EE and Reliability: SCE’s LCR RFO and Preferred Resources Pilot

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Several major drivers have led to initiatives that are changing the way SCE will procure and manage Energy Efficiency

### Drivers

- **Policy Objectives**
  - (GHG, RPS, Efficiency Standards)
- **Capacity / Reliability Investment**
  - (OTC, SONGS)
- **Changing Grid Needs**
  - (Duck Curve, Customer Resources)
- **Technological**
  - (Smart Meters, Storage, Internet-Enabled Devices, Analytics)

### Major Initiatives

1. Local Capacity RFO (LCR)
2. Preferred Resources Pilot (PRP)
3. Distributed Resources Plan
4. IDSM/IDSR
5. Energy Storage
6. EE/DR OIR

These initiatives raise a number of questions and opportunities for how EE can become a more integral part of the grid.
Key Questions

Why are we talking about EE and reliability?

What do we mean, when we say “reliability”? How does it differ from how we use EE today?

What needs to happen for EE to contribute more? What challenges are there?

What efforts are currently underway?
The EE Story is Changing

As SCE’s overall resource portfolio depends more heavily on preferred resources to meet its needs – whether carbon reductions, capacity, local reliability, or other goals – the specific resource attributes EE provides will become more valuable.

<table>
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<tr>
<th>Selected Preferred Resource Attributes</th>
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<tbody>
<tr>
<td><strong>Energy Efficiency</strong></td>
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<tr>
<td>• Certainty and persistency</td>
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<tr>
<td>• Ability to target time and geography</td>
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<tr>
<td>• Cost</td>
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<tr>
<td>• Speed of Deployment</td>
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<tr>
<td><strong>Demand Response</strong></td>
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<tr>
<td>• Dispatch control</td>
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<td>• Peak alignment</td>
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<td>• Geographic targeting</td>
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<tr>
<td>• Moderate ramps</td>
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<tr>
<td>• Dependence on customer behavior/response</td>
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<tr>
<td><strong>Distributed Renewable Generation</strong></td>
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<tr>
<td>• Local energy and capacity</td>
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<tr>
<td>• Peak contribution</td>
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<tr>
<td>• High intermittency</td>
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<tr>
<td>• High ramp rate</td>
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<tr>
<td><strong>Energy Storage</strong></td>
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<tr>
<td>• Still being defined, potentially very flexible</td>
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<tr>
<td>• Ability to act like DR without the negative customer impacts</td>
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<tr>
<td>• Load Shifting</td>
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<tr>
<td>• Expensive</td>
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## What does “reliability” mean?

<table>
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<tr>
<th>Reliability Level</th>
<th>Reliability Need</th>
<th>Example Resource Comparison</th>
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<tbody>
<tr>
<td><strong>System &amp; Local Capacity Area</strong></td>
<td>Meet system and local capacity needs</td>
<td>Generation / Supply Resource</td>
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<tr>
<td><strong>Transmission / Substation</strong></td>
<td>Manage sub-station load and transmission congestion</td>
<td>Transmission or Generation Resource</td>
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<tr>
<td><strong>Distribution / Circuit</strong></td>
<td>Manage circuit peak loading limits</td>
<td>Circuit Upgrade</td>
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Historically, EE has been used in planning processes (LTPP & TPP) as a load modifier. In the future, it will need to better approximate the characteristics provided by resources currently used for reliability.
## How will EE need to evolve?

<table>
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<tr>
<th>Application of EE Resources</th>
<th>... Today</th>
<th>... in the Future</th>
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<tr>
<td>• Targeted to customer sectors</td>
<td>• Targeted geographically based on grid constraints</td>
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<tr>
<td>• Focused on system-level targets</td>
<td>• Support load shaping to mitigate over-gen due to DG, reduce RA requirements, and moderating ramps</td>
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<tr>
<td>• EE impacts and forecasts spread across grid</td>
<td>• Impacts realized, and forecasts analyzed, locally</td>
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<table>
<thead>
<tr>
<th>Utilization of EE as a Reliability Resource</th>
<th>... Today</th>
<th>... in the Future</th>
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<tbody>
<tr>
<td>• Limited to system-level supply reliability demand modifier in load forecasts</td>
<td>• Able to alleviate system constraints at transmission (substation) or distribution (circuit) levels</td>
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<tr>
<td>• Limited situational awareness of EE impacts</td>
<td>• Can be used to defer capital investment</td>
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<tr>
<td>• Incidental incorporation of EE impacts in capital investment decisions</td>
<td>• Can be used with other DERs to meet grid needs</td>
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<td></td>
<td>• Enabler of grid safety, reliability and affordability</td>
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There are a number of challenges

**Characteristics** – How can a portfolio of DSM resources, that include EE, be made to “look-and-feel” like a traditional reliability resource such that planners can depend on it?

**Measurement** – How do we effectively measure and verify the performance and persistence of EE resources at the grid level?

**Performance** – How do we ensure that DSM resources will perform as projected?

**Targeting** – How can we effectively target EE to specific grid needs and geographies?

**Forecasting and Analytics** – How can we accurately forecast savings opportunity at more granular levels?
Even more challenges 😊

Valuation – How do we appropriately value EE against other grid resources?

Planning – How do we effectively integrate DSM, Distribution, Transmission, and Procurement planning? Can we optimize across multiple domains of reliability at the same time (i.e. system and grid)?

Regulatory Structure – What regulatory structure best supports the use of EE as a reliability resource?

Procurement Mechanism – What is the best way to procure EE to deliver grid benefits?

Customer Experience – How do we ensure customer service and satisfaction while utilizing EE as a grid resource?
Local Capacity Requirement Request for Offers (LCR RFO)
The Local Capacity Requirements RFO is a, first of its kind, true “all-source” solicitation that includes any type of generation or DSM project.

What is the LCR RFO?:

- **Meet projected local capacity needs and maintain reliability** as a result of expected retirement of Once-Through-Cooling units and the closure of SONGS.
- **A technology neutral “head-to-head” competitive solicitation of resources**
- **Minimum targets for preferred resources**
  - 550 MW total of preferred resources
  - 50 MW of energy storage
- **2021 delivery date**
- **Resources are to be incremental to programs**

SCE received over 1100 indicative offers for DSM resources from over 25 counterparties.
There were several major differences and challenges between the LCR and how SCE contracts EE through our utility programs

<table>
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<tr>
<th>Contracting Approach</th>
<th>Contracts were fully negotiable PPAs with no standard scope-of-work and no upfront incentive definition</th>
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<td>Valuation &amp; Optimization</td>
<td>Traditional cost-effectiveness tests were not used, instead EE was inserted into the valuation process used for all resources</td>
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<tr>
<td>Time Horizon</td>
<td>The LCR was planned to meet a generation development timeline, one much longer than the planning horizon used for energy efficiency</td>
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<tr>
<td>Definition of Incremental Resource</td>
<td>EE purchased through the LCR was required to be demonstrably incremental to SCE’s programmatic resources</td>
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<tr>
<td>Measurement and Verification</td>
<td>To provide contract certainty, M&amp;V terms were negotiated upfront using IPMVP</td>
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Thru the LCR RFO SCE selected a total of 2157 MW; including over 400 MW of customer-sided resources, and approximately 130 MW of EE
Preferred Resources Pilot (PRP)
The Preferred Resources Pilot is exploring the intensive use of DSM to meet local area reliability needs in the South OC region caused by the SONGS closure.

Objectives include:

- **Demonstrate** DSM can be used to meet local capacity & reliability needs
- **Measure** grid impact of DSM
- **Implement** a Preferred Resources portfolio to address local peak needs
- **Minimize/eliminate** the need for gas fired generation at these locations
- **Identify lessons** learned to apply to other grid areas

The Pilot will provide “real time, real world” experience to reduce the performance uncertainty associated with Preferred Resources.
A key aspect of the PRP is that it integrates design, acquisition, measurement, and engagement.

**DESIGN**
- Determine system needs (amount, duration, timing, ramping, etc)
- Determined DSM Market potential
- Determine CHP, DG and ES potential

**ACQUISITION**
- Coordinate w/ existing solicitations:
  - Utilize PRP specific solicitations if necessary

**IMPLEMENTATION**
- Leverage existing and expanded DSM portfolio

**MEASUREMENT**
- Built data collection, analysis & routine reporting Install new telemetry
- Evaluating solar production models against actual performance for estimating unmetered systems

Stakeholder Engagement
For the pilot we conducted in-depth analysis of resource needs, potential, and distribution of savings.

**Resource Fit Analysis**

- "EE"
- Storage
- Solar (BTM)
- DR
- Solar
- CHP

**Geographic Distribution of Savings**

**Peak Load Analysis**

- Segments with largest contributions to peak:
  - Offices
  - Warehouses
  - All Other Commercial
  - Retail Stores
  - Restaurants
  - All Other Industrial
  - Hotels/Motels
  - Schools
  - Food Stores/Refrigerated Warehouses

**Customer Targeting Study**

**Target Sector EE Potential: Residential HVAC EE Potential**

- Residential HVAC Grid
- Savings Potential: 6.5 MW
  - EE program demand reduction potential: 2.7 MW
  - Utilized targeting process to identify likely HVAC users
  - Targets AC units >10 years old (51%)
  - Grid: SEER 20 replacing SEER 10
  - EE program: SEER 20 replacing SEER 15

- Target Customers (Seasonal Factor > 1.7, Avg. Summer Load > 1 kW)

- Residential (Single Family)

- Est. # of Service Accounts
  - Target Customers: 23,446
  - Remainder of Segment: 113,051
- % of Sector
  - Target Customers: 17%
  - Remainder of Segment: 83%