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.

Selected Preferred Resource Attributes

Energy Efficiency	• Certainty and persistency • Ability to target time and geography	• Cost • Speed of Deployment
Demand Response	• Dispatch control • Peak alignment • Geographic targeting	• Moderate ramps • Dependence on customer behavior/response
Distributed Renewable Generation	• Local energy and capacity • Peak contribution	• High intermittency • High ramp rate
Energy Storage	• Still being defined, potentially very flexible • Ability to act like DR without the negative customer impacts	• Load Shifting • Expensive

What does “reliability” mean?

Reliability Level	Reliability Need	Example Resource Comparison
System & Local Capacity Area	Meet system and local capacity needs	Generation / Supply Resource
Transmission / Substation	Manage sub-station load and transmission congestion	Transmission or Generation Resource
Distribution / Circuit	Manage circuit peak loading limits	Circuit Upgrade

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?

EE Evolution

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

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?

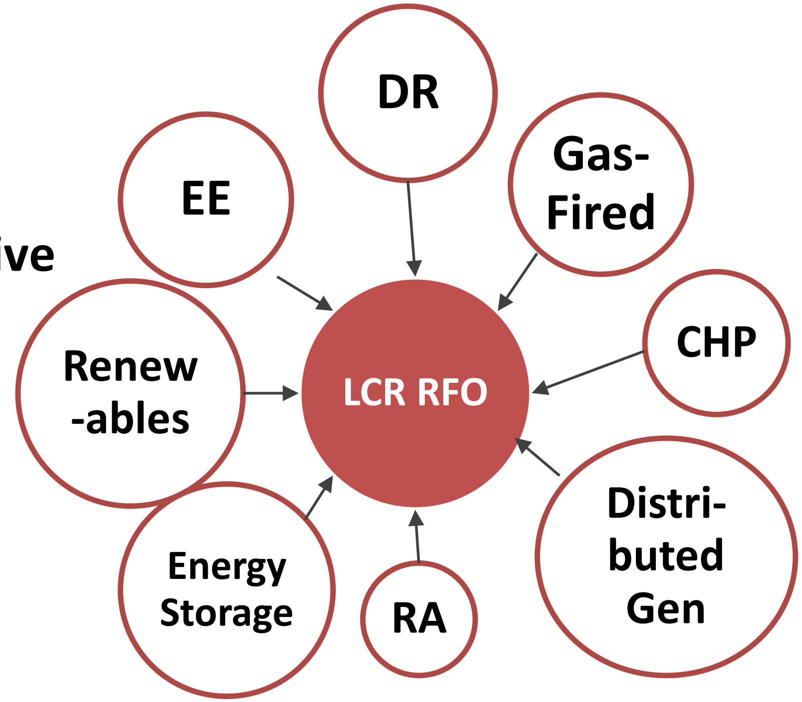
Customer Experience – How do we ensure customer service and satisfaction while utilizing EE as a grid resource?

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

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There were several major differences and challenges between the LCR and how SCE contracts EE through our utility programs

Contracting Approach	Contracts were fully negotiable PPAs with no standard scope-of-work and no upfront incentive definition
Valuation & Optimization	Traditional cost-effectiveness tests were not used, instead EE was inserted into the valuation process used for all resources
Time Horizon	The LCR was planned to meet a generation development timeline, one much longer than the planning horizon used for energy efficiency
Definition of Incremental Resource	EE purchased through the LCR was required to be demonstrably incremental to SCE's programmatic resources
Measurement and Verification	To provide contract certainty, M&V terms were negotiated upfront using IPMVP

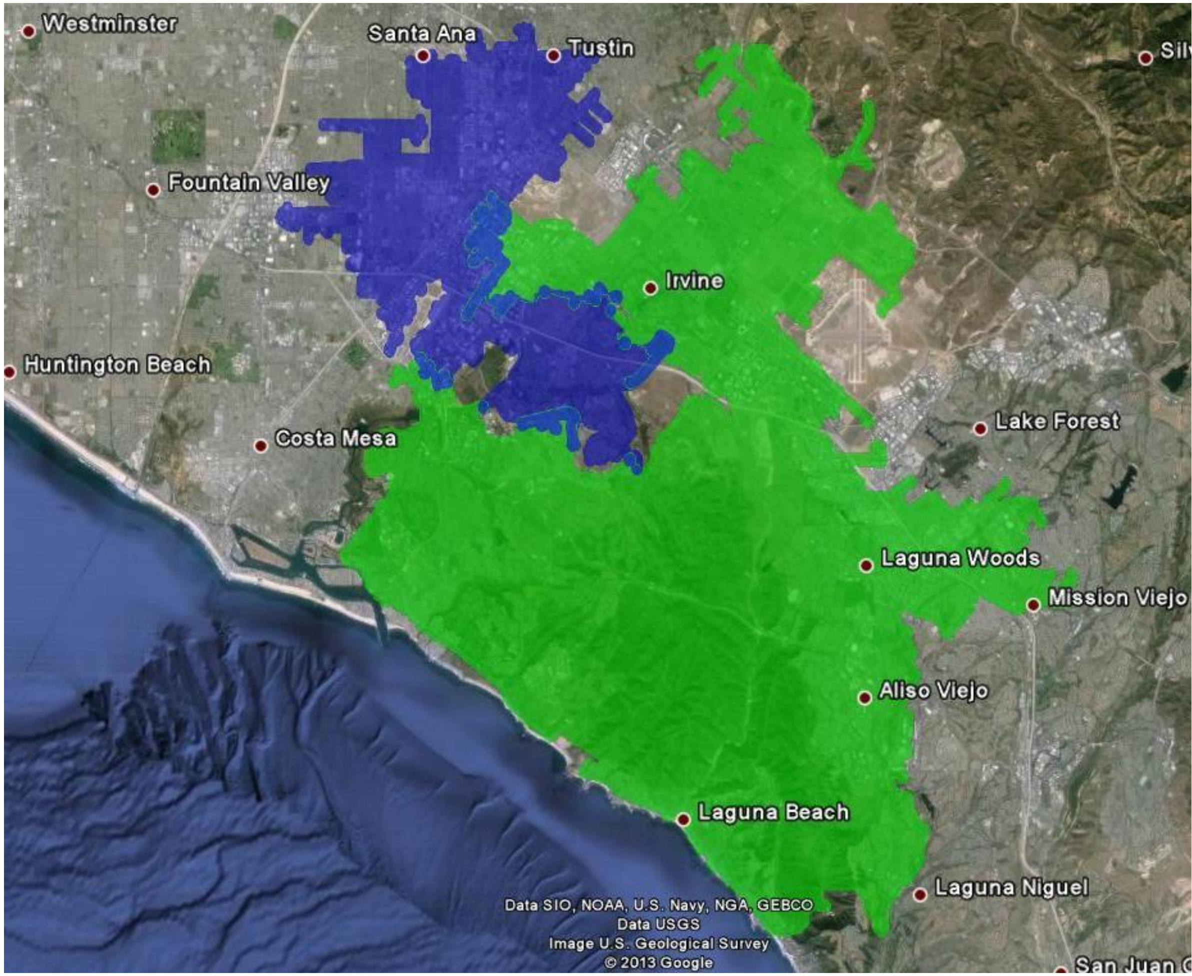
Thru the LCR RFO SCE selected a total of 2157 MW; including over 400 MW of customer-sided resources, and approximately 130 MW of EE

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

Stakeholder Engagement

MEASUREMENT

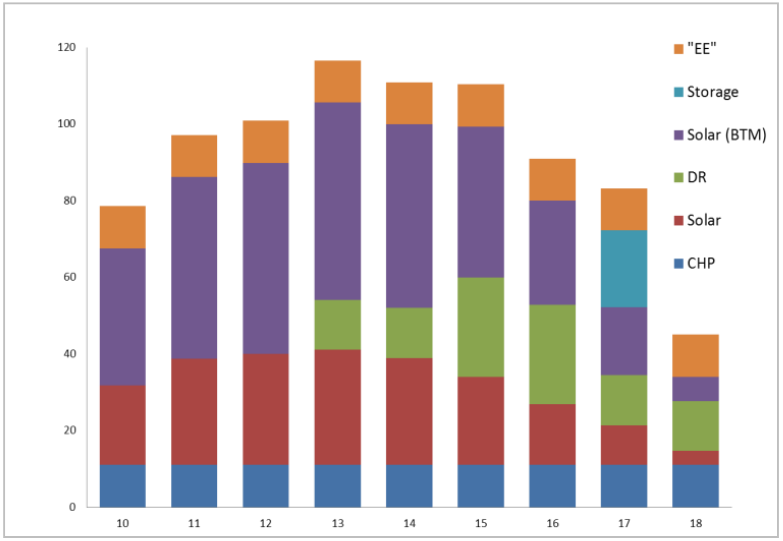
- Built data collection, analysis & routine reporting Install new telemetry
- Evaluating solar production models against actual performance for estimating unmetered systems

IMPLEMENTATION

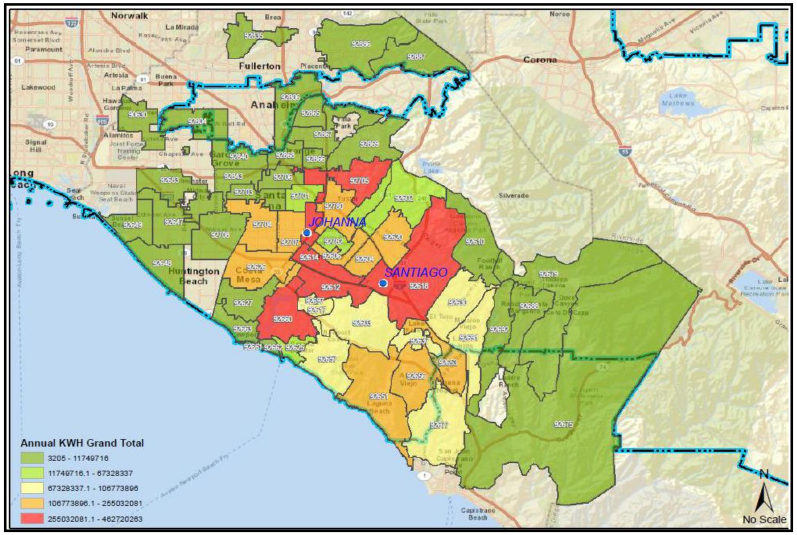
- Leverage existing and expanded DSM portfolio

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

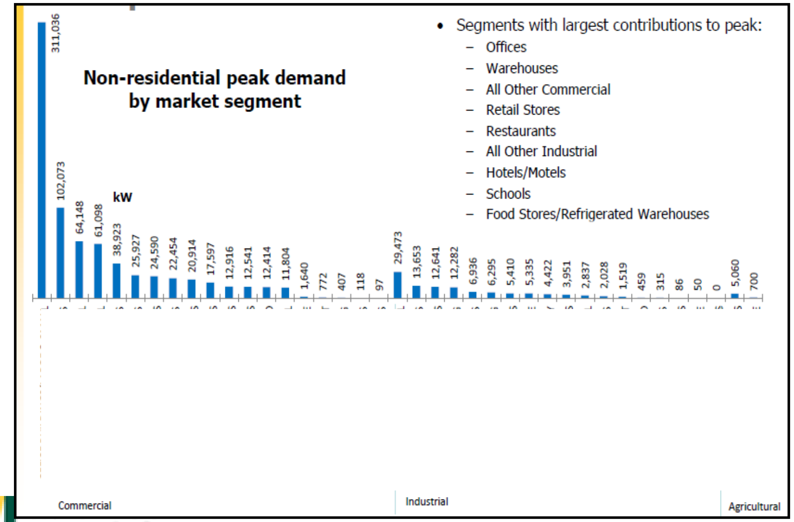
Resource Fit Analysis



Geographic Distribution of Savings



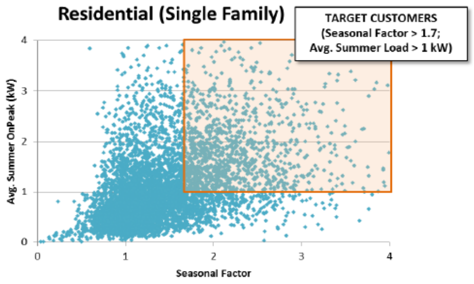
Peak Load Analysis



- 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: **2.7MW**
  - 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	Remainder of Segment
Est. # of Service Accounts	23,446	113,051
% of Sector	17%	83%