Demand Response – Enabling the Future for California's Energy Needs

Automated Demand Response-Enabled Solution Development and Deployment for HVAC Distributors: OpenADR Alliance Webinar

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The Evolution of Demand Response

- Largely manual control
- Interruptible tariffs for large C&I
- 1-way Direct Load Control for Residential
- Used for Capacity Planning & Emergencies

- Introduced To Wholesale Markets
- Increased automation
- Increased Precision
- Eventually Ancillary Services
- Behavioral/voluntary Options
- Smarter Equipment
- 2-way communications

- Provide Multiple Grid Services
- Respond to Controls and/or Price Signals
- Distribution & Transmission Relief
- Introduction of Storage
- Migration to DER

Energy for What’s Ahead®
The Grid is Changing

• Manage the “Ramp” During Spring and Fall Days
• Improve Affordability of Electricity by reducing Costs
• Improve Grid Reliability at local levels
• Enable More Renewables on the Grid
Shifting strategies will be needed
Emerging Markets and Technology (EM&T)

- **Mission**
  - To identify, facilitate, and deliver emerging, technology-driven demand response measures that enhance customer engagement of DR programs and tariffs

- **Origination and Continuation**
  - Initiated in 2005 to enhance the portfolio of DR programs
  - Authorized in the SCE DR Programs Proceeding
  - Current funding is $14.6M through 2022

- **Strategic Guidance and Focus**
  - Discover new DR trends, benchmark with other IOUs and munies, and drive DR innovation in the SCE market
  - Communicate with stakeholders for technology transfer
  - Address OpenADR emerging technology opportunities for today’s policies and vision of grid modernization
EM&T Early DR Market Influence

- **Highest Level of EM&T Influence**
- **With EM&T Intervention**
- **With Incentive Programs**
- **Business as Usual**

- **Technology Adoption/Technology Development Influence**
  - **Proof of concept and pre-cost effective**
  - **Early Adoption**
  - **Mass Market Adoption**
  - **Market Transformation**

- **EM&T Influence decreases over time**
SCE’s OpenADR Relationship

- **Auto-DR Program (2007)**
  - C&I Customers >200 kW

- **Auto-DR Express (2012)**
  - Some Smaller Commercial Customers 100 to 499 kW

- **3rd Party PCT (2013)**
  - Residential Customers with a compatible smart thermostat

- **Small Commercial Pilot (2015)**
  - C&I Customers <200 kW
EM&T Program Commitment for 2020

**Increasing Grid Needs**
- Changing power flows
- Consumer-driven Technologies
- Integrating Renewables
- System Reliability

**Evolving Role of EM&T**
- “Next generation” demand response programs should meet the future needs of the grid, while balancing customer choices.
- OpenADR enabled smart technologies can facilitate “fast, flexible, and smart DR”
- Load shifting can be a valuable tool for addressing over-generation challenges
- Working to remove market barriers and advance ADR development and deployment can be valuable tools to help stabilize the electric grid and meet state GHG goals.
- **DR EM&T is committed to foster the advancement of DR emerging technologies to meet resource needs**