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2021 IEPR Commissioner Workshop

Supply Side Demand Response

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California Public
Utilities Commission



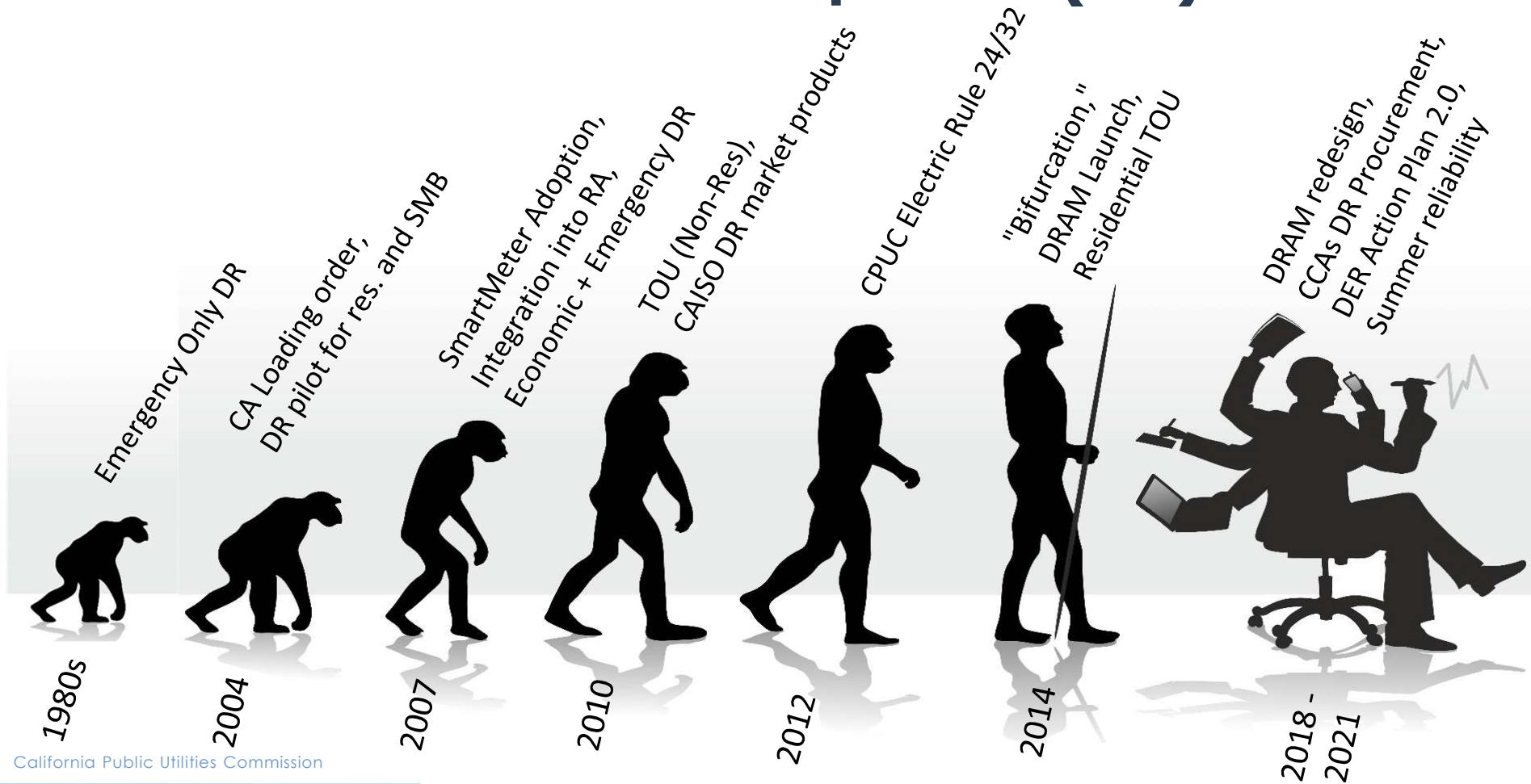
Agenda

- Overview & Background
- Current Proceedings & New Initiatives

Demand Response

- In Decision (D.) 17-12-003, the Commission broadly defined Demand Response as “reductions, increases, or shifts in electricity consumption by customers in response to economic or reliability signals.”
- Demand Response can alleviate the stress on the grid, reduce operational costs and play a critical role in ensuring grid reliability and price stability. Demand Response also helps avoid the construction of new generation and transmission infrastructure, lowers fossil fuel consumption, and helps with the integration of renewable energy into the electricity grid.

Evolution of Demand Response (DR)



Bifurcation of DR Programs

▪ Supply Side DR:

- Dispatchable DR resources integrated into CAISO markets, counted for Resource Adequacy
- DR Resource is bid into the CAISO market; gets dispatched based on grid needs
 - Resource is compensated for Capacity by the Load Serving Entity (LSE)
 - Resource is compensated for Energy by CAISO if dispatched

▪ Load Modifying DR:

- Any program for demand flexibility not classified as Supply Side DR (typically driven by time variant rates) – associated load reduction counted in reduced peak demand forecast
- Compensation is typically done via bill savings

2018 Implementation

2014-15 Decisions

Supply Side DR – Economic and Emergency

- Economic DR:

Triggered by economic/price signals

Participates at CAISO as Proxy Demand Resource (PDR)

A/C cycling, Capacity Bidding Program, IOU Local Capacity Requirement contracts, DRAM, LSE DR RA contracts

- Emergency DR:

Triggered by emergency grid conditions

Participates at CAISO as Reliability Demand Response Resource (RD RR)

Base Interruptible Program, Agricultural Pumping Interruptible Program

Current DR Portfolio (2021)

Supply Side DR (~ 1500 Aug MWs)

- **IOU managed DR:**

- Emergency (804 Aug MWs)
 - Base Interruptible Program (BIP)
 - Agricultural Pumping program (API)
- Economic (393 Aug MWs)
 - Capacity Bidding Program (CBP)
 - AC Cycling
 - Local Capacity Requirement Contracts (LCR)

- **3rd Party managed DR:**

- Demand Response Auction Mechanism (DRAM) (206 Aug MWs)
- Community Choice Aggregator RA-DR Contracts (120 Aug MWs)

Load Modifying DR

- **IOU managed DR:** (85 Aug MWs)

- Permanent Load Shifting (PLS)*
- Time of Use (TOU)*
- Critical Peak Pricing (CPP)
- Real Time Pricing (RTP)

* Load impact incorporated in reduced peak demand forecast

Current Status of Supply Plan and QC Methodologies

DR Resource Type	Resource on CAISO's Supply Plan	QC Methodology
IOU DR (Load modifying)	No	LIP
IOU DR (Supply Side)	No	LIP
LCR	No	LIP
DRAM	Yes	QC Guidelines
3rd Party Non-DRAM/ CCA RA Contracts	Yes	LIP

Demand Response Auction Mechanism (DRAM)

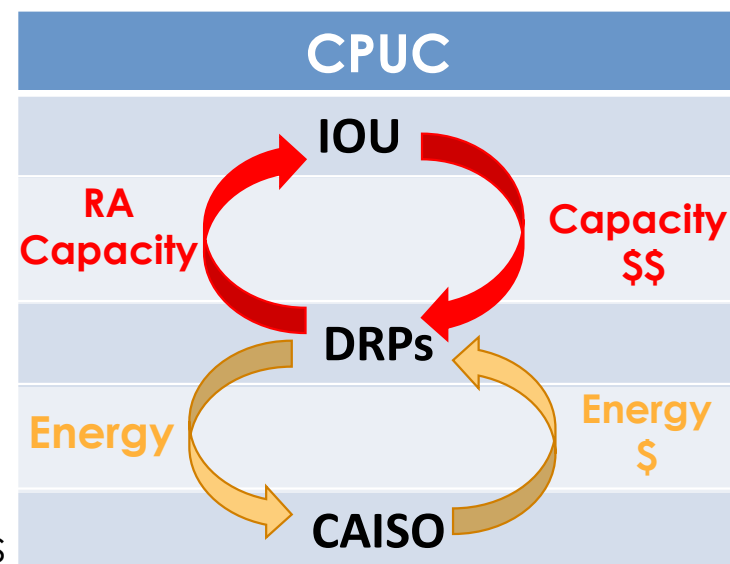
IOUs hold annual capacity auctions procuring DR from 3rd party DR providers

IOUs pay DRPs for the aggregated Capacity

Capacity is counted towards IOU's RA obligations

DR providers are required to bid their Capacity into the CAISO energy markets

CAISO compensates the DRPs for energy when resources are dispatched



DRAM History– Capacity Procurement & Budgets

		I	II	III-A	III-B	IV	V	VI	VII
Delivery Year		<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Capacity (Aug) MWs	SCE	20	56	88	99	73	95	100	98
	PG&E	17	56	80	90	73	99	83	75
	SDG&E	3	12	14	16	17	22	23	28
	Total	40	124	182	205	163	216	206	201

Delivery Year		<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Budget (\$ Millions)	SCE	4	6	6	6	6	5.2	6	6
	PG&E	4	6	6	6	6	5.7	6	6
	SDG&E	1	1.5	1.5	1.5	1.5	1.9	2	2
	Total	\$9.0	\$13.5	\$13.5	\$13.5	\$13.5	\$12.8	\$14.0	\$14.0

Current Proceedings and New Initiatives

- Demand Response Rulemaking (Closed)
- Summer Reliability Rulemaking
- Investor-Owned Utility (IOU) DR Applications (2023-2027)
- Resource Adequacy Rulemaking
- Load Flexibility Rulemaking (TBD)
- General Rate Case (GRC) Phase 2 Proceeding

Summer Reliability Rulemaking

■ Phase 1 Decision:

- Adopted changes to existing DR programs for incremental RA capacity
- Established the Emergency Load Reduction Program (ELRP):
 - A voluntary pay-for-performance program with no CAISO market obligations
 - ELRP load reduction is excluded from the RA and CEC's load forecasting framework
 - Compensation for Incremental Load Reduction (ILR) at \$1/kWh

■ Phase 2 Decision (Adopted Dec 2):

- Further modifications to the IOU programs
- Additional ELRP programs including a Residential Program, Thermostat Programs and two New Dynamic Rates
- Increased ELRP compensation to \$2/kWh

Virtual Power Plants (VPP)

- An aggregator managed BTM hybrid resource consisting of storage paired with Net Energy Metered (NEM) solar
- VPP pilot approved in the Summer Reliability Phase 2 Decision
 - Resource cannot be part of a market integrated DR program
 - Minimum VPP Size threshold is set at 500 kW
 - Net exports by the resource are compensated

2023-2027 IOU DR Applications

IOU DR portfolio (budgets and programs) to be reviewed and updated
Future of DRAM pilot will be decided

Resource Adequacy Rulemaking

CEC DR QC Methodology Working Group

Other DR related topics (MCC¹ Buckets, Slice of the day proposal, CPE² and multi-year procurement,...)

- 1. Maximum Cumulative Capacity
- 2. Central Procurement Entity



Draft Distributed Energy Resources (DER) Action Plan 2.0

Track One: Load Flexibility and Rates

Recommends **Load Flexibility Rulemaking**

May 25, 2021 workshop previewed a staff proposal and took comments

Track Two: Grid Infrastructure

Track Three: Market Integration

Recommends combined successor supply-side DR and storage rulemaking

Track Four: DER Customer Programs

General Rate Case (GRC) Phase 2 Proceeding

Dynamic Rate Pilots



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Thank you!

Appendix Slides



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DR Program Design

- **Bifurcation:** Supply Side v. Load Modifying
- **DR Provider:** Utility v. Third Party DR Providers v. CCAs
- **Customer:** Residential v. Non-Residential
- **Usage:** Emergency v. Economic
- **Dispatch:** Event v. Non-Event
- **Notification:** Day-Ahead v. Near Real-Time
- **Compensation:** Rates v. Capacity Payments v. Energy Payments

IEPR Commissioner Workshop on Supply-Side Demand Response

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ASSOCIATION (CLECA)**

DECEMBER 3, 2021



CALIFORNIA LARGE
ENERGY CONSUMERS
ASSOCIATION

Who is CLECA

- An organization of large high load factor customers located in CA who all participate in the Base Interruptible Program (BIP)
- BIP was used to maintain grid reliability seven times in 2020 and once in 2021
- In 2020, BIP was 845 MW (Sep) which represented 75% of event-based demand response
- CLECA members represent a significant portion of the statewide BIP participation and have responded when necessary to reduce load by shutting down their manufacturing processes

Demand response is a triple Win

- DR maintains grid reliability by reducing load so other customers do not suffer from rotating outages
→ A reliability Win
- DR avoids the need to purchase costly peaking capacity and allows participants to offset the expensive electric rates in CA
→ A cost Win for all customers
- DR off-sets high industrial rates, which keeps manufacturing in CA which prevents GHG leakage and avoids increased GHG from transport of goods into CA
→ A carbon Win

Measuring DR requires balance between accuracy and cost

- Load Reduction should be measured accurately but also appropriately
 - The methodology for measuring a customer's load drop during a peak event must be understandable by the customer
 - Overly expensive and complex measurement methodologies reduce DR incentives and reduce customer participation

Focus on RA Reform

- The CPUC's Resource Adequacy program is being reformed to use the Slice of Day method
 - Changing to the Slice of Day method requires adjustments to measurement
 - The CEC working group should be focused on these needed changes and not on interim costly methodology for just 2023