

Smart Thermostats: The Newest, Latest, and Next in Program Strategy

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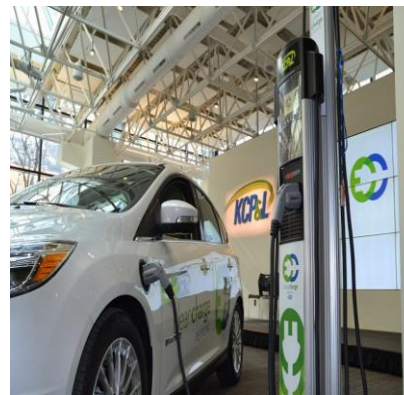
Who is KCP&L

135 years ago in 1881, a small group of forward-thinking Kansas Citians believed electricity was more than a novelty.



Who is KCP&L

Every day, our employees honor our founders' standards: innovation, entrepreneurship and community leadership



What is KCP&L

We are an investor-owned, vertically integrated, regulated electric utility.

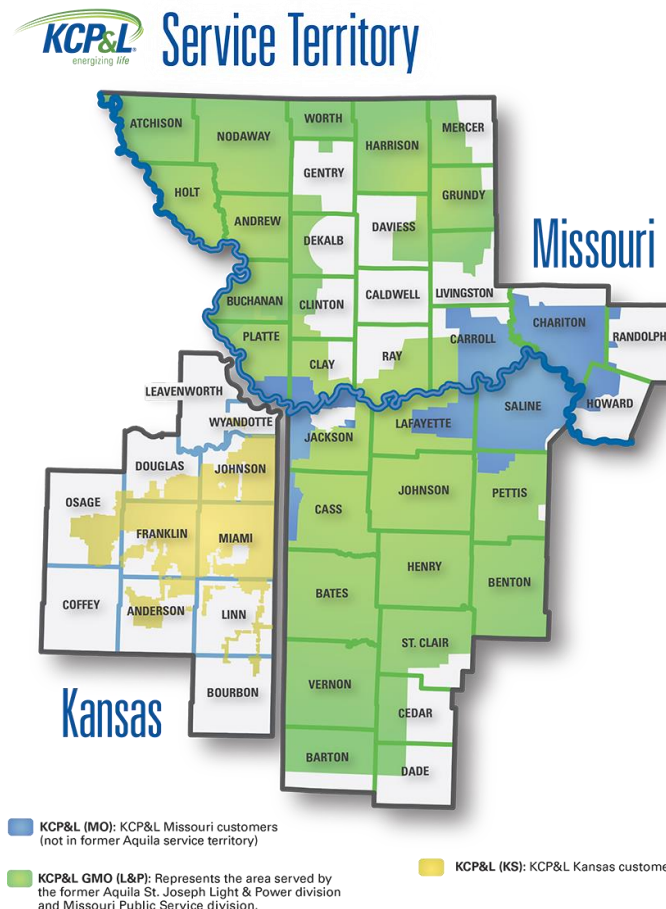
We serve more than 800,000 customers in 47 northwest Missouri and eastern Kansas counties.



Where is KCP&L

With a service area of about 18,000 square miles, it takes more than-

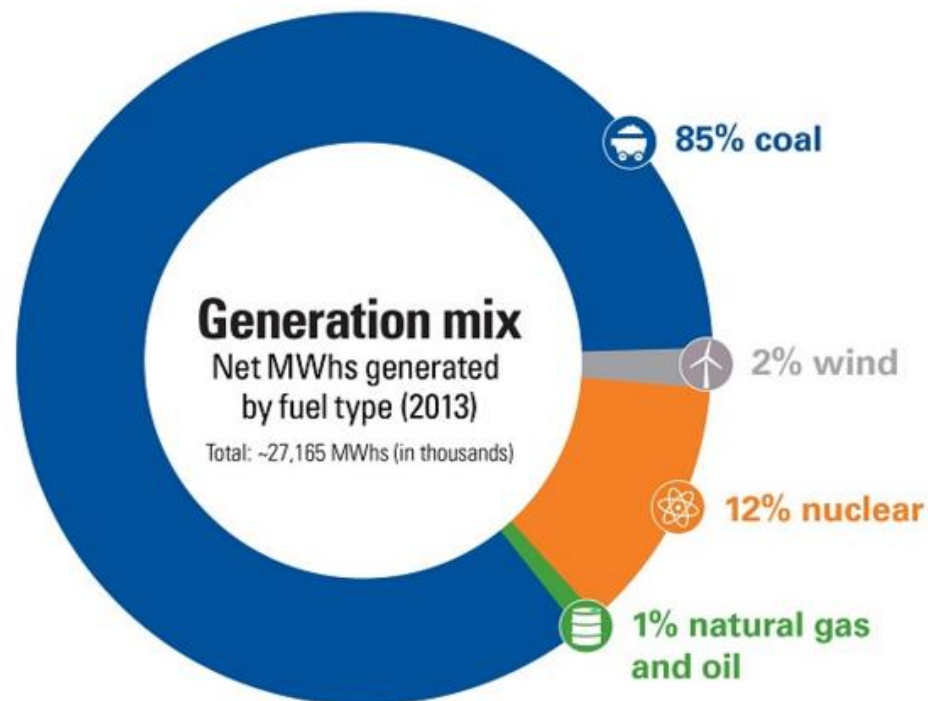
- 3,000 miles of transmission lines
- 24,000 miles of distribution lines
- 400 substations to deliver power to our customers



How does KCP&L...

We rely on a diverse energy mix-

- Coal is a price-stable way to generate reliable electricity 24 hours a day
- We also use other sources, including natural gas and nuclear power
- Renewable energy sources like wind, solar, biogas and hydro are a priority



KCP&L: Energy Efficiency Hipsters



Energy Efficiency Mission Statement

“To deliver cost-effective, customer-focused efficiency solutions that yield financial savings and energy reductions in our homes and businesses”



Electric Charging Stations

The KCP&L Clean Charge Network consists of more than 1,000 electric vehicle charging stations — currently more than any other U.S. city.



Solar Power



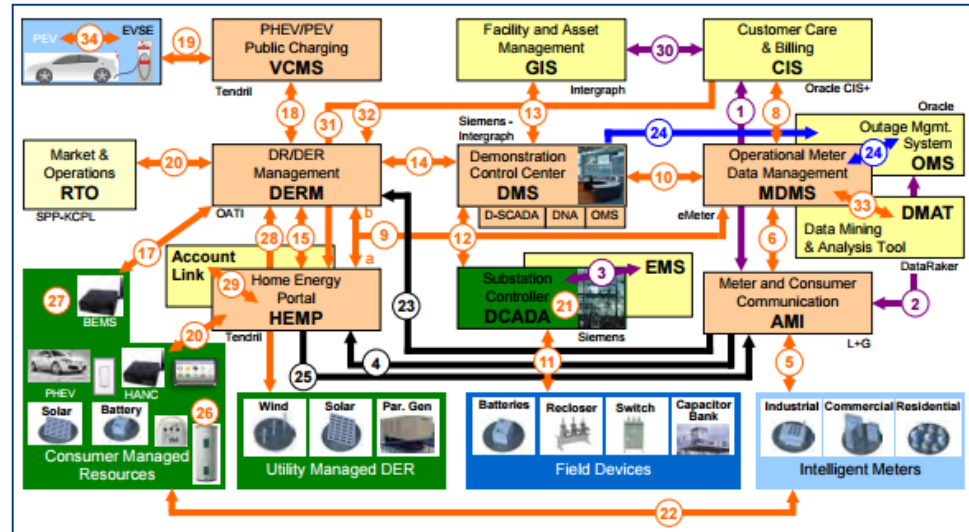
We've partnered with the Kansas City Royals by installing a 120-panel solar system on the outfield canopy roof

Currently this is the largest in-stadium solar array in Major League Baseball



Smart Grid

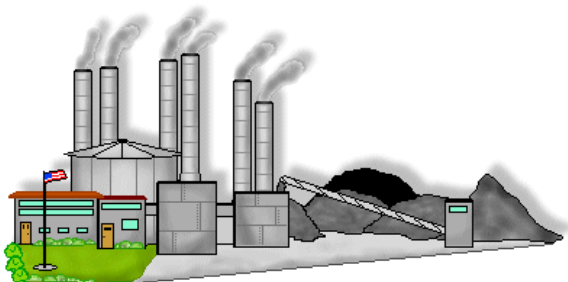
In 2012, KCP&L began work on their Smart Grid Demonstration Project in collaboration with EPRI



This included a 1 MW Battery, AMI Metering, DERM, Zigbee thermostats, Home Energy Displays, TOU rates, etc...



EE/DR Portfolio



Commercial & Industrial

Business Energy Efficiency Rebate Standard
Business Energy Efficiency Rebate- Custom
Strategic Energy Management
Block Bidding
Online Business Energy Audit
Small Business Direct Install
Thermostat w/ Rush Hour Rewards
Demand Response Incentive

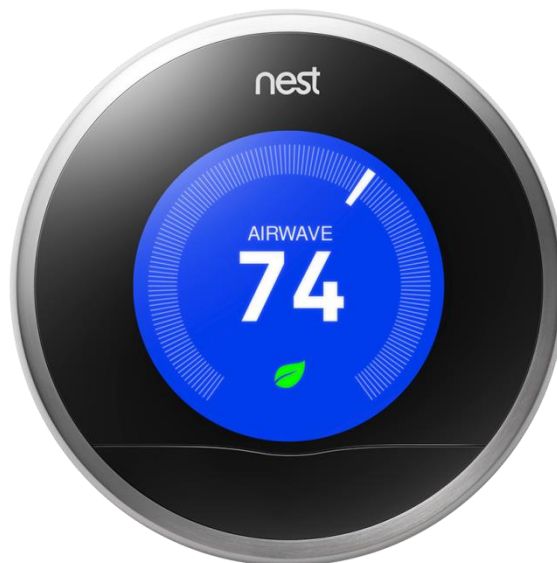


Residential & Multi Family

Lighting Rebate
Appliance Recycling
Home Energy Report
Home Energy Audit
Whole House Efficiency
Income Eligible Multi Family
Income Eligible Weatherization
Thermostat w/ Rush Hour Rewards

Thermostats

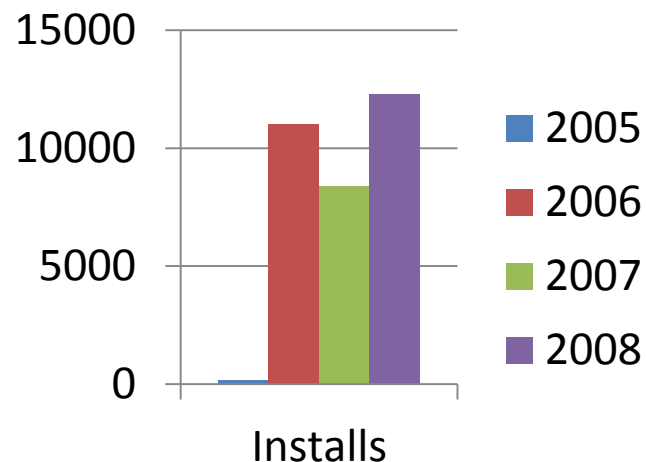
Why we're here...



Energy Optimizer Program 2005-2008

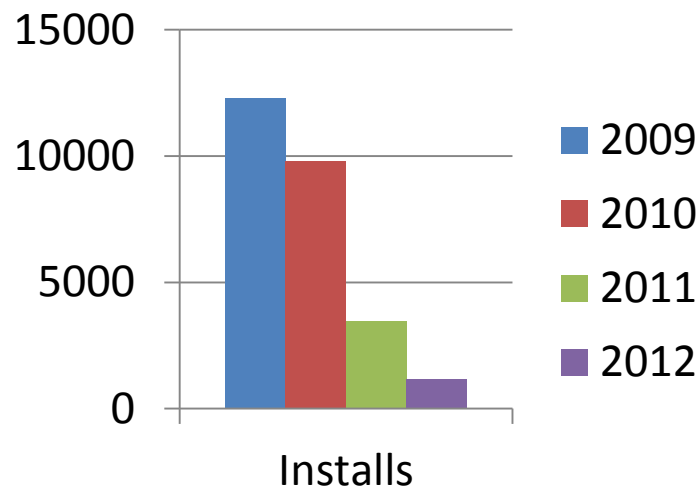
The program was initially created in 2005 under the Energy Optimizer branded name as a residential and small commercial direct load control program in Missouri and Kansas.

The program offered participants Honeywell programmable thermostats with one way receiving paging modules built into them that could be remotely programmed by the participant or remotely curtailed by KCP&L via the Cooper Yukon website.



Energy Optimizer Program 2009-2012

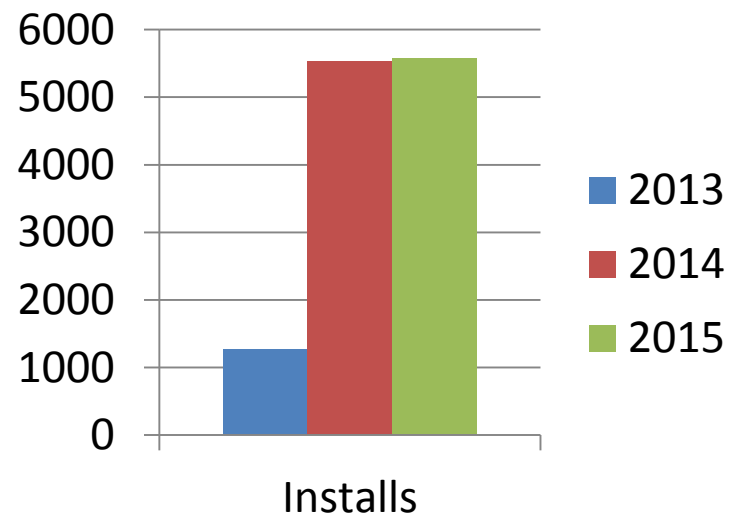
In 2009 after KCP&L's acquisition of Aquila, the program became open to those jurisdictions as well and from 2009 through 2012 an additional 25,000 thermostats were installed across the four jurisdictions.



Programmable Thermostat Program 2013-2015

In 2013, the program was rebranded the Programmable Thermostat program

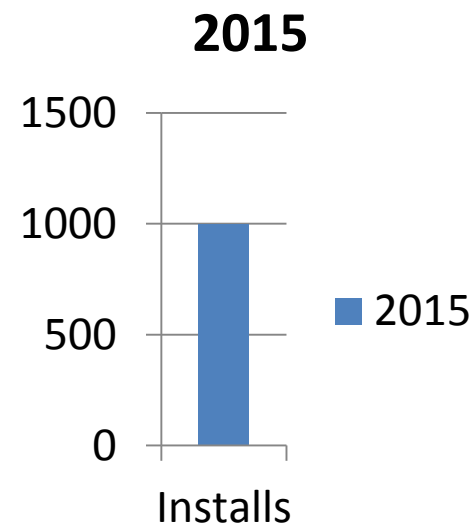
From 2013 through 2015, an additional 13,000 thermostats were installed across the Missouri jurisdictions, of which roughly 8,000 are Wifi enabled two way programmable thermostats.



EPRI Smart Thermostat Study 2015

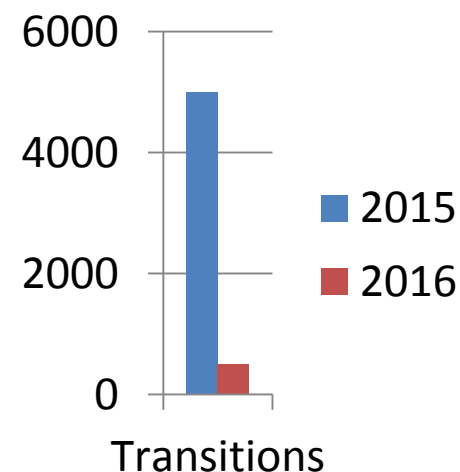
In collaboration with EPRI, KCP&L conducted a field study to evaluate the use and effectiveness of advanced WI-FI-enabled programmable thermostats.

KCP&L was interested in knowing how these thermostats can be used as a tool to help reduce the community's peak demand for electricity during hot summer week days. KCP&L was also interested in knowing what their customers think about the new thermostat devices, and whether it helps them save energy overall.



Transition from Opower to Honeywell 2015

In 2015, Honeywell and Opower ended their relationship pertaining to residential demand response. As a direct effect of this, the 8,000 existing Honeywell/Opower thermostats within the Programmable Thermostat program needed to be transitioned from the Opower platform to the Honeywell Total Comfort Connect platform.





CLEARResult

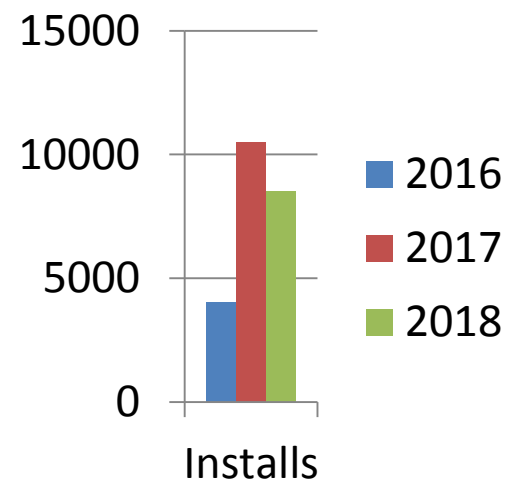
nestTM



KCP&L Thermostat w/ Rush Hour Rewards

As part of the program, KCP&L will install 23,000 Nest Learning Thermostats at no additional cost as part of KCP&L's Rush Hour Rewards offering. This program will place a priority on replacing existing legacy one way thermostats from the Energy Optimizer program and KCP&L Programmable Thermostat program.

Participants will have three installation options: A "Self-Install" option where the participant will have the thermostat shipped to them and upon successful self-installation would receive an additional \$50 incentive , a professional installation option where a Nest Pro installer would come and install the thermostat free of charge or a BYOT option where customers can enroll their existing Nest thermostats into the program.



Demand Response & Energy Efficiency Savings

Real + persistent savings

Reducing load while preserving customer comfort

1 kW

average demand reduction

15% savings on cooling bills

10-12% savings on heating bills

\$131 - \$145 avg. savings/year

Additional 5-10% with Seasonal Savings

55%

Cooling Load Reduction

85%

Events completed without adjustment

462

kWh reduction annually

1.2

kW reduction per Thermostat



Nest Pro Direct Installation

Customers who elect for a Direct Installation can schedule their appt online or call into the contact center



Free Nest Learning
Thermostat

CLEARresult

Free Installation by
CLEARresult



24/7 Maintenance and
Customer Support



\$25 annual incentive for
participation

Self Installation

Customers who elect for a Self Installation can go online or call contact center and have thermostat shipped to their residence



Free Nest Learning Thermostat



\$50 Self Install Incentive



24/7 Maintenance and Customer Support



\$25 annual incentive for participation

Bring Your Own Nest

Customers who already own a Nest Thermostat can enroll in the program and have Rush Hour Rewards pushed to their Nest



Free Nest Learning Thermostat



\$100 Enrollment Incentive



24/7 Maintenance and Customer Support



\$25 annual incentive for participation

What's Next?

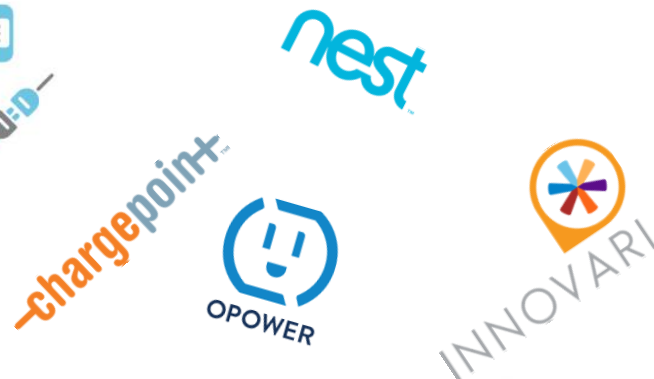
Our strategy focuses on testing and proving customer programs via targeted projects and technologies that align with the philosophy of empowering customers and optimizing the grid.

By embracing a vision of the future that chooses to think of integrating edge-of-grid resources as an opportunity (instead of a threat), and customers as partners (instead of obstacles), we can optimize grid utilization and continue to deliver affordable, clean, and reliable power for the long haul



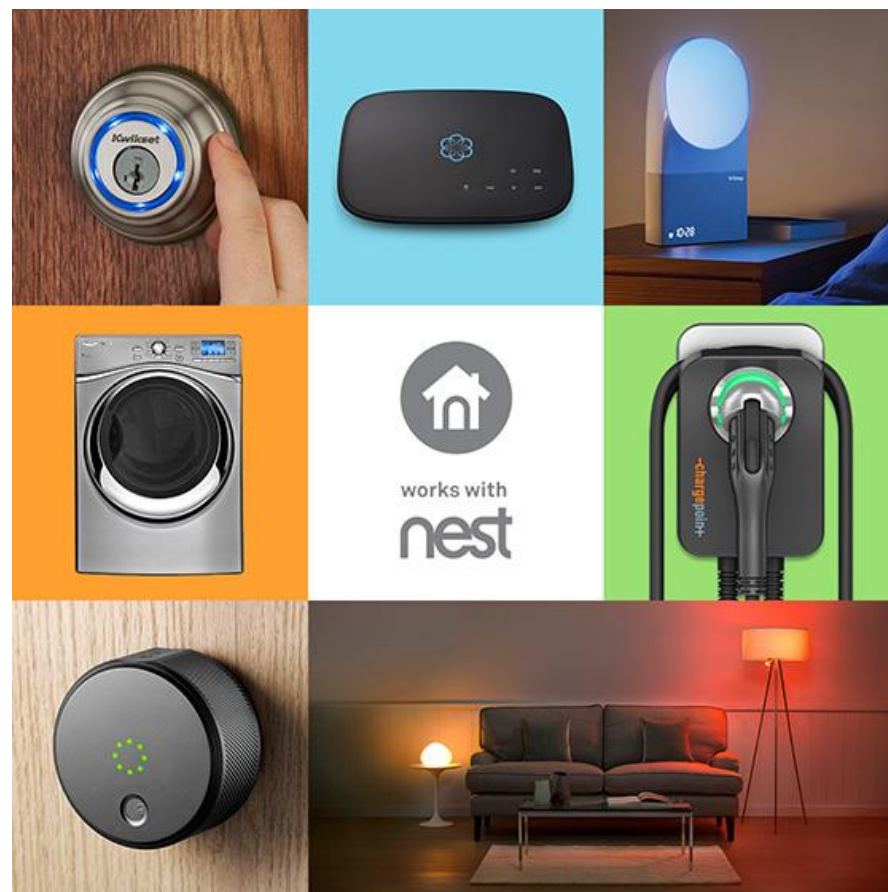
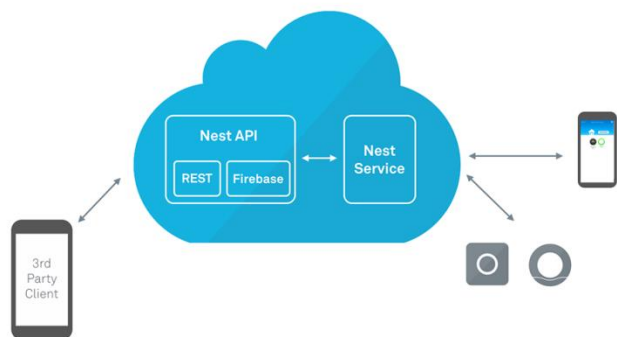
Partnerships

By leveraging our relationships with innovative companies we can benefit from the natural roadmap of innovation

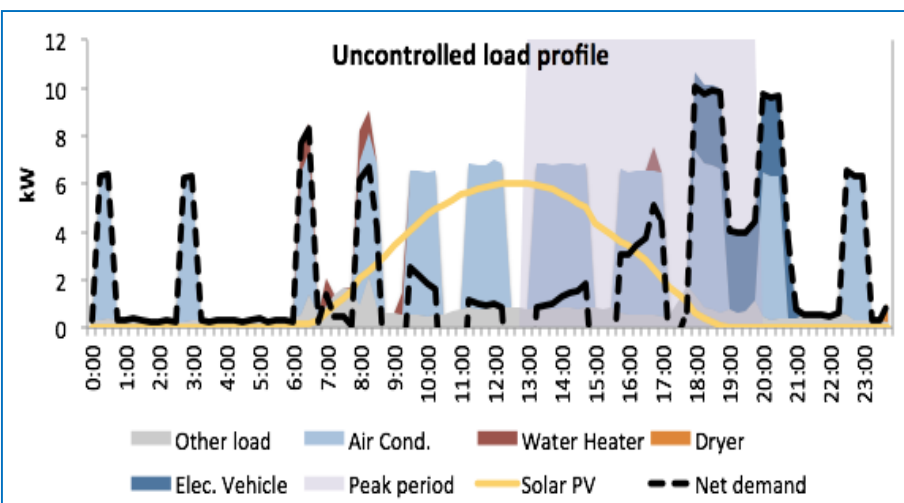


True Market Transformation

“Strategic interventions that attempt to cause lasting changes in the structure or function of a market, or the behavior of market participants, resulting in an increase in the adoption of energy efficient products, services, or practices.”

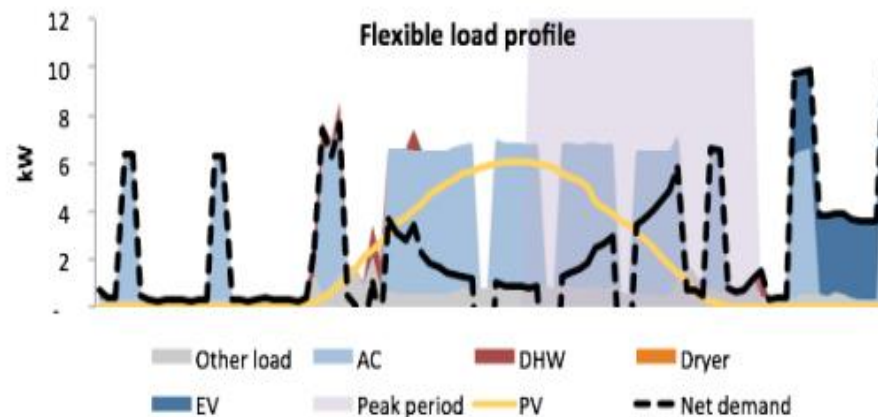


The Future of EE/DR



Demand from different appliances for customer who runs their AC during the afternoon and charges an EV after returning home from work. As a result, the customer's demand net of PV (black dashed line) peaks at a very high level (10+ kW) in the evening

By pre-cooling their home, charging their EV off peak, and using the storage tank of their water heater to avoid on-peak water heating, this customer can reduce their maximum on-peak demand by more than 48%





DR
Demand Response



Energy saving

