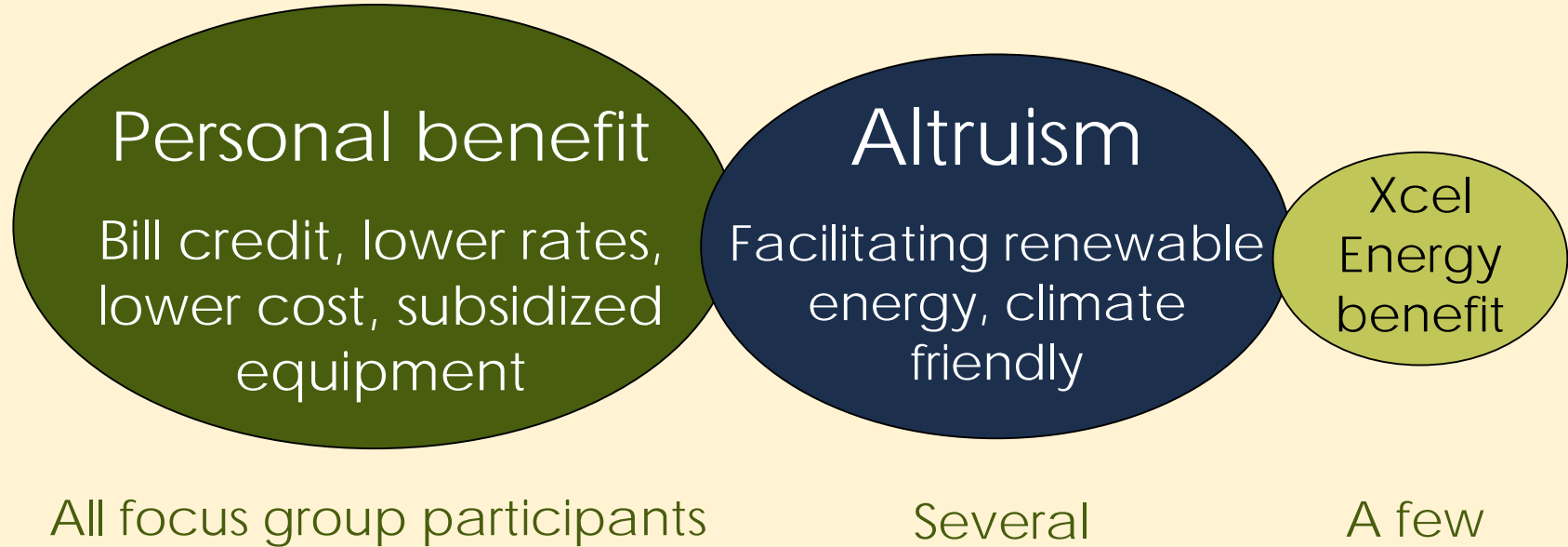
### Insights

- Motivation
- Fit with practices
- Incentives needed
- Willingness to cede control





# What We Learned: Consumer Motivation



## Win-Win-Win

# What We Learned: Fit with Household Patterns

Type of Hot Water Usage	Time	Amount of Need
Morning routine	Through 9a	High
Daytime	9a – 4p	Much reduced
Late afternoon	4p – 7p	Increasing
Evening	7p and beyond	Second daily peak

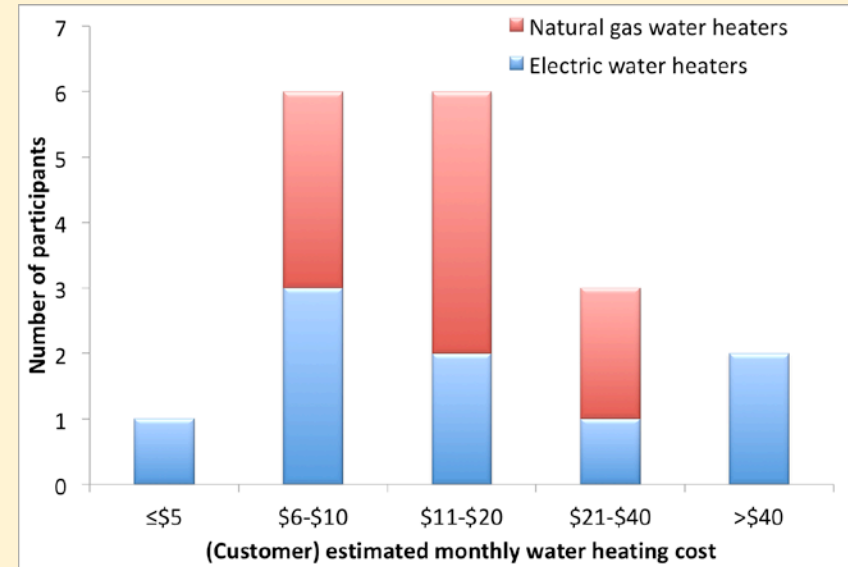
**Weekends:** Similar, but a bit later.

**Experience with running out:** A few participants, infrequent, took it in stride.


**Implications:** Turning off water heating until evening could be a challenge.

# What We Learned... Degree of Incentives Needed

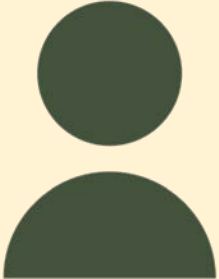
- Too early to ask directly about incentives
- Utility offer likely interpreted in context of water heating spending
- Large range and not always realistic
  - Opportunity to correct misperceptions
  - Could reduce interest



# What We Learned... Willingness to Cede Control



Can we take over your water heater?

A dark green silhouette of a person's head and shoulders.


Say what?

A light green silhouette of a person's head and shoulders.

Focus group participants were actually open to the concept.

**Caveat:** We explained the idea in familiar terms (Xcel Energy Saver's Switch).

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**Just some questions they asked:**

**Privacy** – Would Xcel Energy monitor our activities?

**Logistics** – What time period would water heater not reheat? Is there an override? How much hot water would be available?

# What We Learned... Willingness to Cede Control

Can we take over your water heater?

Say what?

Focus group participants were actually open to the idea of Xcel Energy (the idea in family (e.g. Xcel Energy saver switch).

**Questions they asked:**

**Privacy** – Would Xcel Energy monitor our activities?

**Logistics** – What time period would water heater not reheat? Is there an override? How much hot water would be available?

Interest in details varies →  
communications challenge



# Update from Xcel Energy

Program filings anticipated in MN and CO

Likened to existing Saver's Switch program

Could be dumb or emerging smart controls

Event-based or broader load management





# Questions or Thoughts?







# Thank You

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