



Internet of Things and Bring Your Own Device Programs

OpenADR Open House

May 25, 2016

Smart Thermostats: Part of the Solution

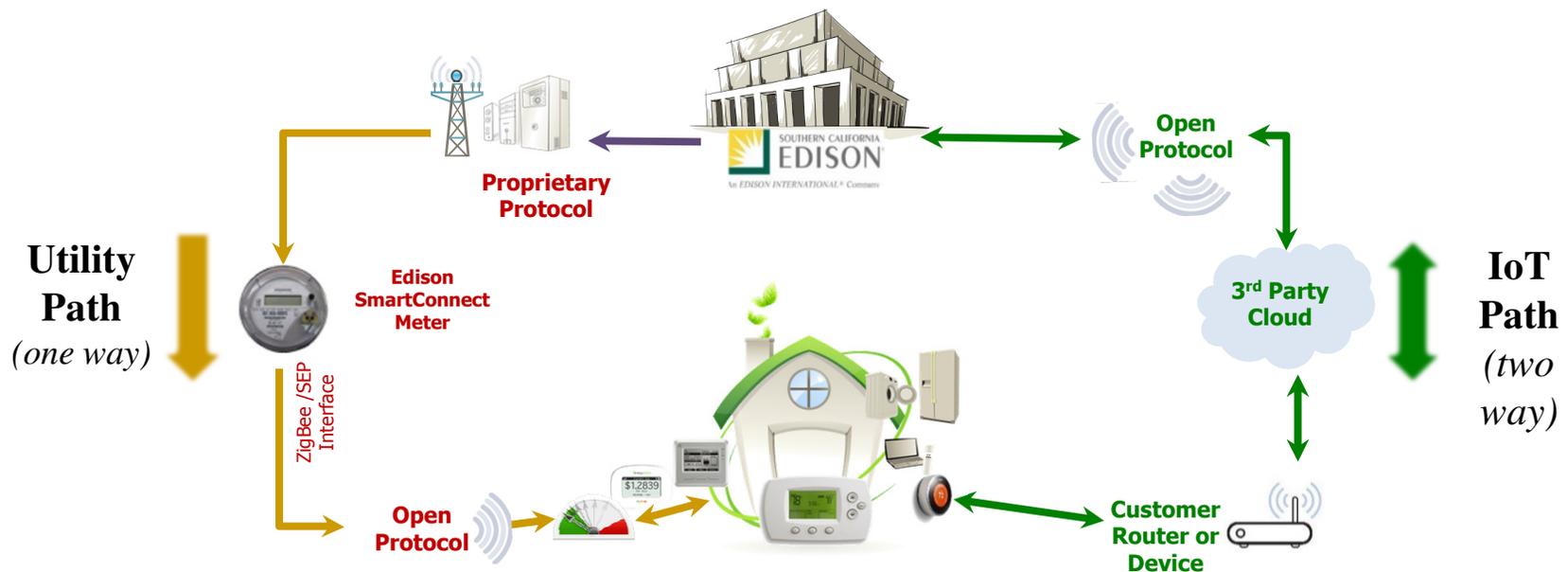
- SCE is partnering with industry innovators in home automation and energy management technology, including Nest Labs, Alarm.com, EnergyHub, Ecobee, Filtrete, Vivint.com, and RadioThermostat
- Each year, an estimated **50,000 households** served by SCE install interconnected “smart” thermostats and energy management systems



Third party market research predicts smart thermostat adoption will grow 43% in the next five years; by 2020, 1 out of 4 SCE customers will likely own a smart thermostat

Connectivity Enables *Greater Choice*

- New technologies, and markets evolved creating a shift in customer preference for “**smart home solutions**”.



- Leveraging the utility and IoT communications pathways enable **customer options for energy management and support Smart Grid functionality** that can enhance reliability and optimize investments.

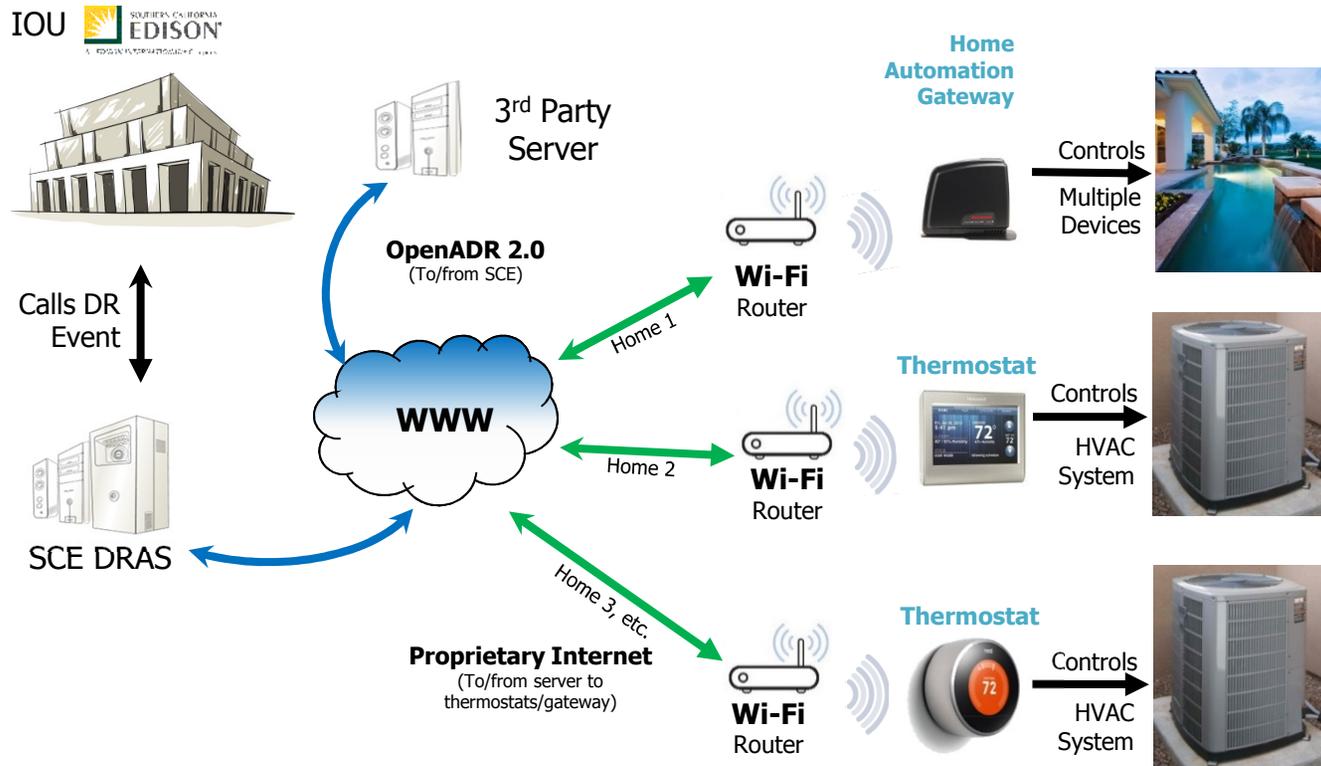
Leveraging the Connected Home

SCE's Third Party BYOD Save Power Days Program

- Thermostat partners perform marketing and provisioning for an annual **\$20 management fee** per customer
- SCE provides **\$1.25 per kWh reduction** incentive to customers through the SPD (Save Power Days) program rate
- Utilize **OpenADR 2.0 cloud platform** to communicate events to partners



3rd Party BYOD Communication Architecture



Providing multiple pathways communications and minimizing the opportunities for obsolescence

Co-Marketing and Co-Branding



nest Nest
November 30 at 12:00 am · 🌐

Save energy. Stay comfy. Get paid.



Get a Nest Learning Thermostat and earn \$60.

Southern California Edison will give you up to \$60 a year when you sign up for Rush Hour Rewards — a Nest Learning Thermostat program that helps you use less energy during peak hours.

Learn more at nest.com/sce



To get up to \$60, your Nest Learning Thermostat has to control an air conditioner and you have to enroll in the program. Payment is subject to Southern California Edison funding and other eligibility requirements. Amount of payment will vary based on weather and energy use.



SCE Save Power Days Progress



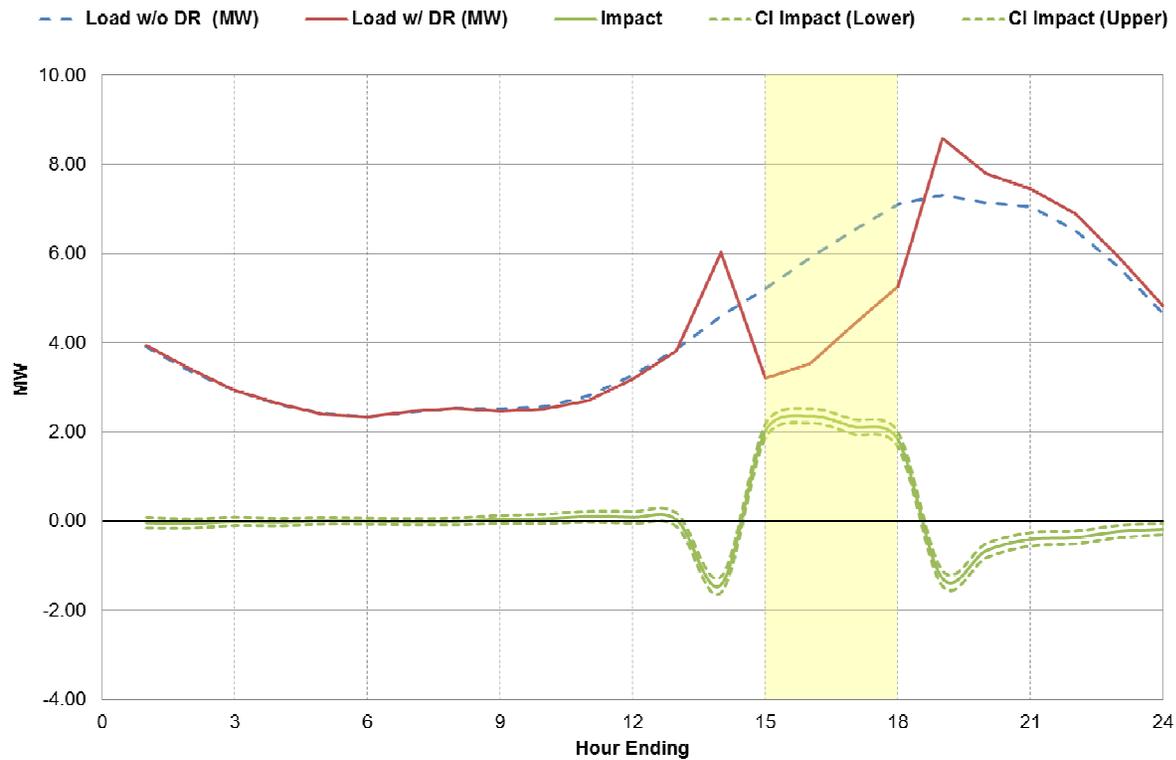
Smart Thermostats (2015)

- 4th year with over 5,400 customers enrolled through Nest and EnergyHub (and more every month)
- Customers participating in up to 12 Save Power Day events a year with an average 750 watts of load reduction per hour per participant

Communicating SPD Program Benefits to customers and partners

- Provides customer choice and comfort
- Creates an opportunity to differentiate your product
- Additional revenue on existing and new installed base for partners
- Co-branding opportunities with SCE for participation in SCE programs
- OpenADR cloud platform enables scalable and domestic market
- Building the foundation for energy efficiency (potential downstream rebates)
- Great for the environment, reduces energy use and carbon footprint

2015 load analysis results for SPD



Avg. Load Reduction for Event Window (kW): **0.78**

% Load Reduction for Event Window: 33.7%

Future Opportunities for BYOD – Study/Pilot/Program

Objective is to match demand with grid needs

- Quick response (<10 min.)/Short Duration (<60 min.)
- Locational dispatch (call devices in specific geography)
- Utilize OpenADR 2.0 – upgrade to B as needed
- Include multiple loads (HVAC, pool pump, EVSC, etc.)
- Decrease or increase load (overgen needs)
- Flexible incentives (determine amount, up-front vs. performance based, etc.)
- Outcomes used to define future SCE Programs (process improvement to maximize load impacts)

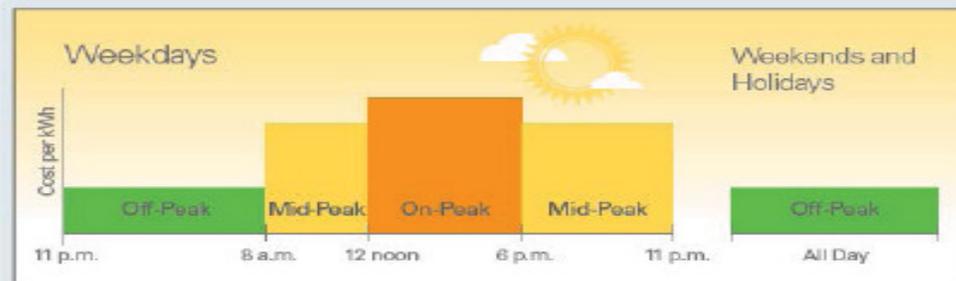
SCE Emerging Markets and Technologies

What's Next? TOU Rate Transition 2019

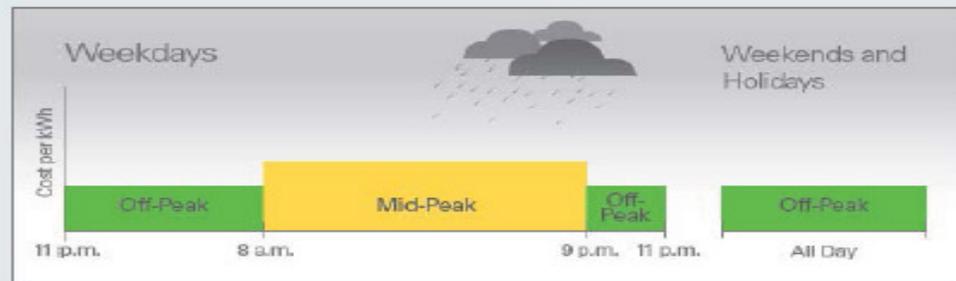
At a Glance: Rates By Season and Time

Many rates factor season, day, and hour into prices. The following charts depict SCE's traditional Time-Of-Use (TOU) periods in the summer and winter seasons.

Summer Season* Begins at 12 a.m. on June 1 and continues until 12 a.m. on October 1 each year.



Winter Season* Begins at 12 a.m. on October 1 and continues until 12 a.m. on June 1 each year.



■ **On-Peak:** Highest Energy Charge
 ■ **Mid-Peak:** Medium Energy Charge
 ■ **Off-Peak:** Lowest Energy Charge

* The lower off-peak rate applies on holidays. When any holiday falls on Sunday, the following Monday will be recognized as a holiday. Holidays are New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day.

This rate sheet is meant to be an aid to understanding SCE's Rate Schedule TOU-GS-1-A. It does not replace pricing information contained in the CPUC-approved tariffs. Please refer to the tariffs for a complete list of terms and conditions of service, which can be viewed online at www.sce.com/regulatory.

Partnerships are the Key to Success

- Our experience combined with market research shows that the “**rational benefits**” of Energy Management alone isn’t enough to drive consumer adoption of smart home technology
- The Primary drivers of the Smart Home are Home Automation, Security, and Entertainment (**not energy savings** 😞)
- By partnering with the key vendors of these primary drivers, we can **influence the inclusion of energy management capabilities** in smart home devices to ensure future Grid Reliability
- Leveraging native communication and energy management capabilities in devices that **customers have already purchased** and installed lowers the barriers to entry for Utility programs

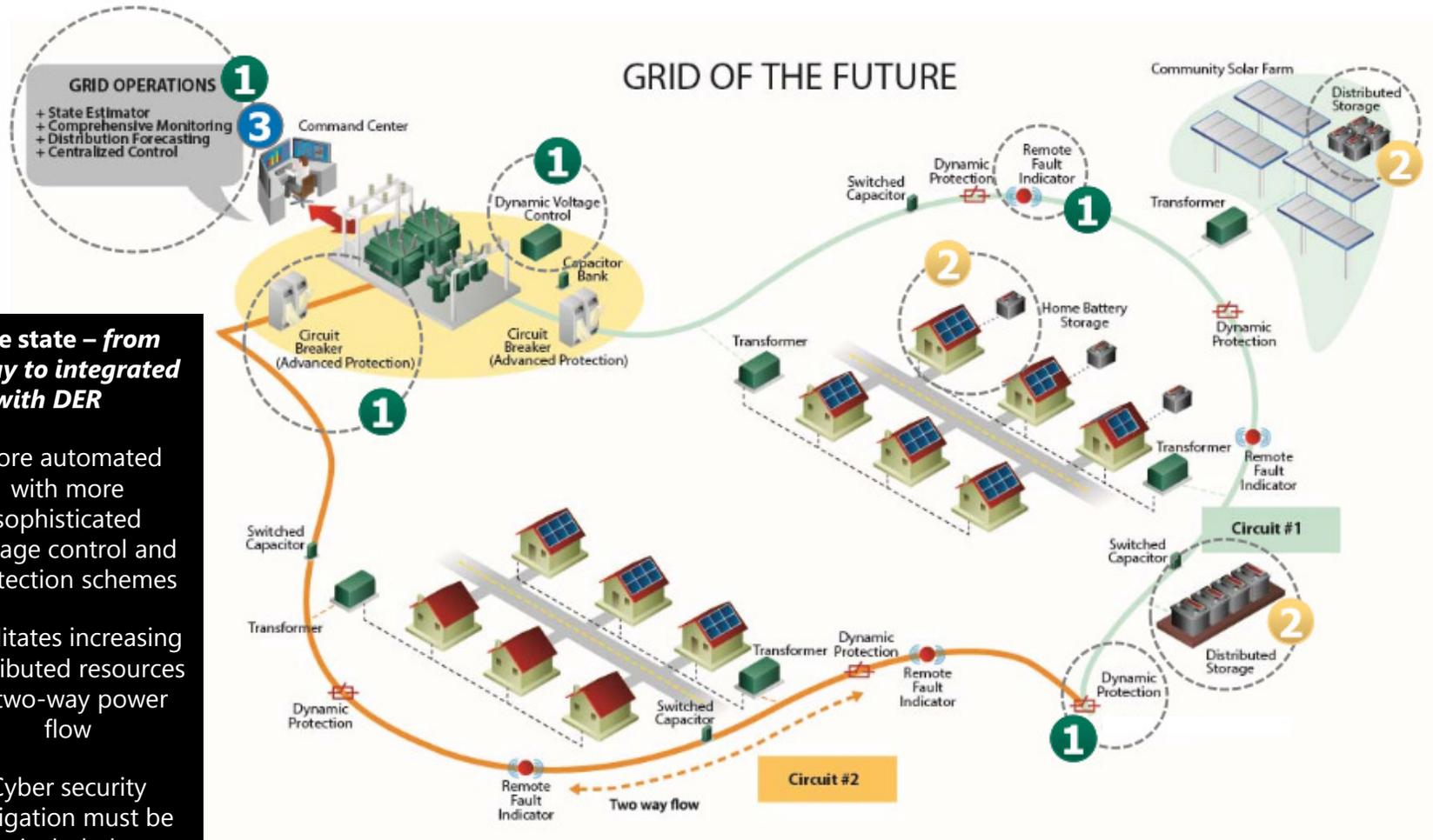


67% RANKED IT AS THE #1 OVERALL

Respondents ranked personal and family security as the number one reason overall for using a smart home system.

SCE's Vision: 21st Century Integration

The modern grid will allow variable, two-way electricity flow, maximize DERs to support renewables, and enhance grid operator situational awareness in real time for reliability.



GRID OPERATIONS

- + State Estimator
- + Comprehensive Monitoring
- + Distribution Forecasting
- + Centralized Control

Future state – from one-way to integrated with DER

- 1 More automated with more sophisticated voltage control and protection schemes
- 2 Facilitates increasing distributed resources & two-way power flow
- 3 Cyber security mitigation must be included



Thank you!

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