



# Smart Transitions – Can Smart Thermostats Help Low-Income Customers Switch to TOU Rates?

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# Pilot Background

**Who**

Low income customers at three electric utilities

**What**

Smart thermostat and move to TOU rate vs. move to TOU rate alone

**Why**

**Does smart thermostat set to shift off peak help low income customers transition to TOU?**

**When**

Installations started January of this year



## Surveys

- 1<sup>st</sup> - before rate switch
- 2<sup>nd</sup> - after summer bills
- 3<sup>rd</sup> - towards the end of the pilot

## AMI Billing Analysis

- Conducted after full year of participation

## Pilot Recruitment and Assignments



764 customers recruited

34 disqualified

36 opted out

347 control



+



348 treatment



+



# Attrition

347 control



348 treatment



18% did not respond to follow up



15% asked to cancel



9% incompatible wiring



5% already have smart thermostat

285 survey responses



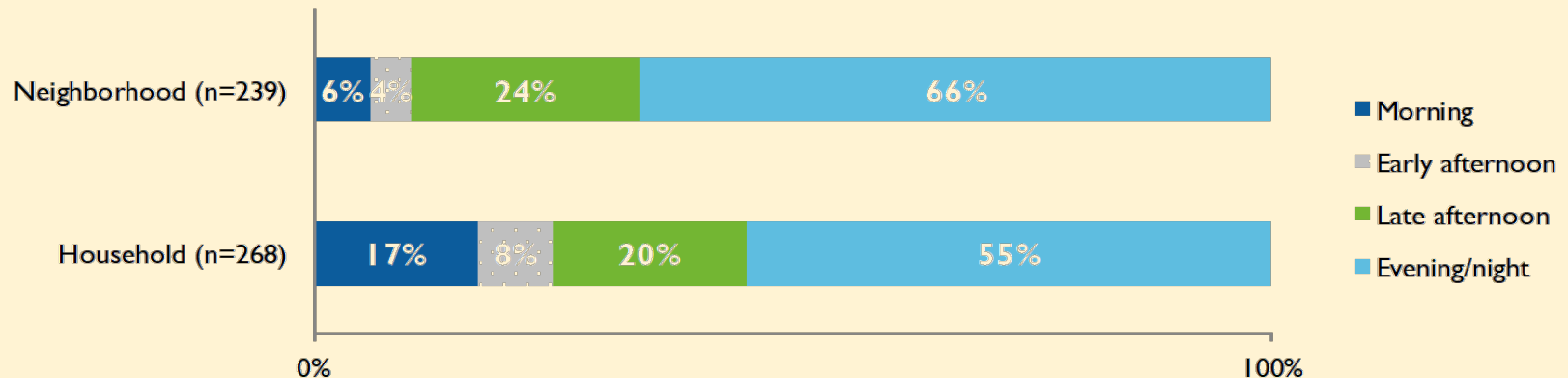
# Characterizing Participants

- Perceptions of Time of Use Rates
- Thermostat Features and Settings
- Reducing Energy Use



# Perception of Time of Use Rates

When Respondents Think Household and Their Neighborhood Uses the Most Electricity  
(excludes not sure)



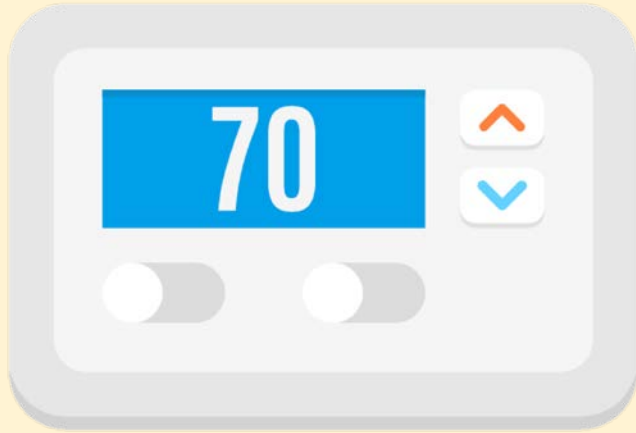
# Perception of Time of Use Rates

## Respondent Ranking of Energy Using Equipment From Highest to Lowest

Equipment	Mean Score of Importance
Cooling (n=273)	2.7
Heating (n=261)	4.0
Clothes washer/clothes dryer (n=273)	4.1
Refrigerator (n=273)	4.2
Lighting (n=273)	5.2
Water heating (n=273)	5.6
TVs (n=273)	5.6
Pool/spa equipment (n=45)	5.7
Oven/stove top (n=273)	6.5
Chargers (n=273)	7.6



# Thermostats



71%



26%

# Reducing Energy Usage

## Unique Equipment in Household

Energy Using Equipment	Percentage of Respondents (n=285)
Medical equipment that plugs in and uses electricity	16%
Household Jacuzzi, hot tub, or heated pool	12%
Pool pump	11%
Well	8%
Irrigation pump	1%



# Reducing Energy Usage

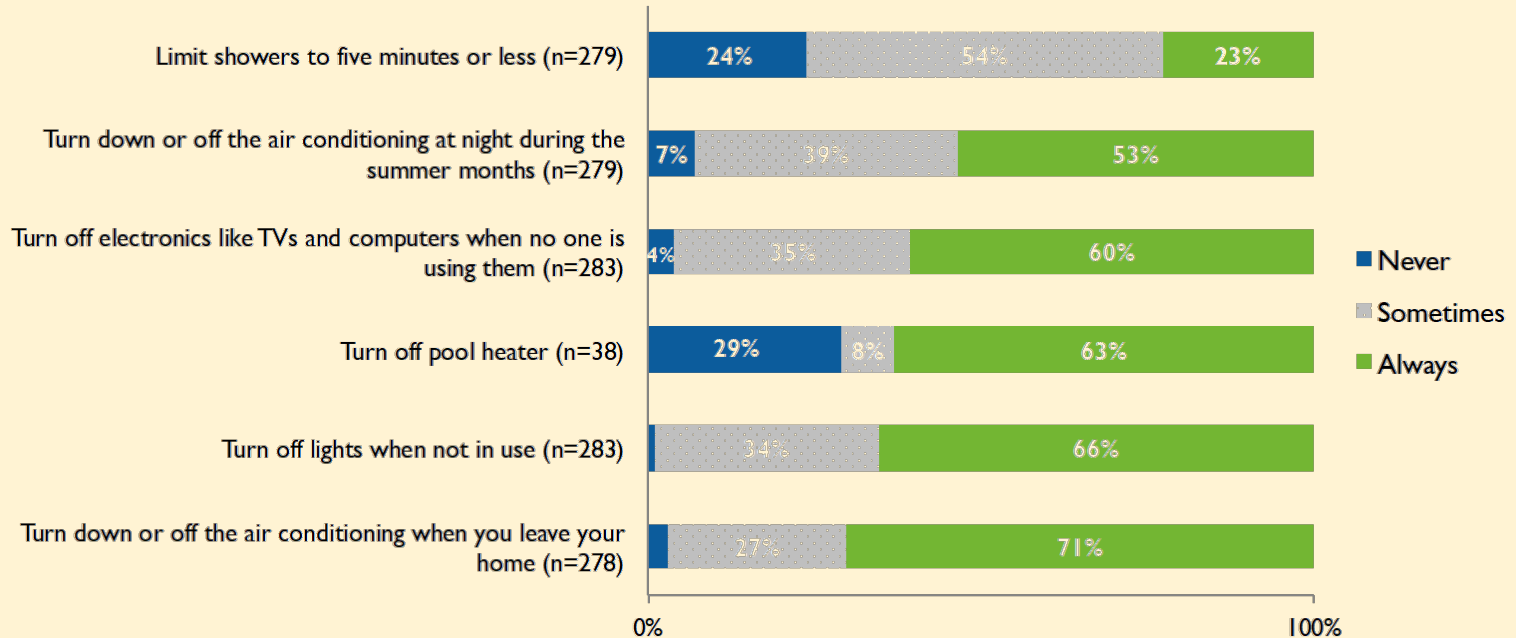
Do Respondents Do Everything They Can to Save Electricity?

	Percentage of Respondents (n=285)
Always	40%
Sometimes	56%
Never	2%
Not Sure	1%



# Reducing Energy Usage

## Energy Efficiency Behavioral Actions Taken by Respondents





# Reducing Energy Usage

## What Keeps Respondents From Saving More Electricity in Their Homes

	Percentage of Respondents (n=285)
Comfort (prompted)	43%
Control over others in the household (prompted)	33%
Do not have the time to pay attention to saving energy (prompted)	6%
AC-related	4%
Health	3%
Heating-related	3%





# Reducing Energy Usage

## Supplemental Heating Usage

	Percentage of Respondents (n=285)
Portable space heater	28%
Gas fireplace	13%
Wood fireplace	11%
Oven/stove	2%
Wood stove	2%
Electric fireplace	1%





# Reducing Energy Usage

## AC Usage Patterns

When given four options regarding when they use their AC, 50 percent reported that they only use it on very hot days.

## Supplemental Cooling Usage

	Percent of Respondents (n=285)
Ceiling fans	67%
Portable fans	57%
Open the windows	50%
Evaporative cooler/swamp cooler	7%
Room AC	6%
Whole house fan	1%
Evaporative cooler	0%





# Key Conclusions and Recommendations

- **Perceptions that participants are:**
  - Already doing all they are willing to do
  - Using energy off-peak compared to their neighbors
- **Lessons for future programming:**
  - Attrition due in part to lack of understanding, and lack of interest in technology







# Contact Info

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