Rate Design:

What Do Consumers Want and Need?

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Increasing utility interest in alternative rates – but what about consumers?

Rate Design Research Report is now available to SECC members

- To better understand the preferences of residential consumers and SMBs on a wide range of alternative rates & related programs (i.e., TOU, real-time pricing, peak time rebates).

- Findings from over 1,500 online surveys completed by residential consumers and SMBs across the U.S., including oversamples from the most active states in terms of alternative rate enrollment.

Despite awareness issues, many residential consumers are willing to try alternative rates

- Residential consumers are largely unaware of their current rate plan
- They have low awareness of most alternative rates and moderate awareness of TOU
- Over 60% are willing to try alternative rates if fees are kept to a minimum
- Automation technology increases willingness to participate in alternative rates

Alternative rates offer a way for SMBs to better manage operating costs

- SMBs demonstrated strong rate literacy and overwhelmingly prefer alternative rates (again – assuming fees are low to none)

Good Targets

- Larger organizations
- Smaller individual locations
- Owner-occupied
- Higher energy bills

Likely Participants – IT Firms

- Highest awareness
- Higher enrollment
- More willing to reduce or shift use during peak times
- Highest interest in responding via automation technology
- Highest acceptability of demand charges

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Smart Rate Design for a Smart Future

Smart Energy Consumers Collaborative: Minneapolis

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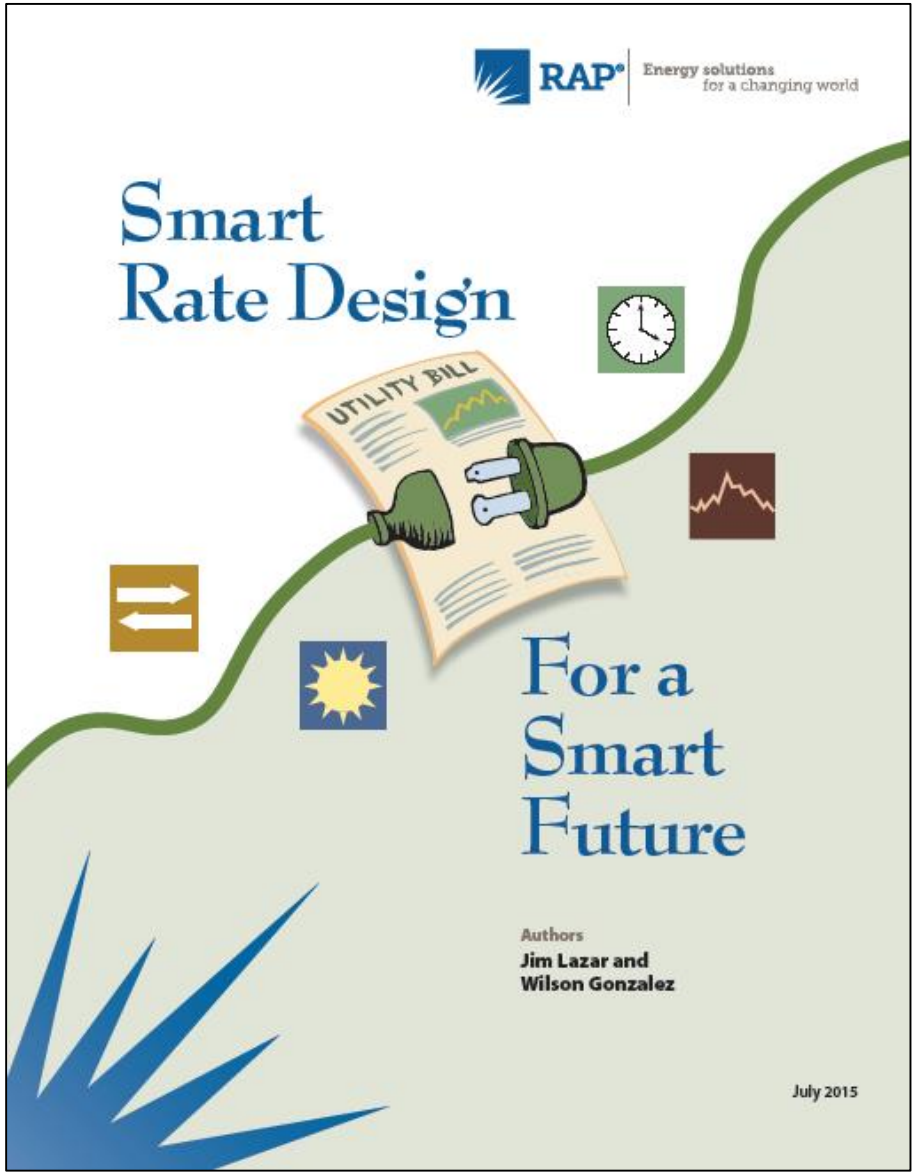
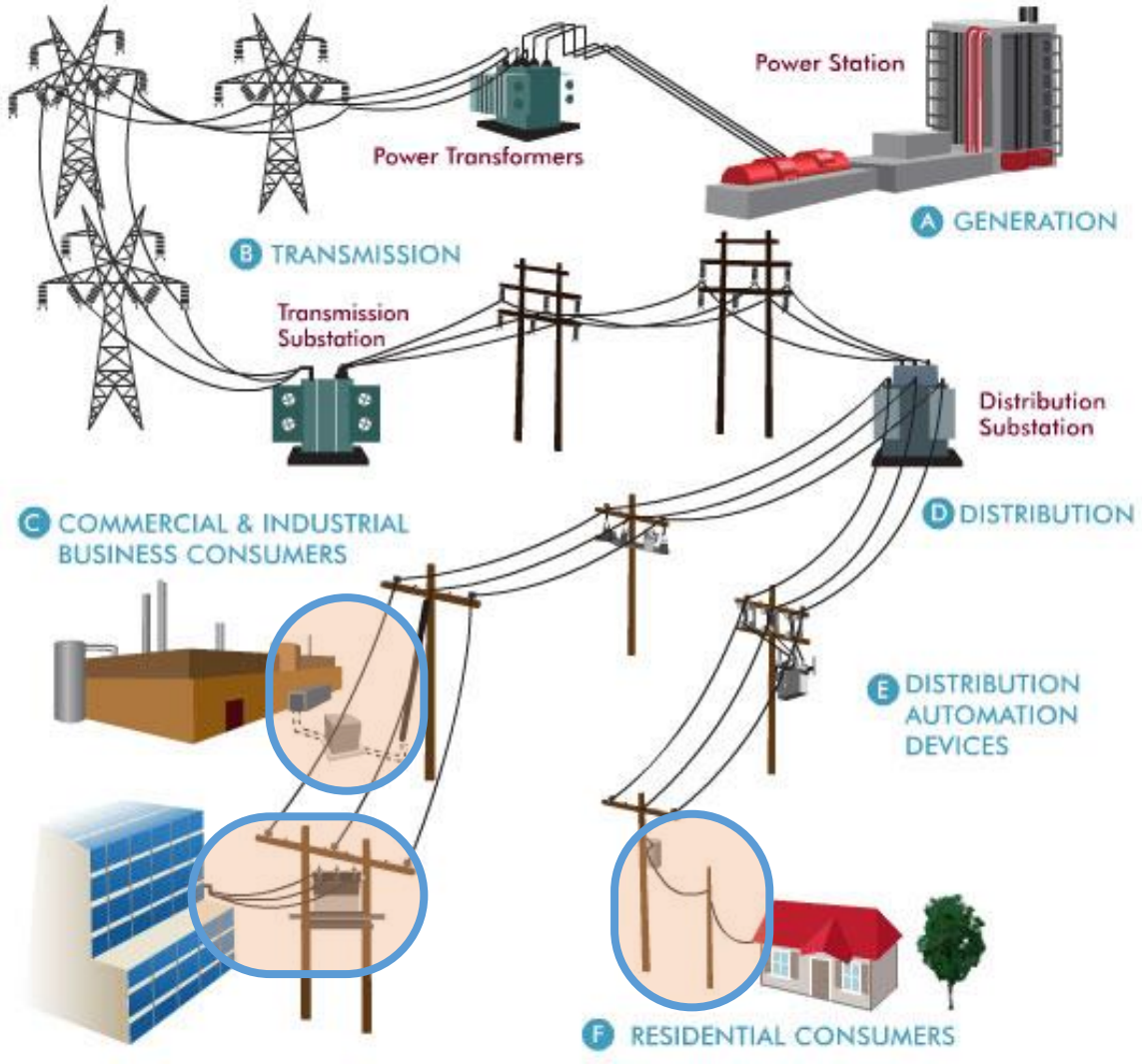
Rate design should make the choices the customer makes to minimize their **own bill**

consistent with the choices they would make to minimize **system costs**



Principle #1

- A customer should be allowed to connect to the grid for no more than the cost of connecting to the grid.



Principle #2

Customers should pay for power supply and grid services in proportion to how much they use and when they use it.

Principle #3

Customers delivering power to the grid should receive full and fair value–no more and no less.

Examples of Smart Rates

Residential
Fort Collins, Colorado

Customer Charge	$ 6.78	
	Summer	Winter
Off-Peak	$ 0.069	$ 0.067
On-Peak	$ 0.241	$ 0.216
Tier Charge (Over 700 kWh)	+ $.0194 / kWh	

Net Metering Rate Credits	Summer	Winter
Off-Peak	$ (0.065)	$ (0.636)
On-Peak	$ (0.227)	$ (0.204)

Large Commercial Sacramento

SMUD TOU-GS2 (500kW - 1,000 kW) Secondary Voltage			
Customer Charge	$/mo	$ 109.05	
Site Infrastructure	$/kW/mo	$ 2.88	
		Summer	Non-Summer
Peak Demand Summer 4 - 7 PM	$/kW	$ 7.05	None
Energy Charge			
Off-Peak		$ 0.104	$ 0.082
Mid-Peak		$ 0.136	$ 0.104
On-Peak Summer 4-7 PM		$ 0.197	$ 0.104

Illustrative Smart Rate
Burbank Whole House Electric Vehicle

• Customer Charge:	$8.61/month
• Service Size Charge:	
◦ Small (multi-family)	$1.36/month
◦ Medium (most single-family)	$2.73/month
◦ Large (400 Amp +)	$8.19/month
• Energy Charge	
◦ Off-Peak	$.0812
◦ Mid-Peak	$.1624
◦ On-Peak (4-7 PM Summer)	$.2437

About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

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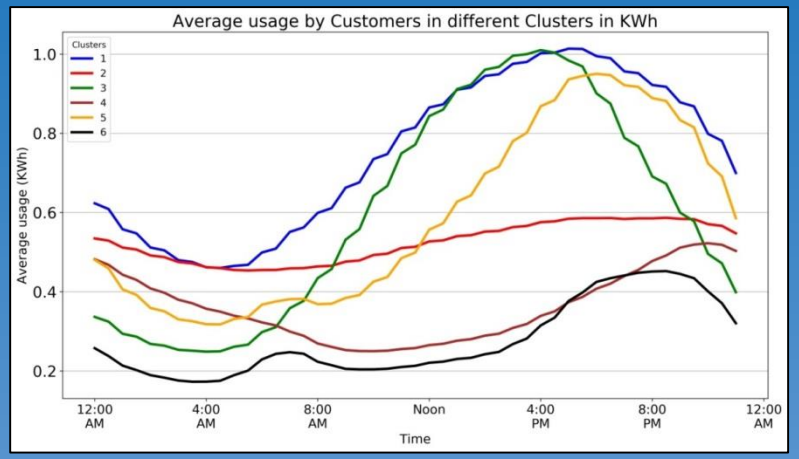
Residential Electricity Usage Patterns: Who, Where, and How?

Jeff Zethmayr, Director of Research
Citizens Utility Board
10/2/2019

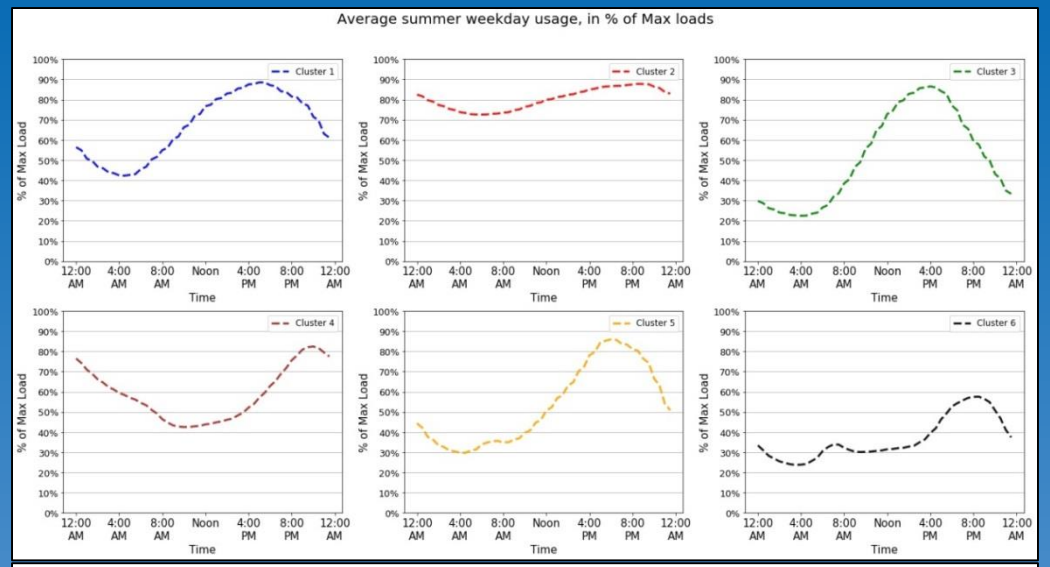
Load Shape Drives Grid Costs

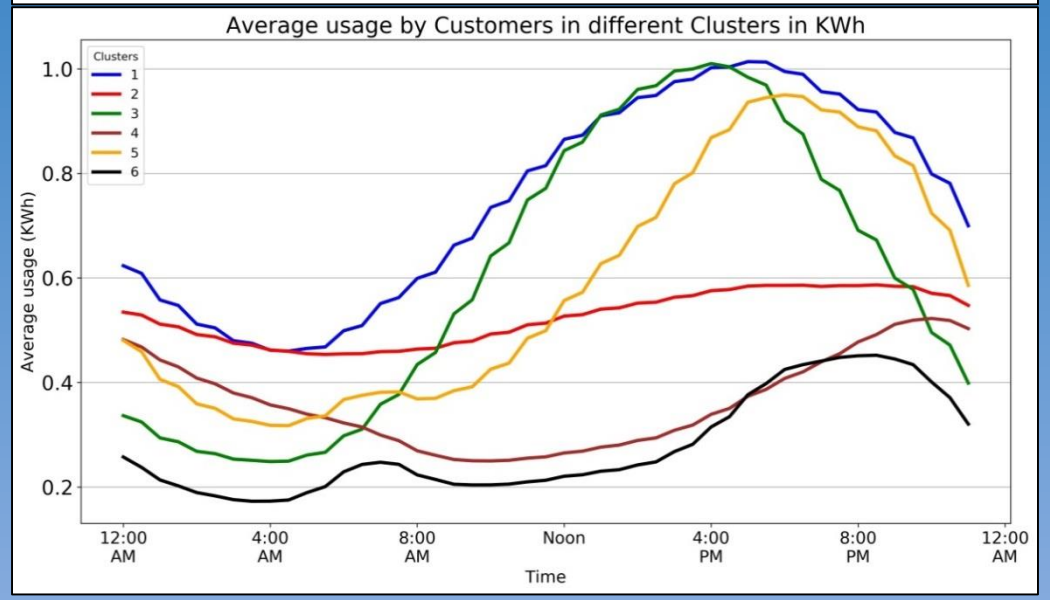


- Component costs of electric service dependent on timing of consumption
- Cost socialization through flat rates creates perverse consumption incentives, cross-subsidies

Cluster Load Shapes

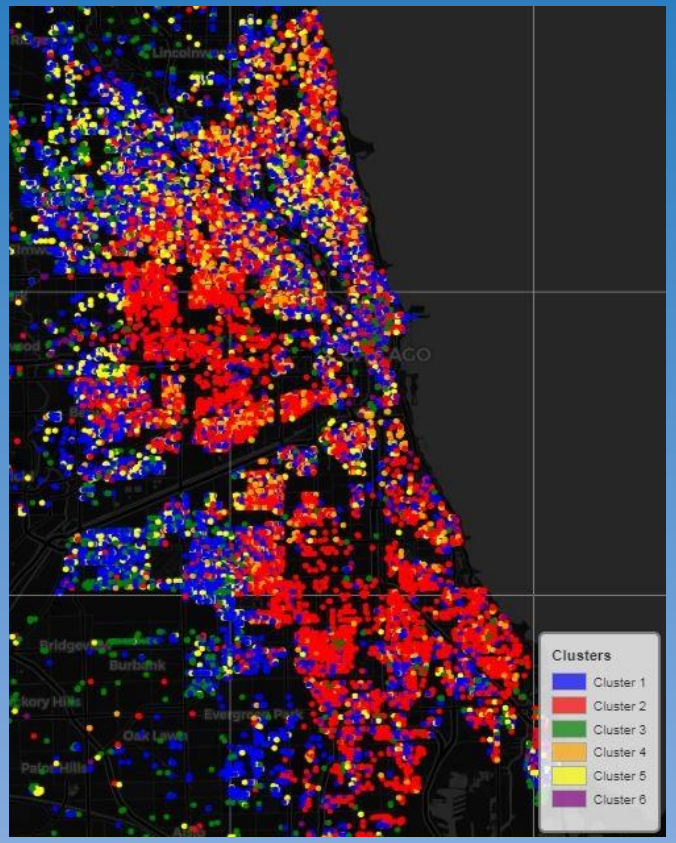
- Clusters 1, 3, and 5 have higher, peakier usage, with slight timing differences
- Clusters 2, 4, and 6 have lower, flatter usage



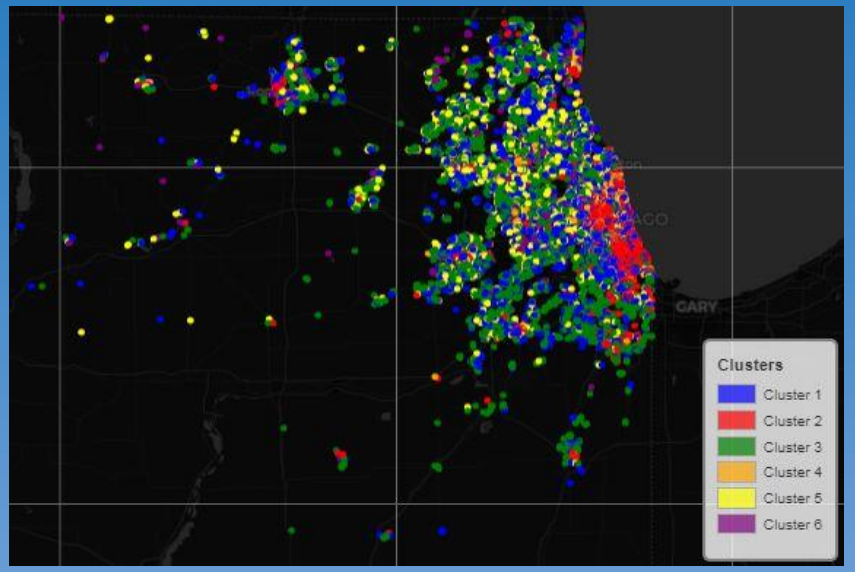


Cluster Distribution

Chicago



Northern Illinois



Conclusions

- Peakier summer usage – with higher grid savings potential – in suburbs and higher-income areas
- Flatter load shapes in low-income areas suggest common flat, volumetric rate designs may result in overpayment from these communities
- Importance of open data access in more jurisdictions

Customer Responses and Needs

- Indifference/Confusion/Skepticism
  - Can't understand offer.
  - Can't find information from trusted source.
- Basic Education Needs:
  - Explaining the Utility Bill.
  - Necessary Services v. Unnecessary Services
  - Energy Usage
  - Supplier Billing
- Utility Incentives
- Costs of Infrastructure

Further Research

Cluster Research

- More investigation into rural areas
- Test rate design bill effects, quantify cross-subsidization

Next Projects

- Local weather effect on usage patterns – projecting system costs of climate change

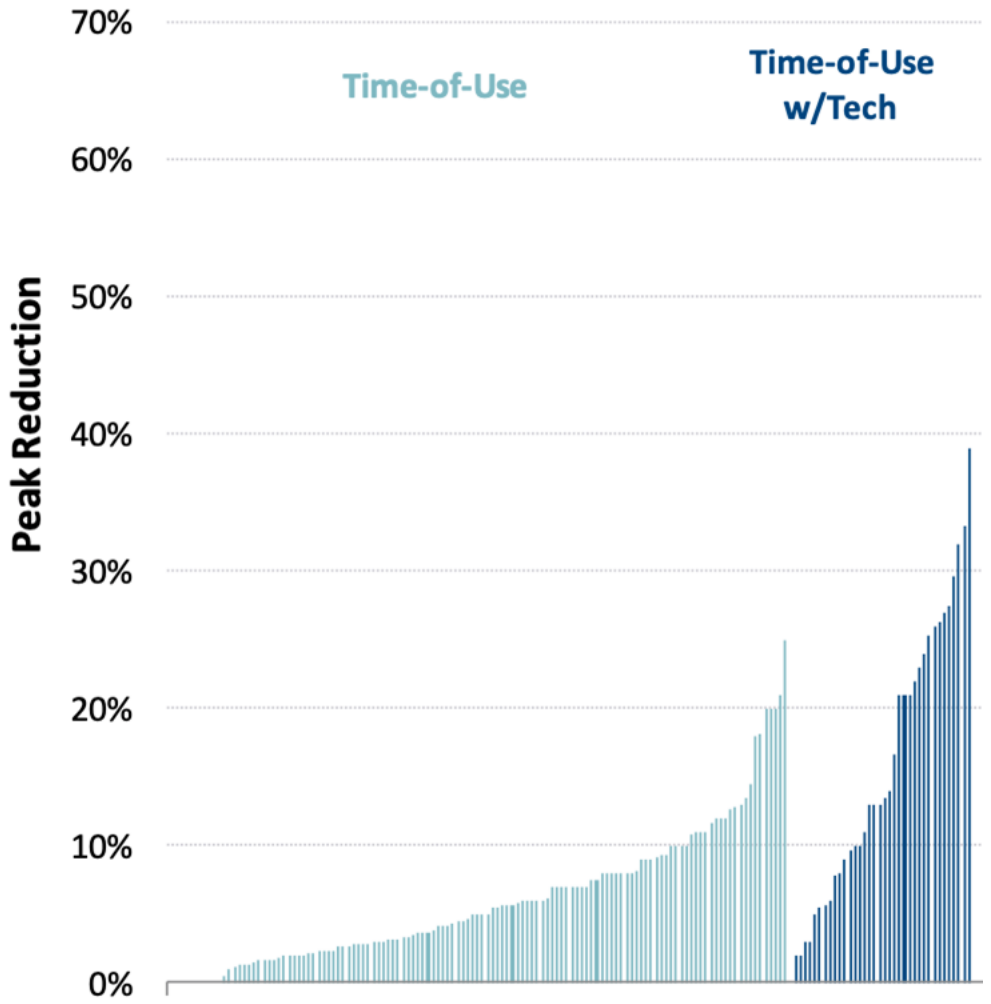
SECC Rate Design Panel

October 2019

Smart Thermostats Boost TOU Participation + Savings

Smart thermostats = tool to automatically manage alternative rates

- ↑ alternative rate participation
- ↑ bill savings = customer benefits
- ↑ peak demand savings = system-wide benefits



Alternative Rate Sign Up Incentive Program Models

Free smart thermostat to sign up on variable peak pricing:

SmartCurrents℠

DTE Energy's SmartCurrents™ program combines the benefits of a smart thermostat with a smart electricity rate to help lower your electric bill. SmartCurrents customers receive a FREE Wi-Fi enabled ecobee3 lite Smart Thermostat, a $169 value.

Smart thermostat rebate to sign up on time of day pricing:

PUBLIC SERVICE COMPANY OF OKLAHOMA
An AEP Company

POWER HOURS℠

IT'S ABOUT TIME

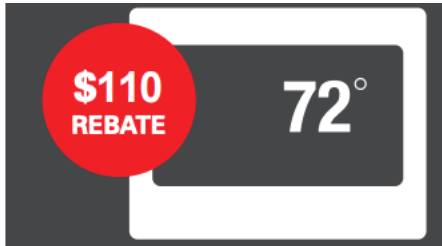
There are peak hours when energy costs rise and off-peak hours when they're lower — and the great news for you is that there are a lot more off-peak hours. By enrolling in the PSO Power Hours Time of Day Program, you'll get special lower rates for electricity used during off-peak hours.

PEAK HOURS:
2pm – 7pm Weekdays

These are the five hours each weekday where rates are highest. Save money by shifting your electric use to other times.

OFF-PEAK HOURS: 7pm – 2pm Weekdays + Weekends

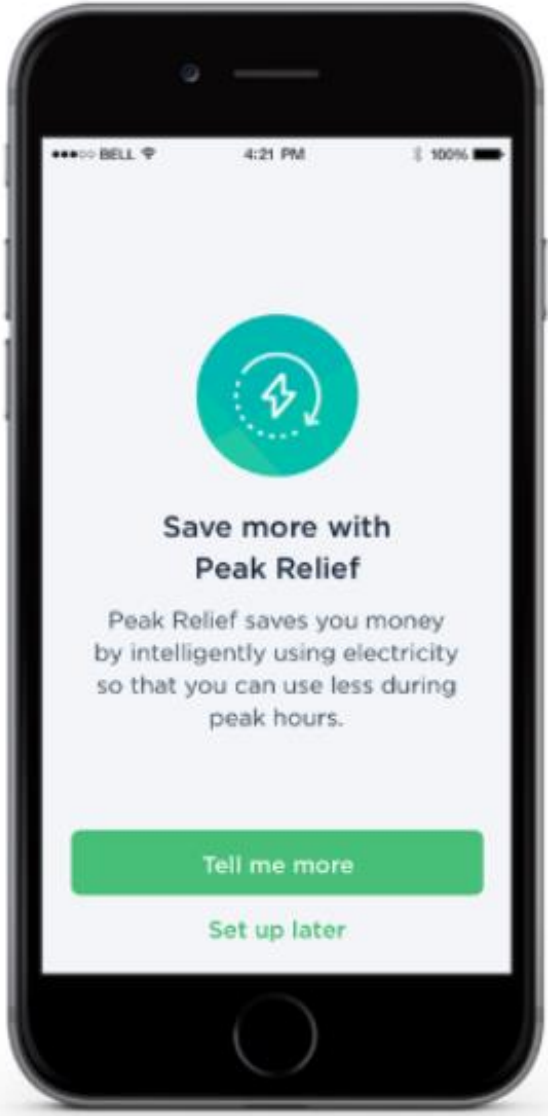
Ah, savings time! The Time of Day program is all about shifting your normal energy use to times when costs are lower, especially nights and weekends. By adjusting your thermostat temperature, waiting to run the dishwasher or doing that load of laundry, baking in the mornings on weekends, and more, you'll help lower your electric bill.



WI-FI THERMOSTAT

By enrolling in a Power Hours program, you can also get a **$110 rebate** towards the purchase of any eligible Wi-Fi Thermostat to add year-round savings and anytime, anywhere connectivity through your smartphone.

ecobee's Peak Relief Feature Puts The "You" In TOU



- Custom thermal modeling for each home
- Personalized TOU and DR optimization routines based on customer-chosen savings and comfort preferences
- Streamlined in-app program enrollment and over-the-air software upgrades
- Average non-event peak savings: 0.52 kW (20%)
- Average DR event savings: 1.0 kW (50%)

Thank You!

ecobee

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