



Energy Division's DRAM Evaluation Interim Report July 26, 2018



Cait Pollock
Demand Response Section



WebEx & Teleconference Info

Conference Phone Line: 1-866-832-3002

Participant Code: 7708062#

• WebEx Information:

<https://centurylinkconferencing.webex.com/centurylinkconferencing/j.php?MTID=mc463c360ed906b8999dea0569f2c4ea0>

Meeting Number: 710 615 528

Meeting Password: !Energy1



CPUC Guest Wi-Fi Info

SSID: cpucguest

User Name: guest

Password: cpuc62918



Agenda

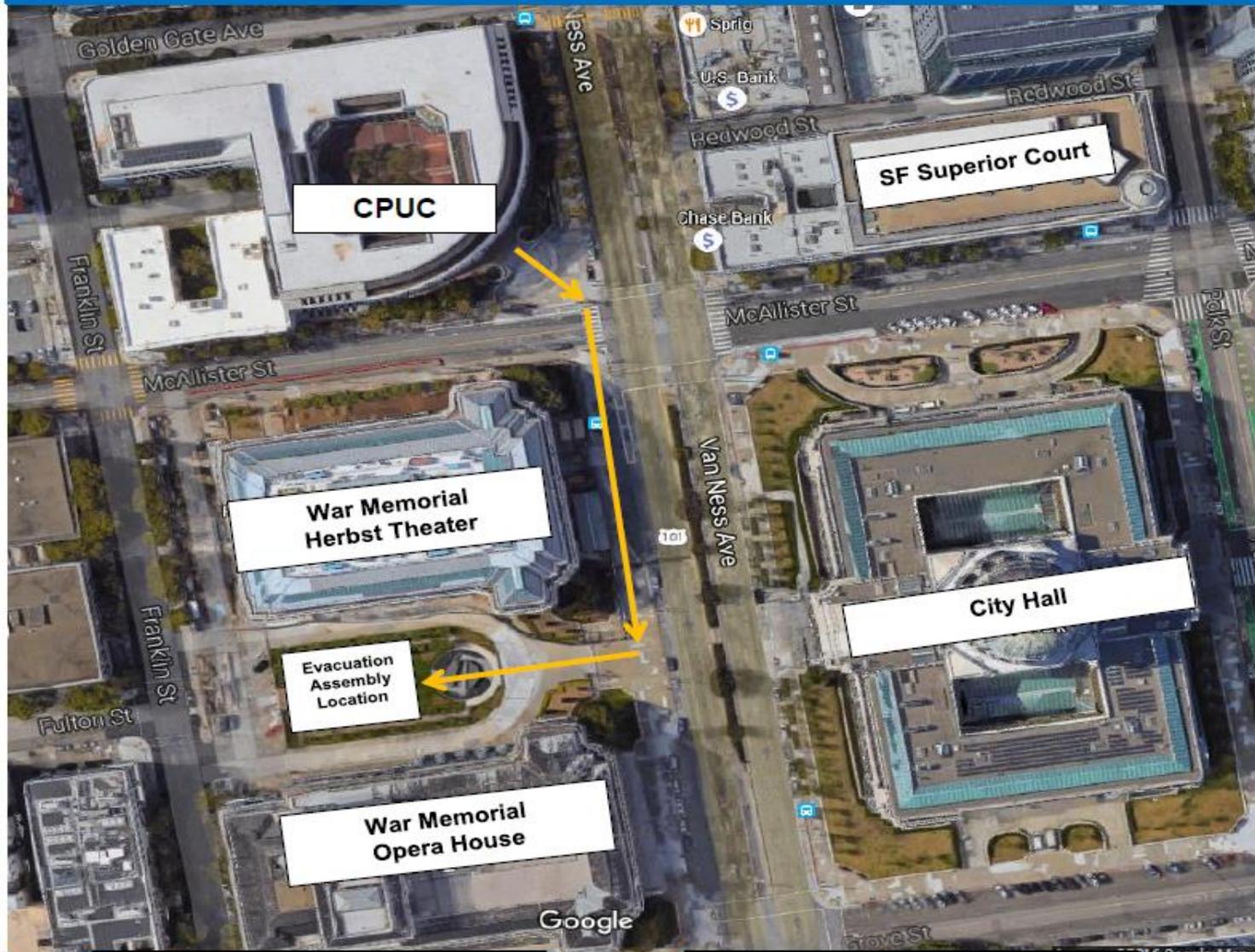
10:00 – 10:10 am	Welcome + Safety	Energy Division
10:10 – 1:00 pm	DRAM Evaluation Overview – Metrics 1,2,3,5	Energy Division
1 pm – 2 pm LUNCH		
2 – 2:30 pm	Should the Commission explore an additional 1-year pilot (2020 delivery)?	ALJ Hymes
2:30 – 4 pm	<p>If the Commission approves an additional 1-year pilot:</p> <ul style="list-style-type: none"> a) What short-term improvements should the Commission consider on the pilot <ul style="list-style-type: none"> - Solicitation? - Procurement? - Performance? b) What budget levels should be considered for a potential additional 1-year pilot, and what should be the cost recovery mechanism for those budgets? 	ALJ Hymes
Adjourn		



Safety and Emergency Information

- In the event of an emergency, please proceed calmly out the exits.
- The evacuation site is the Garden Plaza area between Herbst Theater and the War Memorial Opera House Buildings, on Van Ness Avenue.
- Exit the building at the Main Entrance at Van Ness and McAllister streets, cross McAllister Street, pass Herbst Theater, and enter the plaza.

Evacuation Assembly Location





Agenda

- **DRAM Procedural History**
- **Status of Evaluation Effort**
- **Interim Evaluation Results**
- **Q&A**



DRAM Procedural History

- D.14-12-024: CPUC authorized IOUs to conduct pilot DRAM I & II pilot auctions in 2015 & 2016 for procuring DR capacity aggregated by third-party providers, for deliveries in 2016 & 2017.
- D.16-06-029: CPUC authorized a DRAM III auction in 2017, for deliveries in 2018 and 2019.
- D.17-10-017: CPUC authorized a DRAM IV auction in 2018 (concluded) for deliveries in 2019.
- D.16-09-056 directed ED to conduct an independent analysis of DRAM I & II pilots against six specified criteria, and present report through a resolution.
- Amended Scoping Memo (5/22/2018) (A.17-01-012 et al.) acknowledged ED needed more time to complete the DRAM pilot evaluation, noting that “the preliminary results of the evaluation indicate a set of issues that are too complex to be addressed in the informal resolution process.”
- The Scoping Memo expanded scope of A.17-01-012 et al. to include “next steps for the [DRAM] pilot.”



ED DRAM Evaluation Effort– Status

- **ED encountered significant challenges in assessing DRAM pilots**
 - Due to limited bandwidth and resources,
 - Data quality issues
- **Today, presenting interim results on four criteria (#1–3, & 5)**
 - Evaluation Interim Report [Public Version] released on 7/24/18
- **Staff has chosen to engage an outside consultant to continue analysis of the CAISO-related criteria (#4, 6)**
- **Expect to report final results, including CAISO criteria, in Q4 2018**



DRAM Evaluation Summary

	Evaluation Criteria*	Result
1	Did DRAM engage new, viable DRPs?	Mixed
2	Did DRAM engage new customers?	Yes
3	Were auction bid prices competitive?	Mostly Yes
4	Were offer prices competitive in wholesale markets?	TBD
5	Did DRPs aggregate the contracted capacity in a timely manner?	Mixed, but Improving
6	Were resources reliable when dispatched?	TBD

*adopted by Commission in D.16-09-056



DRAM Procurement & Budget Summary

MW	I	II	III-A	III-B	IV	Annual Average
Delivery Year =>	2016	2017	2018	2019	2019	Capacity (MW)
SCE	20	56	88	99	Contracts Pending	66
PG&E	17	56	80	90		61
SDG&E	3	12	14	16		11
Total	40	125	182	205		138

Note: Year shown is year of contract delivery

IOU Budget / \$ Millions	2016	2017	2018	2019	Total
SCE	4	6	6	12	28
PG&E	4	6	6	12	28
SDG&E	1	1.5	1.5	3	7
Total	9	13.5	13.5	27	63

Note: Year shown is year of contract delivery; includes DRAM IV

(See Tables 5 & 6 in 7/24/18 ED DRAM Evaluation Interim Report)



#1: Did DRAM Engage New, Viable DRPs?

Results: Mixed

- ➔ **Yes: DRAM I – III pilots clearly engaged “new” DRPs**
- Most bidders had never participated in an IOU DR program in CA
 - 67% of contract winners (10/15) were new participants

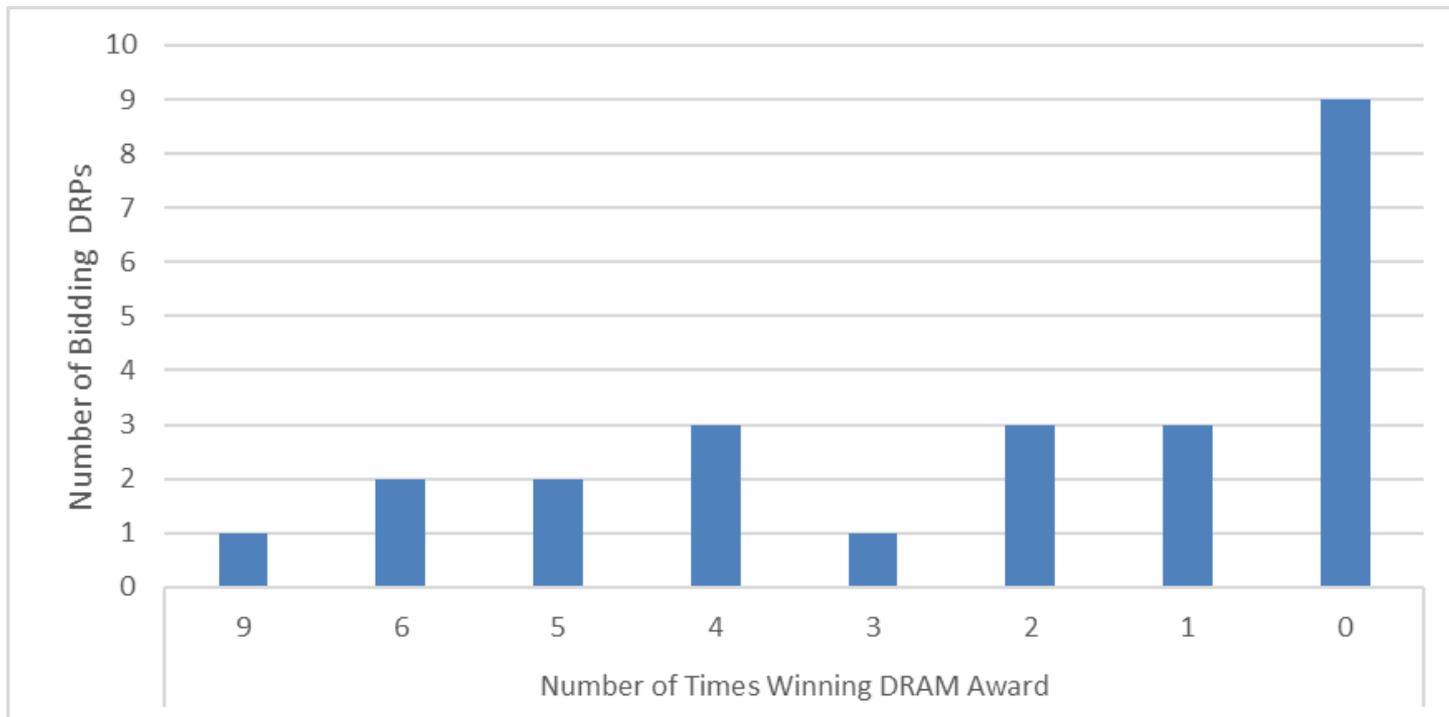
Summary of DRPs New to DR in California (DRAM I – III)

Type of DRP	Number	Percent
Unique New Bidders	16	
Unique Sellers	15	100%
Unique New Sellers	10	67%

Most Contracts Awarded to New DRPs

- Vast majority of contract awards (46/55, or 84%) went to DRPs new to DR in CA

Frequency of DRP Auction Awards (DRAM I – III)



(See Figure 7 in 7/24/18 ED DRAM Evaluation Interim Report)

Winning DRPs New to IOU DR... But Declining Engagement

- Most contract winners at IOU level never participated in that IOU's DR programs

Summary of Unique Sellers by IOU (DRAM I – III)

	SDG&E	PG&E	SCE
Unique Sellers	7	11	13
Unique New Sellers	6	8	11

- But new bidder engagement declined in successive IOU auctions

Number of Bidders by IOU Auction

	SDG&E	PG&E	SCE
Delivery Year	New	New	New
2016	5	8	7
2017	2	4	3
2018–19	0	4	2

(See Tables 9 & 10 in 7/24/18 ED DRAM Evaluation Interim Report)

Viability of DRPs

➔ Not clear how “viable” winning DRPs were

- DRAM pilots experienced contract terminations & reassignments
- Led to some DRPs to exit DRAM
- 43% (3/7) of new sellers fulfilled their contracts in DRAM I – II

Impact of Contract Terminations/Reassignments (2016–2017 Only)

Participant Type	2016–2017 Only	Percent
Unique New Bidders	13	
Unique Sellers	9	
Unique Sellers Completing Some Contracts	8	89% (/9)
Unique Sellers Completing All Contracts	6	67% (/9)
Unique New Sellers	7	78% (/9)
Unique New Sellers Completing All Contracts	3	43% (/7)

Viability of DRPs

➔ Contract reassignments increased over time

- PG&E experienced greatest number of contract terminations/reassignments across DRAM I–II, with 5 of the 11 total

Number of DRPs Terminating/Reassigning Contracts by IOU (2016–2017)

		SDG&E	PG&E	SCE	Total
2016	Terminations	2	1	1	4
2017	Terminations	0	1	1	2
Sub Total		2	2	2	6
2016	Reassignments	0	0	0	0
2017	Reassignments	0	3	2	5
Sub Total		0	3	2	5
Total DRPs Terminating/Reassigning Contracts		2	5	4	11

Concern: Market Concentration

- 5 DRPs controlled 94% of total capacity across DRAM I – III
- 3 DRPs controlled 88% of capacity before contract reassignments
 - increasing to 91% after reassignments

Market Concentration Before (Left) & After (Right) Contract Reassignments (DRAM I – III)*

Seller	Percent Capacity (August MW)
#1	4%
#2	16%
#3	25%
#4	2%
#5	47%
Total	94%

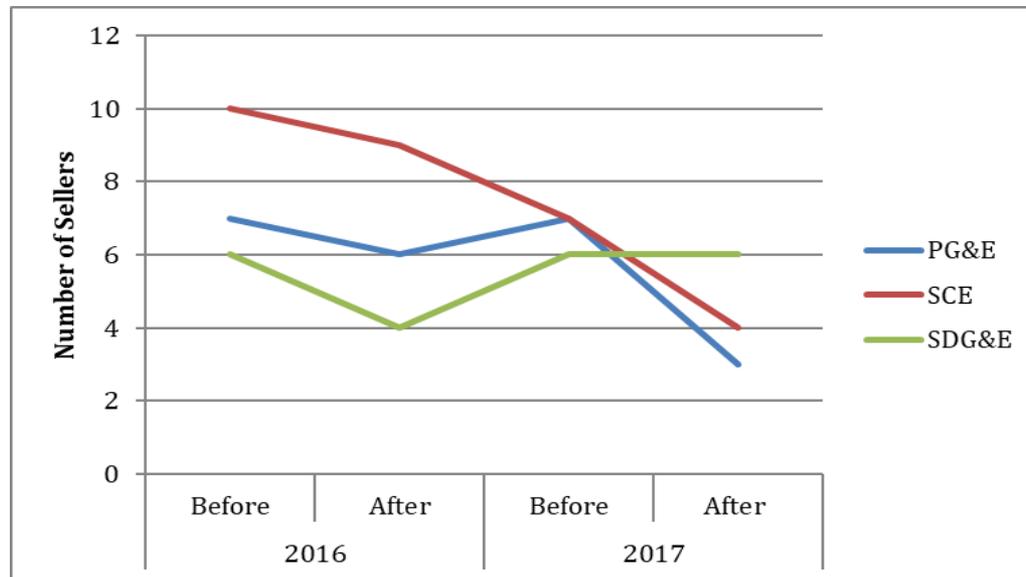
Seller	Percent Capacity (August MW)
#1	1%
#2	15%
#3	32%
#4	2%
#5	44%
Total	94%

*To anonymize DRP names, sellers were assigned a numerical ID

Rapid Market Concentration

- # of sellers completing full contract terms declined significantly in 2017
 - Dropping from 7 to 3–4 in PG&E's/SCE's territory
- Leading DRP purchased all contracts reassigned during DRAM pilot, intensifying market concentration

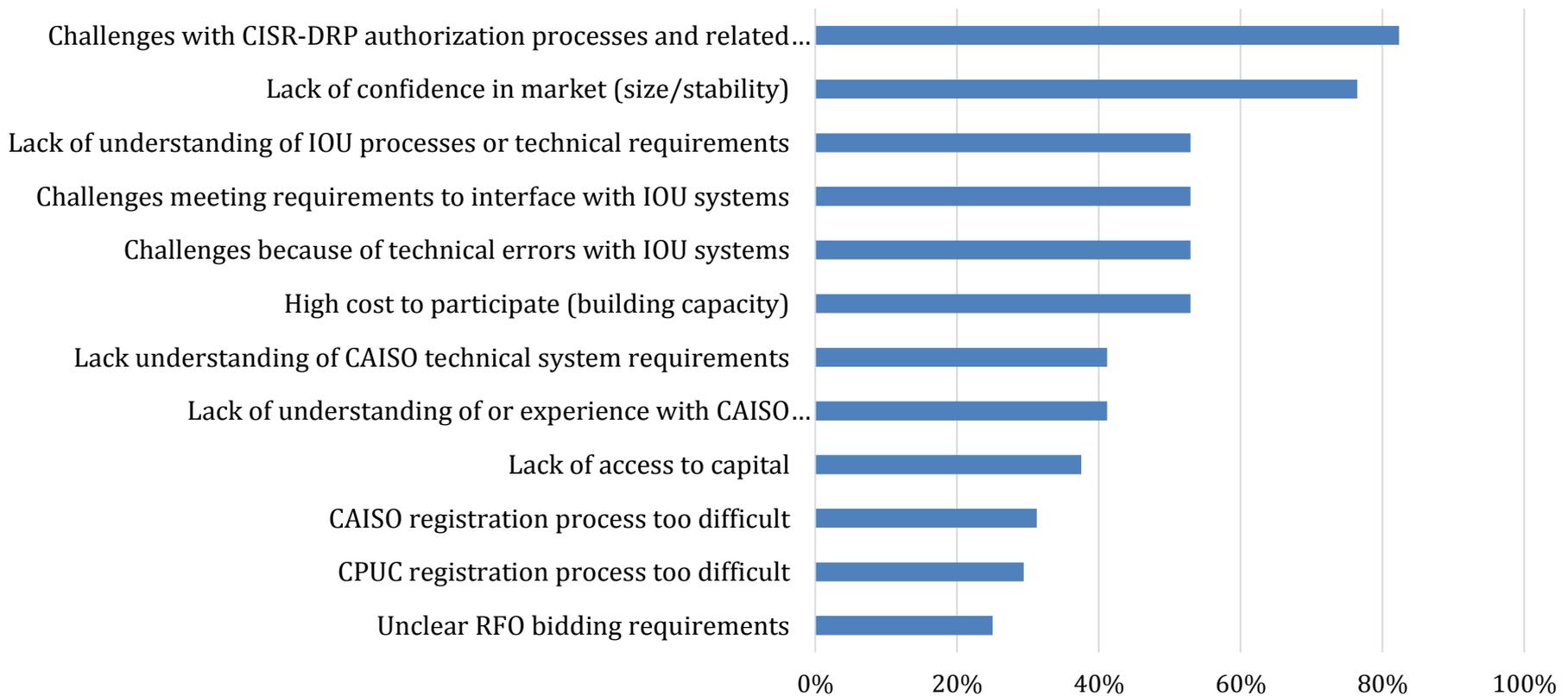
Sellers Before & After Contract Reassignments/Terminations (DRAM I – II)



(See Figure 9 in 7/24/18 ED DRAM Evaluation Interim Report)

Barriers to DRAM Participation

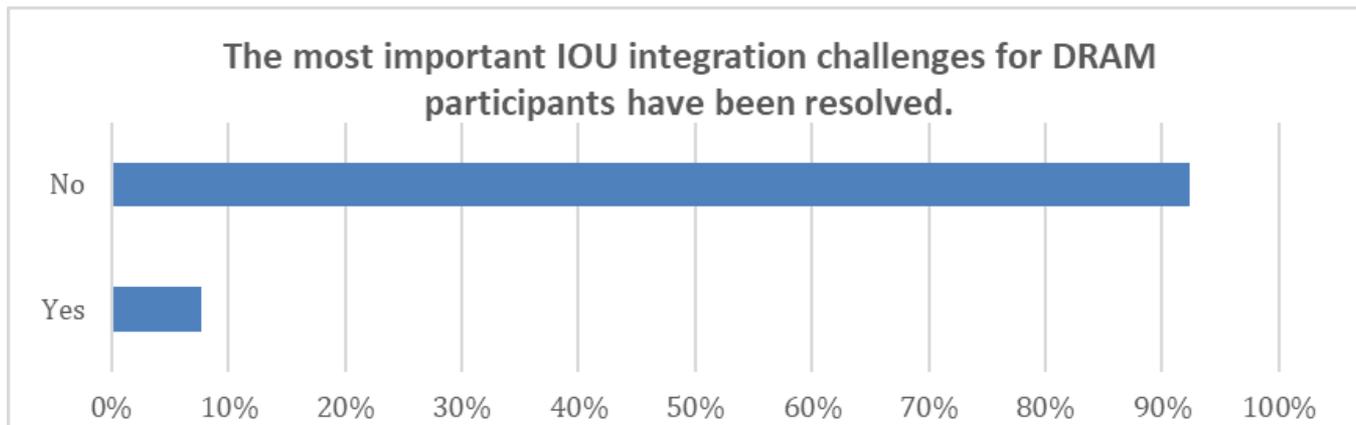
DRP Responses to ED's November 2017 Online Survey



(See Figure 15 in 7/24/18 ED DRAM Evaluation Interim Report)

Barriers: IOU Integration Challenges

1. Loss of customer enrollment due to customer fatigue (with CISR forms, online interfaces) (88%)
2. Delayed/incomplete IOU response to technical issues (56%)
3. Incomplete (or lack of) IOU provision of customer data (38%)
4. Difficulty interfacing with IOU data provisioning systems (38%)
5. Delayed IOU provision of data impacting supply plans, settlements (31%)



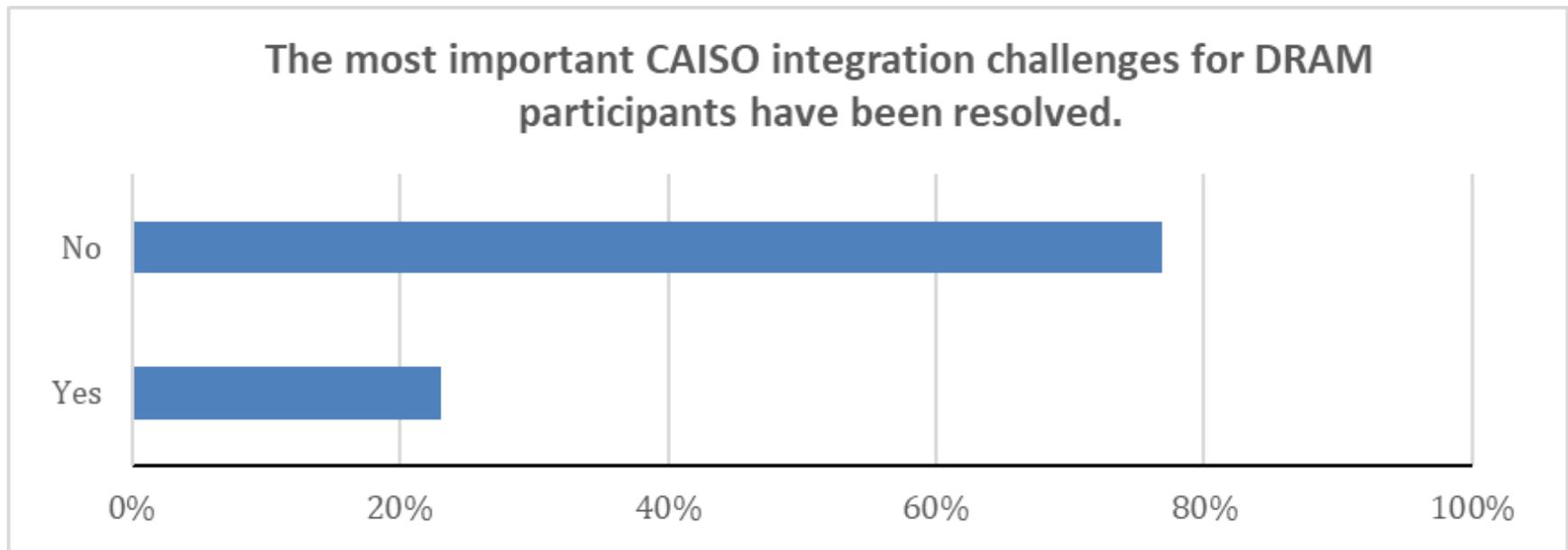
(See Figure 11 in 7/24/18 ED DRAM Evaluation Interim Report)

Barriers: IOU Integration Challenges

- CISR form & lack of e-signature availability slowed many DRPs from gaining customer authorization for data release
- IOU concerns about handling of confidential data on CISR forms slowed their processing
- IOUs frequently changing customer service agreement ID numbers, requiring DRPs to process a new CISR form
- Recurring problems obtaining SQMD from the IOUs for use in CAISO settlement processes
- Many IOU challenges impacted Res more than Non-Res DRPs due larger #s of customers in Res resource aggregations
- Q1/Q2 2018 launch of 'click-through' authorization processes should mitigate many IOU integration challenges

Barriers: CAISO Integration Challenges

1. CAISO processes to register customers (67%)
2. CAISO settlement processes (40%)
3. CAISO bidding processes (30%)





#2: Did DRAM Engage New Customers?

Results: Yes

- ➔ **DRAM successfully engaged many new customers**
- 95% of DRAM I participants were new to DR (74% in DRAM II)
 - # of new DR customers in DRAM tripled from 2016–2017
 - # of customers increased 4x from 2016–2017
 - DRAM I & II customers comprised 98% residential, ~45% MF

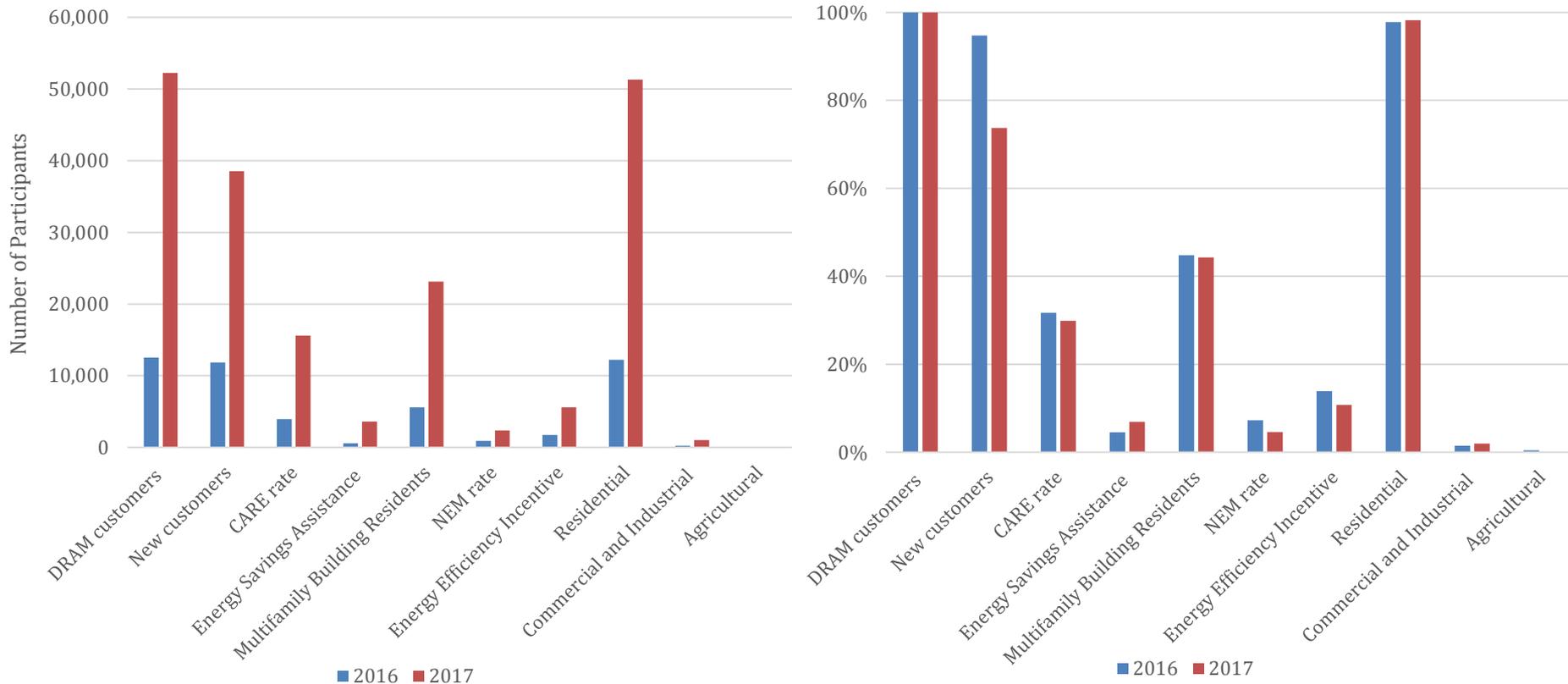
DRAM I & II Customer Profile (Total Number, Across All IOUs)

Customer Type	2016 (#)	2017 (#)	Increase (Multiple)
DRAM customers	12,513	52,260	4.2
New customers	11,854	38,532	3.3
Multifamily Building Residents	5,604	23,132	4.1
Residential	12,242	51,324	4.2
Commercial and Industrial	227	1,016	4.5
Agricultural	68	8	0.1

(See Tables 22 & 24 in 7/24/18 ED DRAM Evaluation Interim Report)

DRAM Customer Profile

DRAM 2016 and 2017 Customer Profile [Total Number (left); Percent(right)]



(See Figures 16 & 17 in 7/24/18 ED DRAM Evaluation Interim Report)

Increased Participation of Low Income & EE Customers

- Number of DRAM customers on ESA, CARE, EE incentives more than tripled from 2016–2017

DRAM I & II Customer Profile (Total Number)

Customer Type	2016 (#)	2017 (#)	Increase (Multiple)
DRAM customers	12,513	52,260	4.2
New customers	11,854	38,532	3.3
CARE	3,965	15,603	3.9
Energy Savings Assistance (ESA)	563	3,623	6.4
NEM rate	912	2,385	2.6
Energy Efficiency Incentive	1,735	5,612	3.2

Concern: Most Customers Not High-Energy Users

- Only 3–4% of DRAM I customers were in top 5% of energy users for their class*
 - Suggests that additional strategies for targeting high-energy users for DRAM enrollment could be useful

*Data references two IOUs only

(See Table 26 in 7/24/18 ED DRAM Evaluation Interim Report)



#3: Were DRAM Auction Bid Prices Competitive?

Results: Mostly Yes

SCE & PG&E = MOSTLY YES

For SCE & PG&E, DRAM I – III capacity prices* were LESS THAN:

- Long-term avoided cost of generation for 2017–2019

SDG&E = MIXED

For SDG&E, DRAM capacity prices* were:

- MORE than long-term avoided cost of generation for 2017 & 2018
- LESS than long-term avoided cost of generation in 2016 & 2019

*Refers to average DRAM contract \$/kW price at IOU level (confidential), not including program admin



#5: Did DRPs Aggregate their Contracted Capacity?

Results: Mixed, but Improving

➔ Mixed record in DRPs aggregating contracted capacity in 60-day Supply Plans (SP) & Demonstrated Capacity (DC)

- 2017 results substantially improved over 2016

DRAM DRP Alignment of Supply Plans & Demonstrated Capacity with Contracted Capacities

All Data in % of Contract Capacity	% in Supply Plan	% in Demonstrated Capacity
DRAM I	65% of MW	58% of MW
DRAM II	90% of MW	88% of MW

(See Table 32 in 7/24/18 ED DRAM Evaluation Interim Report)

Non-Residential DRPs Showed Higher Compliance

- Non-Res compliance level higher than residential
 - in both 2016 & 2017
- 2016: Non-Res DRPs aggregated 69% in Supply Plans (vs. 59% for Res), & 60% in DC (vs. 55% for Res)
- 2017: Non-res DRPs were 95% compliant with both metrics, vs. 67% for Res DRPs

Factors Affecting Contract Compliance

➔ IOU/CAISO integration challenges hampered contract compliance for many DRPs

- This led to many contract terminations/reassignments
- In Residential segment, (perhaps coincidentally) a key factor in differentiating performance was whether a DRP utilized “screen scraping” for obtaining access to customer data

➔ DRP underperformance on contract obligations was also explained by:

- Overly optimistic customer acquisition projections
- Delays relating to SGIP incentives or IOU integration of storage resources
- Dual participation restrictions

➔ In addition, actual capacity aggregation may have been uncertain

- In 2016–2017, DRAM DRPs relied on MOO for Demonstrated Capacity (no in-market tests or full dispatches required)



#4: Were DRAM Bid Prices Competitive in CAISO Markets?

Results: TBD

#6: Were DRAM Resources Reliable When Dispatched?

Results: TBD

*Assessment still in progress;
results to be provided at a later time*



Criteria #4 & 6:

Preliminary/Qualitative Observations

- **Apparent differences in resource behavior depending on type of load shed:**
 - Storage-based vs. Non-Residential vs. Residential
- **Willingness to be dispatched (# of hours shed):**
 - Storage (highest), Residential (med), Non-Residential (lowest)
- **Required dispatch notification time appears to be much shorter for storage (shortest; participates in RTM), & Residential**
- **Not clear to what extent there is competitive pressure to reduce energy bid price in Day-Ahead Market**
- **Not clear how above observations, if supported by full analysis, should factor into procurement evaluations**



Q&A



Appendix



Weighting of DRAM Criteria Adopted in Research Plan

#	Description	Criterion Weight (total)	Metric Type	Pass Threshold / Continuous Scoring Approach
1	Did the DRAM engage new, viable, third-party providers?	0.05	Pass / fail	1 new third-party provider bidding / winning
2	Did it engage new customers?	0.10	Pass / fail	1 new customer participated in DRAM
3	Were auction bid prices competitive?	0.20	Pass / fail	DRAM short-listed bid prices meet definition of competitive
4	Were offer prices competitive in the wholesale markets?	0.20	Continuous	DRAM bids and is scheduled at: + / - 15% of IOU supply-side DR - Good + / - 30% of IOU supply-side DR - Acceptable + / - 45 % of IOU supply-side DR - Needs Work
5	Did DRPs aggregate the capacity they contracted in a timely manner?	0.20	Semi-Continuous	80-100% - Good; score = continuous 60 - 80% - Acceptable; score = continuous Below 60% - Non-performing (fail); score = 0
6	Were resources reliable when dispatched?	0.25	Semi-Continuous	80-100% - Good; score = continuous 60 - 80% - Acceptable; score = continuous Below 60% - Non-performing (fail); score = 0
		1		

(See Table 3 in 7/24/18 ED DRAM Evaluation Interim Report)