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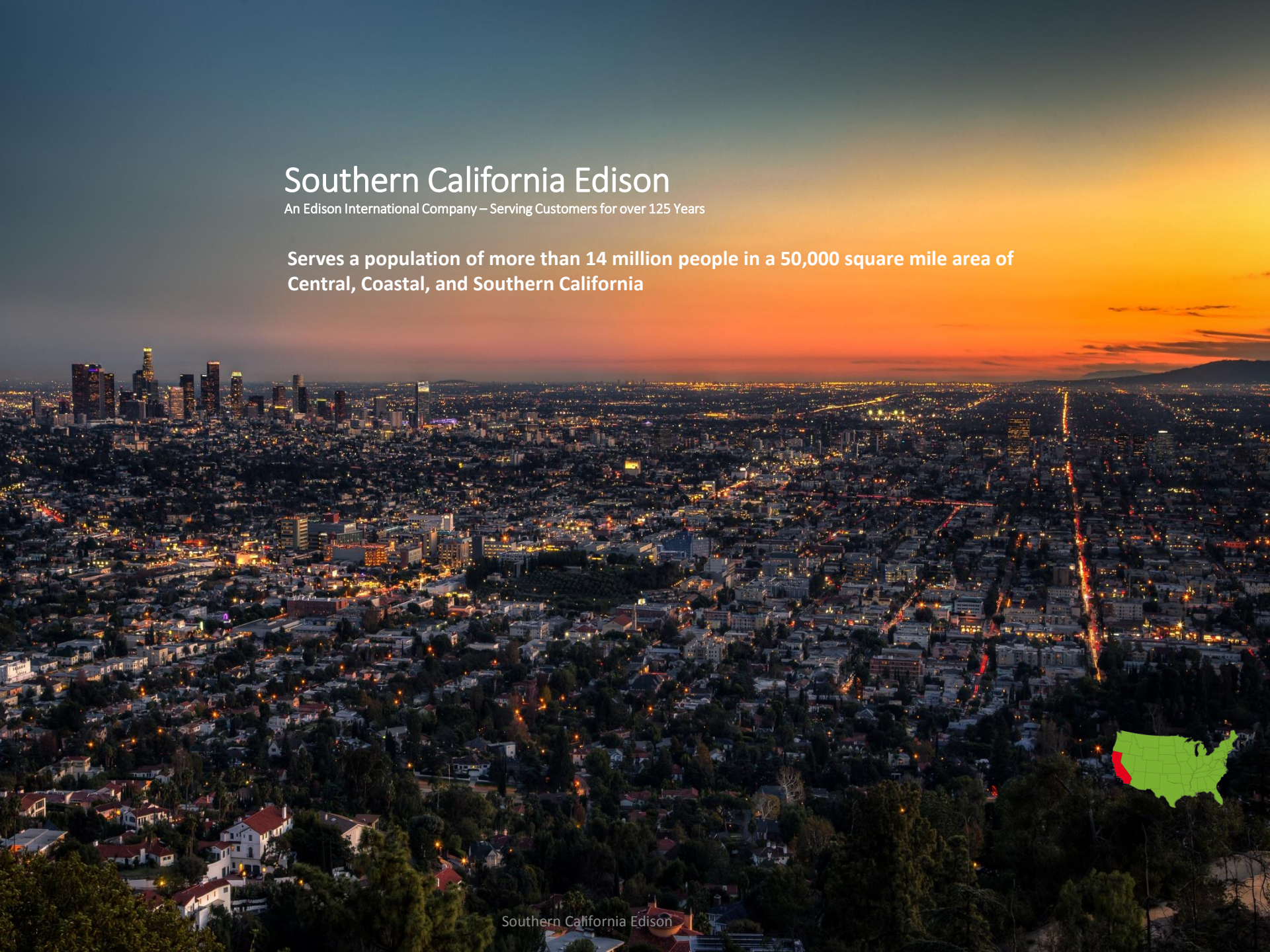
Serves a population of more than 14 million people in a 50,000 square mile area of Central, Coastal, and Southern California



Using Energy Efficiency to Offset Infrastructure Costs

Southern California Edison
Preferred Resources Pilot

ACEEE Finance Forum

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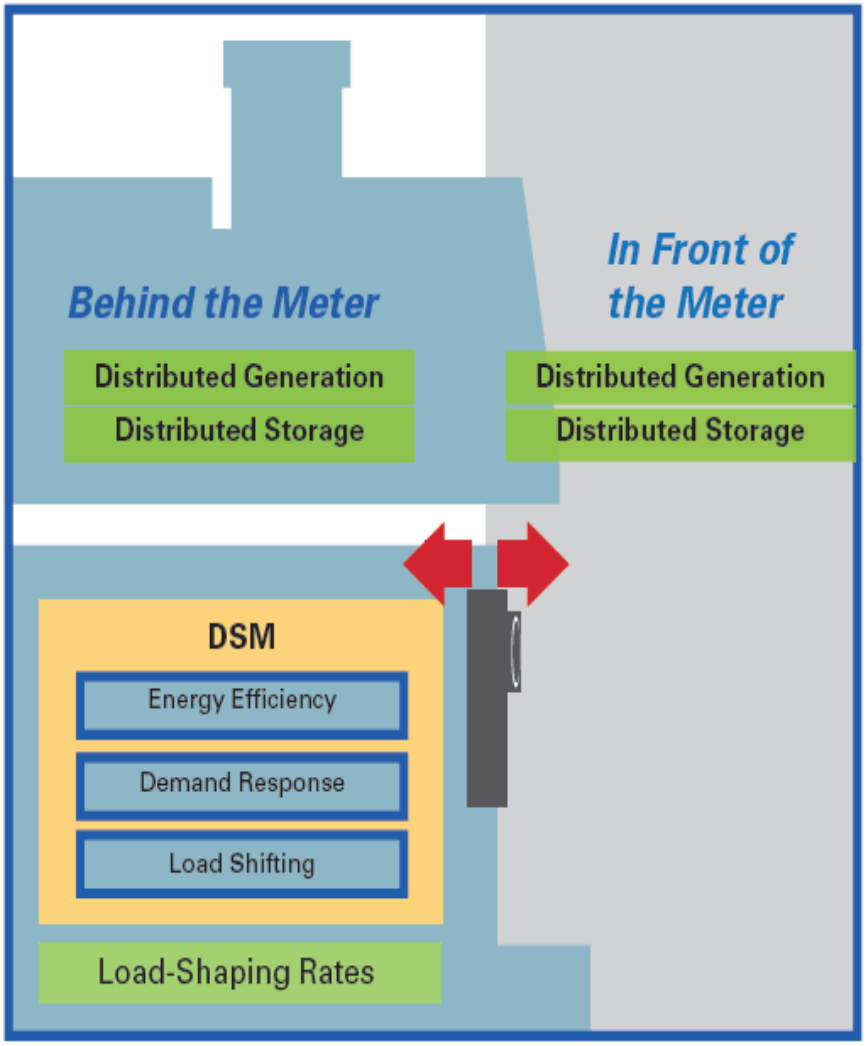
SOUTHERN CALIFORNIA EDISON®

California's Electric Industry Is Changing

- CA's electric industry is being reshaped by major trends including:
  - Ambitious public policy goals to reduce GHG
  - Rapid penetration of Distributed Energy Resources (DER's) and renewable generation
  - Consumers choosing how to procure and manage their energy
    - Many customers are becoming "prosumers" –producing, consuming, and exporting power
- EE and DSM will be important strategic tools in addressing these challenges



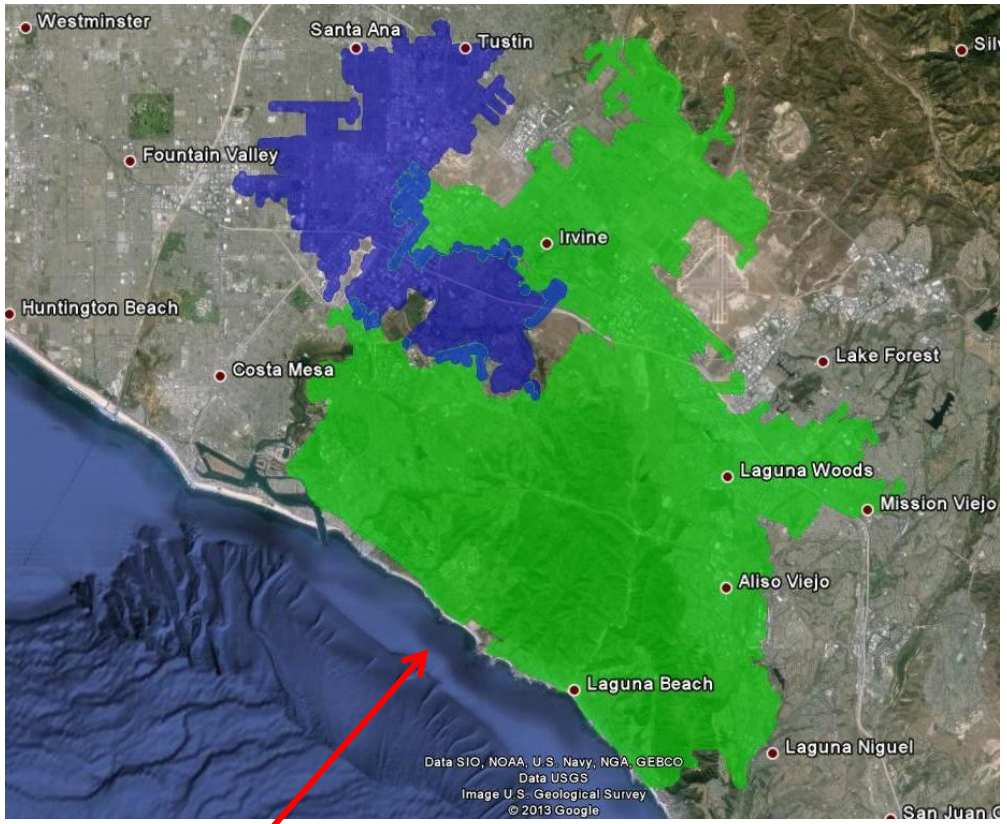
California's Ambitious Public Policy Goals

Major CA GHG-Reduction Policies Impacting DSM

1. Resource Loading Order (2003) places a priority on using energy efficiency, demand response, and similar DSM solutions before turning to other sources of energy.
2. AB 327 (2013) sets a price for carbon emissions, puts a premium on energy efficiency, and requires utilities to consider DSM as a possible alternative to additional distribution investments.
3. SB 350 (2015) sets a goal of reducing state-wide GHG emissions by 40% below 1990 levels and doubling cumulative electric energy savings by 2030. Also requires the state to achieve a 50% Renewable Portfolio Standard (RPS) by 2030.
4. AB 802 (2015) requires the California Public Utilities Commission (CPUC) to authorize investor-owned utilities by Sept 1, 2016 to provide incentives and assistance for EE measures that conform buildings "to-code."
5. AB 758 (2009) requires development of a program to achieve greater EE in existing buildings.
6. CPUC R.12-11-005 (2012) details net energy metering policies to support customer rooftop solar purchases.

A Future Model: SCE's Preferred Resource Pilot (PRP)

- Utilize preferred resources (EE, DR, storage, et al) to meet local and system capacity requirements
- Provide opportunities to procure competitively priced preferred resources alongside generation resources
- Under a new procurement approach third parties bear the risk of delivery (payment upon delivery of energy & capacity vs. pay per installation)



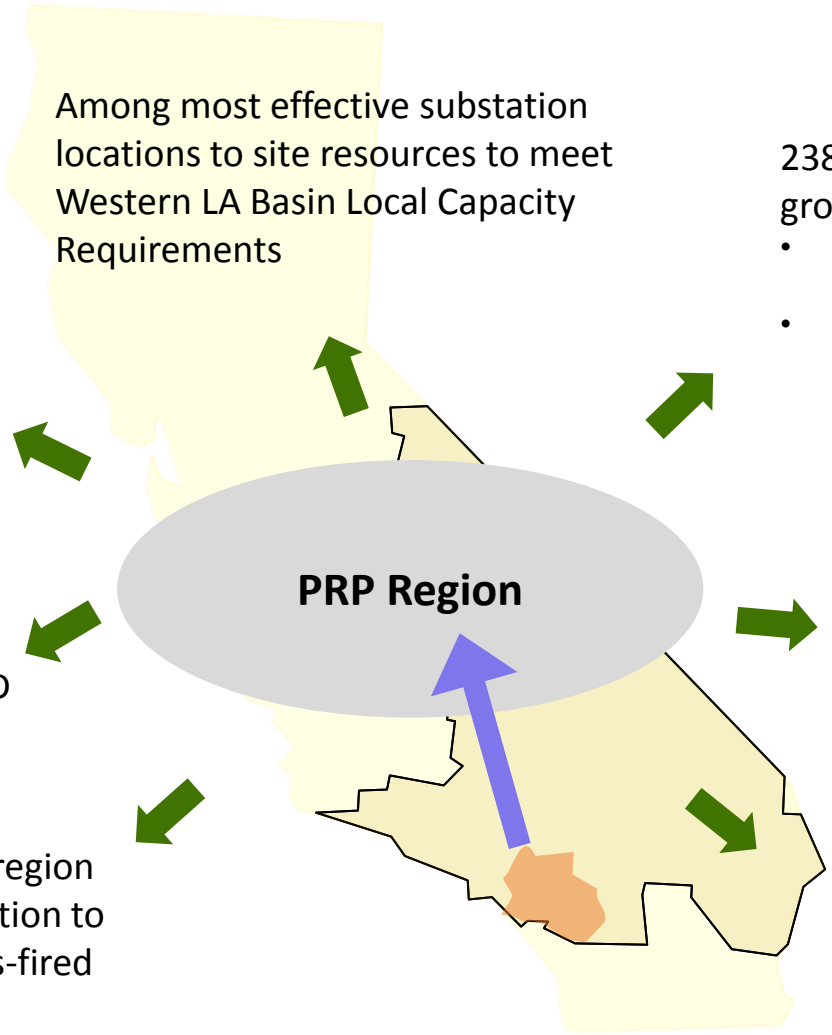
PRP Region is the Ideal Real-World Test Location to Validate Performance of DERs

Among most effective substation locations to site resources to meet Western LA Basin Local Capacity Requirements

238 MW of expected load growth by 2022

- Two substations – Johanna & Santiago
- ~245,000 total customers

Region will be most affected by closure of SONGS and impending retirement of OTC plants if mitigation efforts in flight do not perform as expected



Enables testing of high penetration of DERs by 2020, > 23% region wide, up to 55% in some circuits
→ **Leading region for SCE**

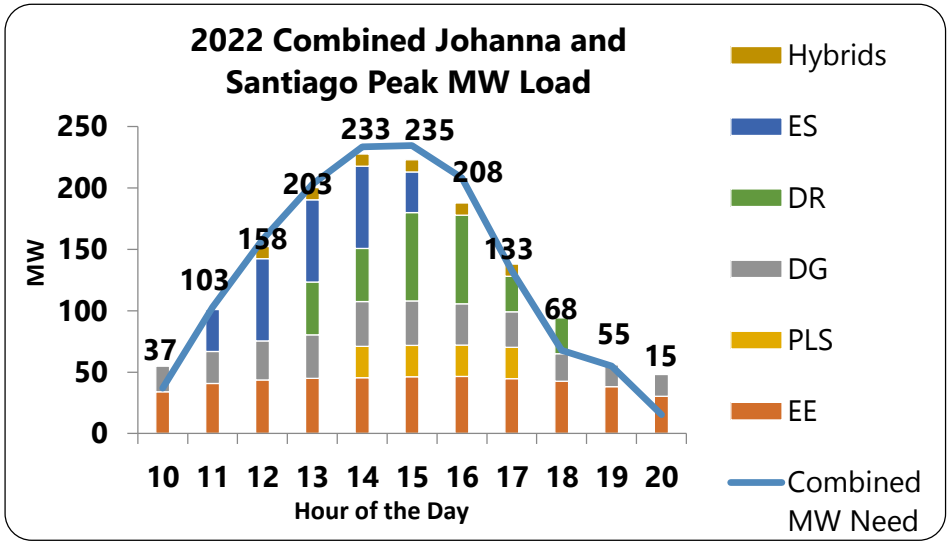
Target region for DRP demonstration projects C & D

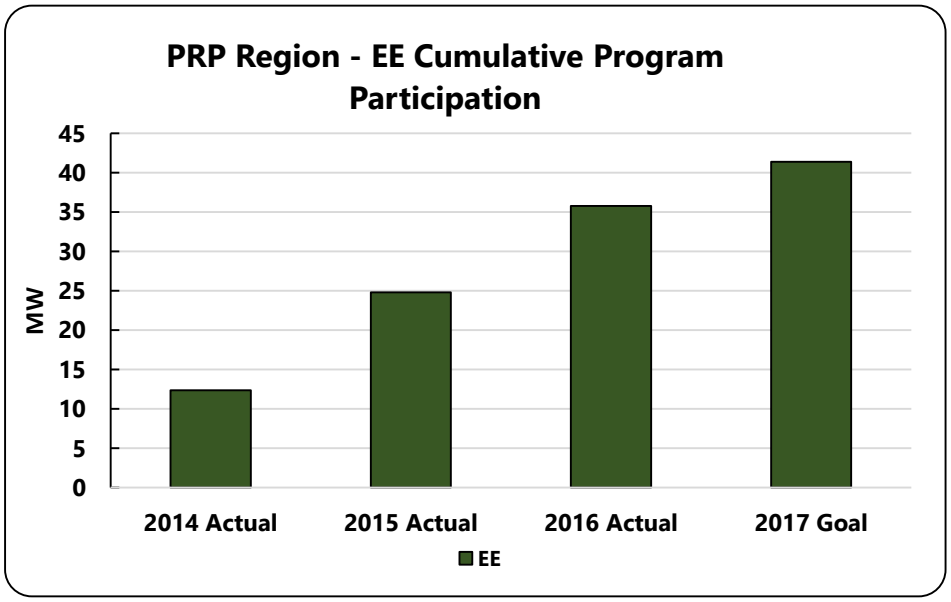
Urban to semi-urban region representative of location to site DERs in lieu of gas-fired generation

Peak is driven by 30k commercial and industrial customers

PRP Is An Example of Locational DSM Grid Benefits

- Energy efficiency provides baseline savings for deployment
- EE savings achieved initial high adoption levels but later reduced due to several challenges
  - Adjustment made for possible "free riders"
- New marketing and engagement strategies in SCE's EE Commercial and Industrial Business Plan are expected to achieve higher EE program participation in the future



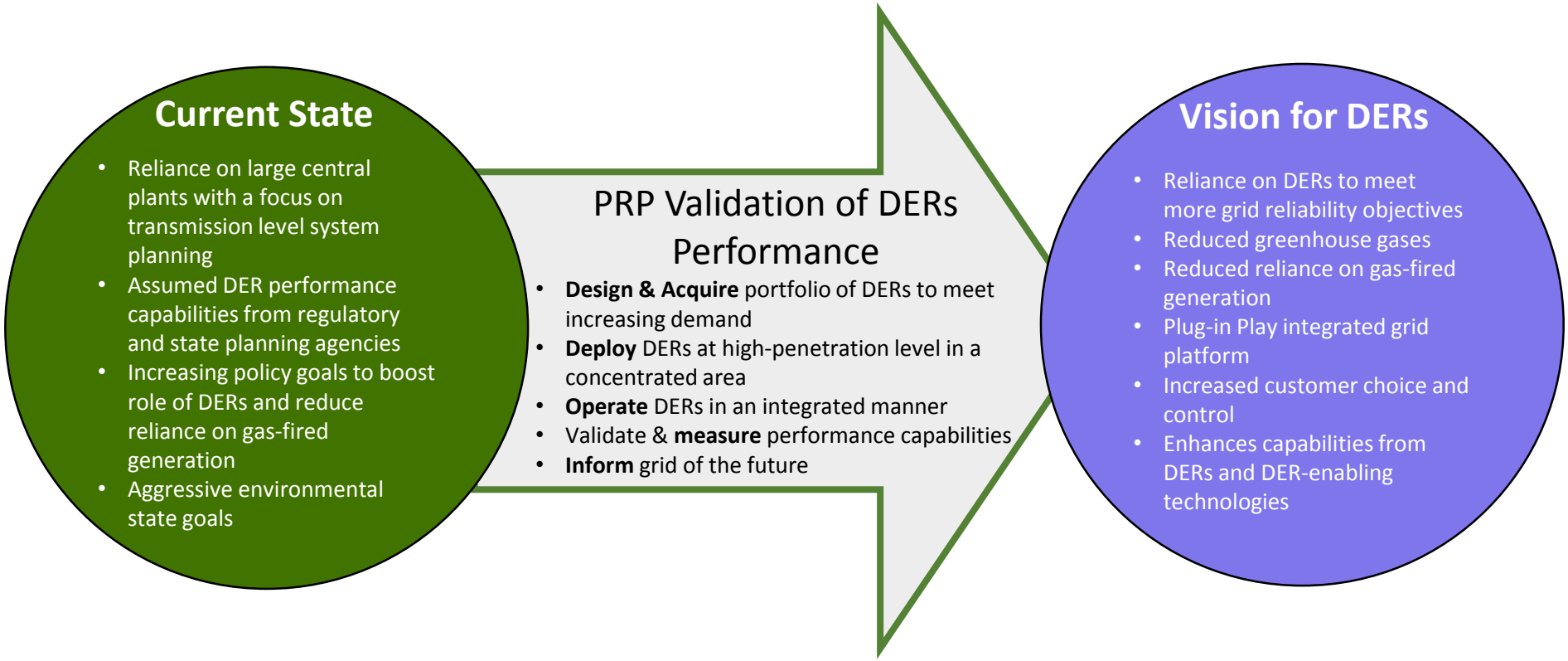


Summary of Active DSM Market Based Contracts

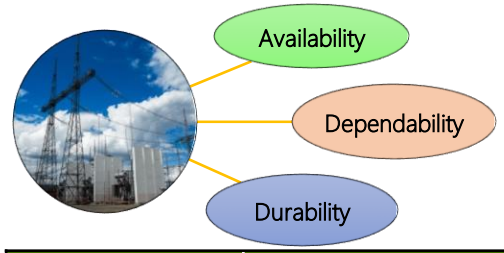
Contract Category	Resource	Number Contracts	Capacity (MW)
Aggregator Managed Programs (AMP)	DR	1	26
Local Capacity Requirements (LCR) Contracts executed pursuant to D.14-03-004 to meet long-term local capacity requirements in the LA Basin	EE & PLS	48	162
	DG	6	50
	DR & DR/ES	7	140
Demand Response Auction Mechanism (DRAM) DR contracts executed pursuant to R.13-09-011, D.14-03-026, E-4728, and E-4754	DR (2017 RFO)	TBD	TBD
Preferred Resource Pilot (PRP2) Contracts executed to meet Preferred Resources Pilot objectives	DR/ES	8	55
	DG/ES	5	10
Total		75	443

DERs Active Role in Serving Customer Needs

The role and functions of DERs in grid operations and the energy economy is rapidly changing. **Validating their performance is vital to properly incorporating them into grid planning and operations.** DER performance validation will help right-size current and future investments in DERs and their dependability.



Metrics to Evaluate PRP Region DER Performance

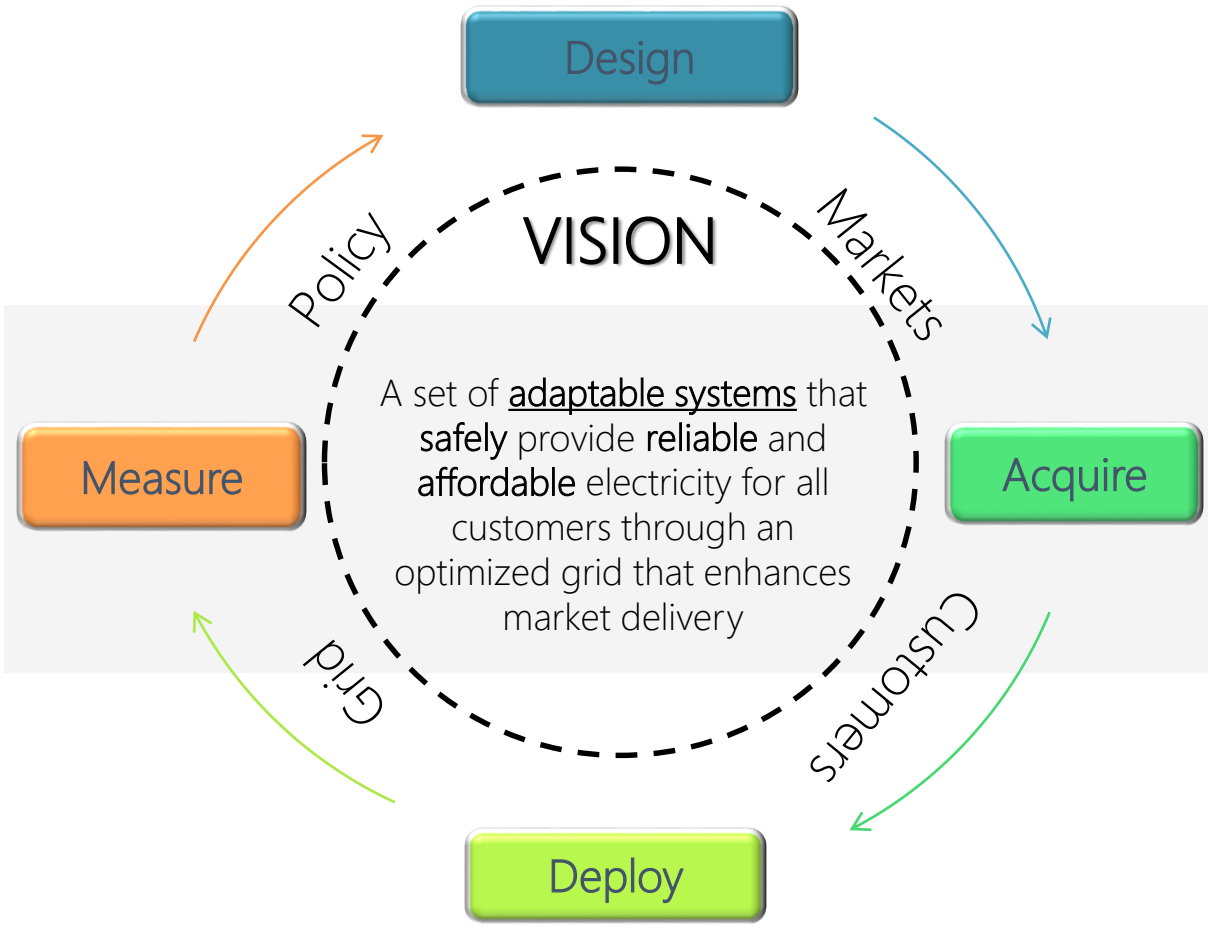


The performance of the DERs procured will be measured by the capability to off-set PRP region load and the impact on the grid by assessing the resources ***availability*** (available when called upon), ***dependability*** (ability to deliver an expected load reduction or production) and ***durability*** (ability to deliver persistently in future years).

Resource Type	Availability & Dependability		Durability
	Performance Metrics	Measurement Process	
Energy Efficiency (EE)	kWh/KW energy savings (load reduction) post EE installation	Load reduction measured by comparing customer utility meter pre and post EE installation along with season and weather factor to calculate savings(dependability) and for the terms of the contract or program expectation (availability).	Energy savings realized year over year for the life of the contract or program expectation.
Demand Response (LR or ES)	MW load drop compared to a baseline over the dispatched hours	Load drop measured using a 10-10 baseline methodology comparison to the actual usage during dispatch (dependability) with dispatches consistent with the terms in the contract or program expectation (availability)	Energy reduction realized year over year for the life of the contract or program expectation during dispatch
Solar (PV) (IFOM and BTM)	Metered and calculated MW generation	Load generation based on actual data from the grid (IFOM) and from 3rd Party Aggregator are aggregated with estimates from non-metered customers (BTM) (dependability) and for the term of the contract or program expectation (availability).	Energy generation realized year over year for the life of the contract or program expectation
Energy Storage (ES) – IFOM	MW generation over the dispatched hours	Delivered metered output (dependability) consistent with dispatches that meet the terms in the contract (availability).	Energy output realized year over year for the life of the contract during dispatch
Hybrids - Combined PV and ES	MW generation over 6 hours firm delivery	Delivered metered output (dependability) consistent with the terms in the contract (availability).	Energy generation realized year over year for the life of the contract during specific times of day.

LR – Load Reduction
BTM – Behind the Meter; sited to serve the customer's load
IFOM – In-Front of the Meter; delivering to the grid for distribution to customers

PRP - Informing the Future Clean-Energy Power System



Potential Outcomes

- Reduced GHG generation
- More customer choice options
- Resource use optimization

Q&A

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