

DOCKETED

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SCE Demand Response Auction Mechanism (DRAM)

IEPR Integrating Renewable Energy Workshop

June 20, 2018

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Large Power Demand Response

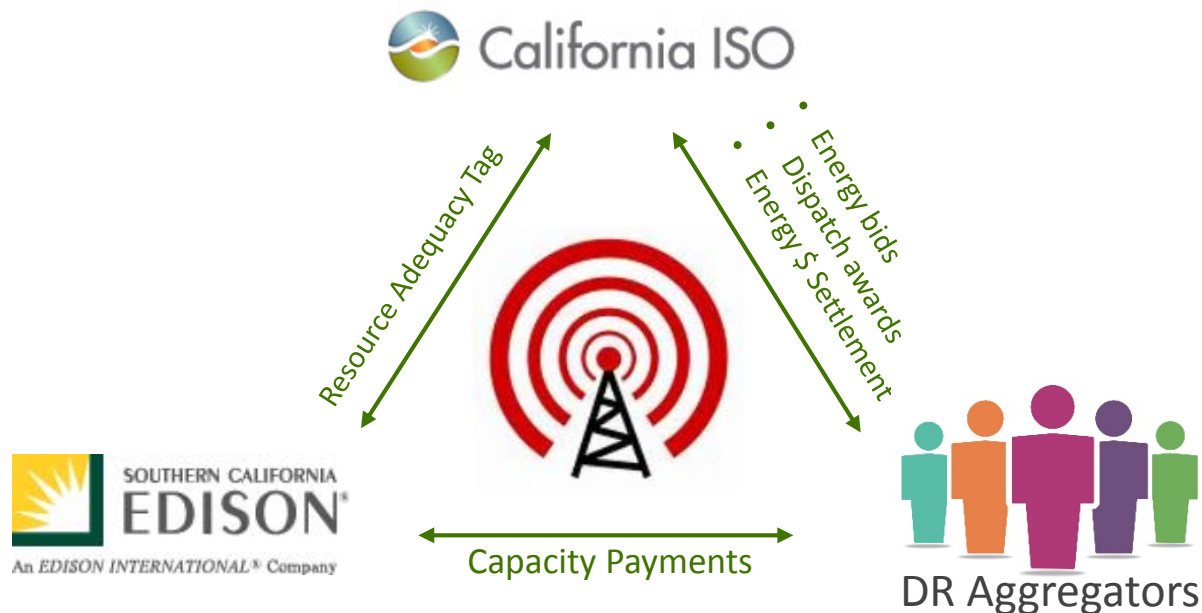
What is the DRAM Pilot?

Envisioned as a new supply-side Demand Response (DR) product for third-party DR providers

- Represents a Resource Adequacy (RA) product for DR providers
 - Provides a **capacity payment**, also referred to as RA, to DR aggregators
 - Third parties bid the capacity into the CAISO wholesale market and can earn energy payments from there
- Encourages new participants in the DR market and provides a level playing field with investor-owned utilities (IOUs)
- Represents a standard agreement for RA; no bilateral negotiations of the contract (i.e. RA Tag for DR)
- Third-parties own relationship with the customers as well as the CAISO

Enables 3P DR in the CAISO Market

- DR aggregator has business relationships with IOUs and CAISO
- Aggregator provides Resource Adequacy tags to IOU
- IOU pays aggregator capacity payments
- Aggregator bids into the CAISO markets
- Aggregator receives market energy revenues
- ★ IOUs have no dispatch rights nor visibility to dispatch performance



DRAM Product Definitions

System Capacity: IOU-wide, can be bid into market as an **RDRR** (reliability demand response resource) or a **PDR** (proxy demand response) resource. Must bid per CAISO must-offer obligation (MOO) in day ahead and/or real-time market.

Local Capacity: Must be located in Local Capacity Areas (LCAs). For SCE, covers the LA Basin and Big Creek/Ventura Substations. Same MOO as System. Must be able to respond to a dispatch instruction in less than 20 minutes.



Flexible Capacity: Bids in to Day Ahead and Real Time Energy market, **able to ramp and sustain energy output for a minimum of three hours**, must be a PDR resource. Addresses variability and unpredictability created by intermittent resources. Must bid per CAISO must-offer obligation for flexible resources.

How is the DRAM conducted?

- Capacity contracts sought via an “auction”
- IOUs issue Request for Offers (RFO)
- Bidders interested in selling capacity product provides bid prices by month and MW (must have August bid)
- Offers are selected up to the authorized auction budget cap

File Update Date: Maximum number of Offers: Offers Entered:

A. List of Offers

[SCE Note: Refer to details on the "Instructions" tab. All Offers must be entered in columns G through R, U through AF and AK. No blanks (zeros or positive numbers rounded to two decimal points only).]
 [SCE Note: Select Type of Product in column C and Resource Type in column D. Refer to Type of Product descriptions on the "Instructions" tab.]
 [SCE Note: Select "Yes" for Residential Customer Type if applicable in column F. Enter Estimated Number of Registrations per Offer in column AJ & AK.]

Validation Message:

[SCE Note: Do not skip rows. Do not cut and paste.]
 [SCE Note: Product is defined by the Monthly Quantity (MW) and Contract Price (\$/kW-month) entered.]
 [SCE Note: Check validation comment in column AD. Offer Name (column A) will appear once all of the fields are entered correctly.]
 [SCE Note: "EXAMPLE"/"SAMPLE" offer is in Row 15.]

Offer Name	Offer ID#	Type of Product in Section 1.1.b	Resource Type	Product	Residential Customer Product in Section 1.1.c (Yes/No)	Monthly Quantity (MW for each day of Showing Month)											
						Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	
TBD-TBD-Mo-A-System-000	00	A-System	PDR	Monthly	Yes	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	
EXAMPLE/SAMPLE OFFER IS ABOVE. ACTUAL OFFERS MUST be entered BELOW (COLUMNS C, D, F through R, U though AF and AK). Modify AK and AJ only if needed for inclusivity																	
		A-System		None	No	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		B1-LAB		None	No	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		B2-BCV		None	No	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		C1-System Flex1		None	No	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		C2-System Flex2		None	No	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		C3-System Flex3		None	No	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		D1-1-LAB Flex1		None	No	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		D1-2-BCV Flex1		None	No	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

DRAM Procurement Results



	PG&E		SCE		SDG&E	
	Authorized budget cap	MW Awarded	Authorized budget cap	MW Awarded	Authorized budget cap	MW Awarded
DRAM 1	\$4M	17 MW	\$4M	20 MW	\$1M	3 MW
DRAM 2	\$6M	56 MW	\$6M	56 MW	\$1.5M	12 MW
DRAM 3	\$12M	80-90 MW	\$12M	90-100 MW	\$3M	16 MW
DRAM 4	\$6M	72.7 MW	\$6M	77.3 MW	\$1.5M	45 MW

- DRAM 2 – Flexible Capacity added to DRAM Products.
- DRAM 4 – IOUs directed to calculate flexible, local and system offers separately.

SCE DRAM Flexible Product Results

DRAM 2

Counterparty	Product Type	Resource Type	August 2017 Capacity (MW)	Contract Term
Advanced Microgrid Solutions, Inc.	Local Flex	Non-Residential	0.40	6/1/2017 - 9/30/2017

DRAM 3: Online June 2018

Counterparty	Product Type	Resource Type	August 2018 Capacity (MW)	August 2019 Capacity (MW)	Contract Term
Green Charge Networks	Local Flex	Non-Res	.30	.50	Jun 2018 – Sep 2019

DRAM 4: 20.7 MW; Engie (formerly Green Charge) and Leapfrog Power selected

Counterparty	Product Type	Resource Type	August 2019 Capacity (MW)	Contract Term
Engie Storage	Local Flex	Non-Res	.6	May 2019 – Dec 2019
Engie Storage	Local Flex	Non-Res	.1	Annual
Leapfrog Power	System Flex	Non-Res	5.0	Annual
Leapfrog Power	System Flex	Non-Res	10.0	Annual
Leapfrog Power	Local Flex	Non-Res	5.0	Annual



How Did DRAM Perform?

The CPUC's Energy Division is conducting an **independent analysis** of the results of the DRAM pilot auctions and the subsequent deliveries, emphasizing the following criterion:

1. Were new, viable third-party providers engaged;
2. Were new customers engaged;
3. Were bid prices competitive;
4. **Were offer prices competitive in the wholesale markets;**
5. Did demand response providers aggregate the capacity they contracted, or replace it with demand response from another source in a timely manner; and
6. **Were resources reliable when dispatched**



- A draft resolution, presenting a final analysis and recommendation was due on June 1, 2018, but the Energy Division has indicated that more time is needed to complete its evaluation of the Pilot.
- Due to limited bandwidth and resources, significant challenges were encountered in evaluating CAISO related criteria (#4 & #6), including data quality issues and internal inconsistencies, leading to inconclusive results.
- Workshop planned for late July to discuss next steps for Auction.