

Elimination of MCC Buckets

Energy Division Staff

R.21-10-002 Reform Track Workshop

August 23, 2022



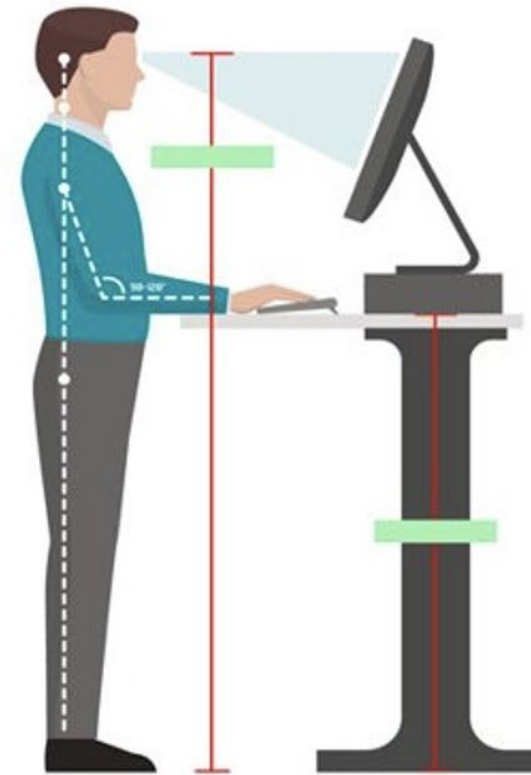
**California Public
Utilities Commission**

Date	Workstream	Workshop Subject	Facilitator	Notetaker
Wed 7/27	2.	Process Overview Resource Counting: exceedance for wind and solar	SDG&E	CLECA
Wed 8/3		Master Resource Database LSE Showing and Compliance Tools: initial discussion	IEP	CLECA
Wed 8/10	2.	Resource Counting: hybrid resources	CalCCA	CLECA
Wed 8/17		Planning Reserve Margin (PRM): part 1 (process and mechanics) UCAP-Lite	CLECA	CAISO
Tues 8/23		Resource Counting: recap for wind, solar, hybrid; availability requirements for use-limited resources; long-duration storage; MCC Buckets for 2024	Energy Division Staff	CLECA
Wed 8/31	1	LSE Requirements: follow-up discussion (CEC data) Cost Allocation Mechanism (CAM) LSE Showing and Compliance Tools: follow-up discussion	CESA	CLECA
Mon 9/5		Labor Day Holiday	-	-
Wed 9/14	2	PRM: part 2 (counting values, setting requirements) Test Year: initial discussion	PG&E	CLECA
Wed 9/20	3	Interface CPUC/CAISO Processes: changes to	SCE	CLECA

Topic of Today's Workshop

Logistics and Safety

- Workshop is being recorded
- Today's presentation & recording will be uploaded onto RA history website
 - [Resource Adequacy History \(ca.gov\)](http://Resource Adequacy History (ca.gov))
- Facilitators (Energy Division Staff)
 - Jaime Rose Gannon
 - Simone Brant
- Safety
 - Note surroundings and emergency exits
 - Ergonomic check



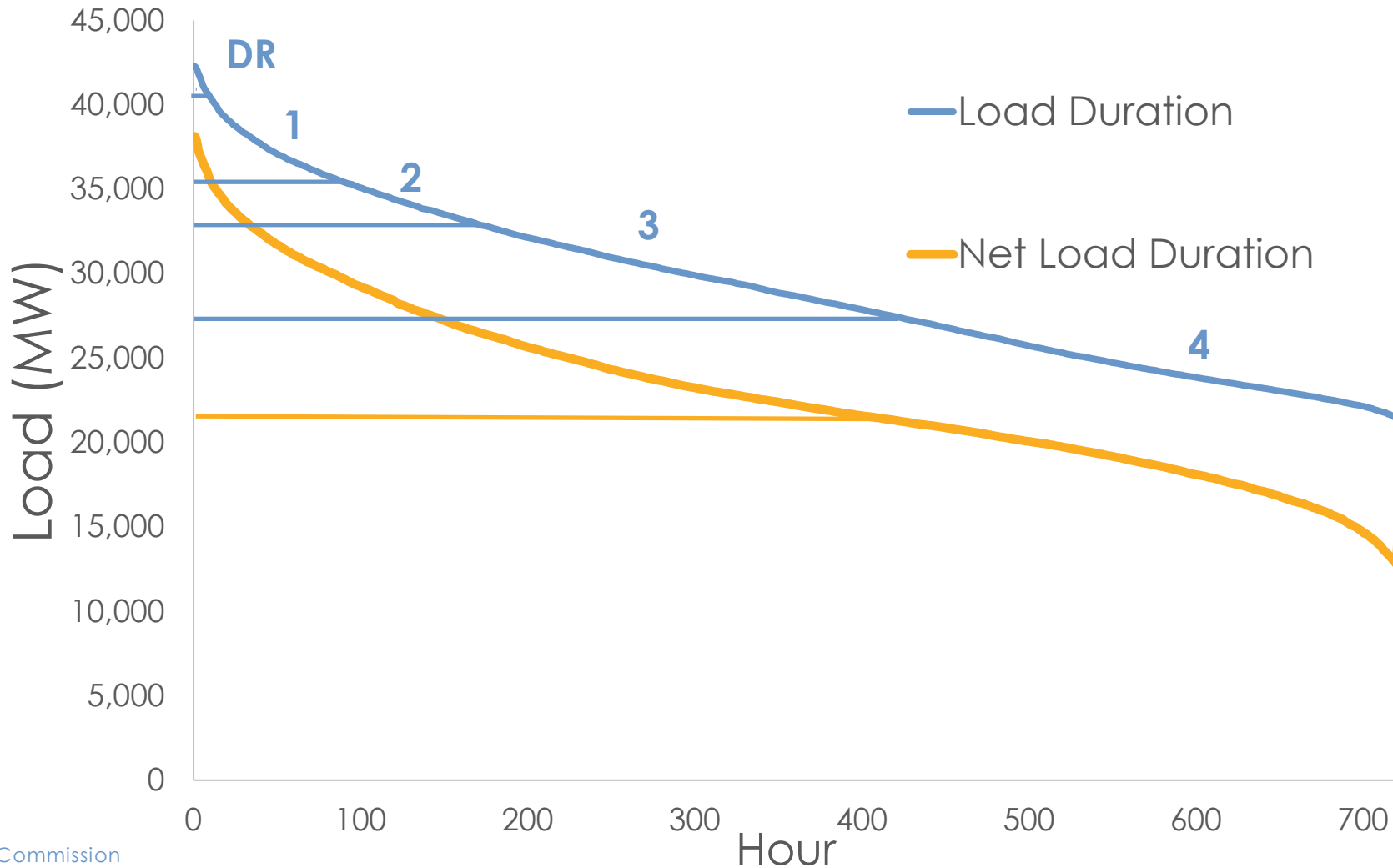
Workshop Agenda

Time	Presenter/ Topic
10:00 - 10:05	Welcome, agenda review
10:05 - 10:35	Energy Division – MCC buckets (30 min.)
10:35 - 11:20	CESA – Long duration storage MCC buckets (45 min.)
11:20 - 11:50	SCE – MCC buckets and resource counting (30 min.)
11:50 - 12:10	CAISO – Deliverability and RA counting (20 min.)
12:10 - 12:20	CalWEA – updates to “Exceedance-ENLR” proposal (10 min.)
12:20 - 1:20	Lunch
1:20 - 1:50	NRDC – Wind and solar profiles (30 min.)
1:50 - 2:10	ACP – Refinements to wind proposal (20 min.)
2:10 - 2:55	PG&E – Revised wind, solar hybrid (45 min.)
2:55 - 3:00	Wrap up

Maximum Cumulative Capacity (MCC) Buckets

- Purpose: To prevent over-reliance on use limited resources used to meet peak load needs
- How: Utilizes a historical load duration curve to establish maximum cumulative percentages of an LSE's procurement obligation that can be met with use limited resources or contracts that provide less than 24 X 7 hours of availability per week in each month
 - Historically set MCC bucket thresholds based on average gross load duration curve from last 3 years
 - Threshold for Demand Response (DR) was based on difference in load between peak load hour and 24th highest load hour for the average summer month

Maximum Cumulative Capacity (MCC) Buckets



Current Framework

Revised MCC buckets for 2023 RA compliance year adopted in D.22-06-050

Category	Availability	MCC for Bucket & Buckets Above
DR	Varies by contract or tariff provisions, but must be available Monday – Saturday, 4 consecutive hours between 4 PM and 9 PM, and at least 24 hours per month from May - September.	8.3%
1	Monday – Saturday, at least 100 hours per month. For the month of February, total availability is at least 96 hours. January - February, May - December, 4 consecutive hours between 4 PM - 9 PM. March - April, 4 consecutive hours between 5 PM - 10 PM.	17.0%
2	Every Monday – Saturday. January - February, May - December, 8 consecutive hours that include 4 PM – 9 PM. March-April, 8 consecutive hours that include 5 PM – 10 PM.	24.9%
3	Every Monday – Saturday. January-February, May - December, 16 consecutive hours that include 4 PM – 9 PM. March-April, 16 consecutive hours that include 5 PM – 10 PM.	34.8%
4	Every day of the month. Dispatchable resources must be available all 24 hours.	100% (at least 56.1% available all 24 hours)

Background- Decision (D).22-06-050

- The Commission finds it prudent to carefully evaluate the consequences of removing the MCC buckets under the 24-hour framework to ensure that use-limited resources are available throughout the compliance month period and not over-relied on in meeting the 24-hour requirements. Parties are directed to further discuss and develop a proposal for the elimination of the MCC buckets.
- Prior to eliminating the MCC buckets, it may be necessary to include some availability requirement for resources with monthly use limitations, particularly for demand response and import resources.

Background- Decision D. 22-06-050 (cont.)

- **Concerns Identified**

- Full removal of the MCC buckets would eliminate the monthly availability requirements specified in the bucket structure.
- DR resources would no longer be required to be available Monday–Saturday, for four consecutive hours between 4:00 and 9:00 PM, and at least 24 hours per month from May–September.
- Import RA counting rules adopted in D.20-06-028 are tied to the MCC bucket structure.

- **Solutions Offered**

- DR contracts could be required to be available Monday – Saturday, for four consecutive hours during the AAHs, and at least 24 hours per month from May - September.
- For import resources, this could be a requirement to deliver energy for at least four hours during the AAHs from at least Monday through Saturday through the compliance month, consistent with the hours specified in the contract.

MCC Bucket Usage Aug. & Sept. 2022

Aug. 2022 Technology	MCC Bucket				
	DR	1	2	3	4
BGAS					73
BIOM					353
COAL					14
GAS		57	8	558	25,892
GEOT					929
Import (unspecified)		185	100	641	946
Import (specified)					1,540
LESR		1,537	2	20	1,099
NUCL					2,264
OTHR	414	47			257
SOLR				11	3,344
WAST		11			48
WATR				1	4,518
WIND					1,131
DR credits	1,365				
Grand Total	1,779	1,837	110	1,231	42,407
Cummulative Totals	1,779	3,616	3,726	4,957	47,364
Bucket Maxs	3,792	7,766	11,375	15,898	45,683
MCC Percents	8.3%	17.0%	24.9%	34.8%	100.0%
Use of buckets	3.9%	7.9%	8.2%	10.9%	103.7%

Sept. 2022 Technology	MCC Bucket				
	DR	1	2	3	4
BGAS					74
BIOM					348
COAL					13
GAS		51	3	562	25,949
GEOT					929
Import (unspecified)		339	150	1,837	1,022
Import (Specified)					1,411
LESR		1,646	2	13	1,147
NUCL					2,079
OTHR	417	47			260
SOLR					1,717
WAST		11			50
WATR				1	4,406
WIND					828
DR credits	1,375				
Grand Total	1,792	2,094	155	2,413	40,232
Cummulative MCC Totals	1,792	3,886	4,041	6,454	46,686
Bucket Maxs	3,852	7,890	11,557	16,152	46,414
MCC Percents	8.3%	17.0%	24.9%	34.8%	100.0%
Use of buckets	3.9%	8.4%	8.7%	13.9%	100.6%

Proposal: SOD-Adjusted RA Procurement Limit

- Similar to existing methodology, procurement limit for DR should be based on difference in load between peak load hour and N^{th} highest load hour for the average summer month
- However, to adjust for SOD framework, restrict to **Availability Assessment Hours (AAH)** when determining peak load hour and N^{th} highest load hour
- Outstanding questions
 - How many hours should DR be required to be available each month?
 - Should procurement limits be determined using gross or net load?
 - Should procurement limit (%) be applied to the MW required for each slice or to the total MW required across all slices?

Assumptions

- Summer months are May through September
- DR should be available during the Availability Assessment Hours (AAH)
 - AAH for all summer months are HE 17-21
- DR should serve load during peak hours
- DR is usually dispatched during high-priced hours
- Monthly availability requirement (N hours) should be tied to procurement limit (N^{th} highest load hour)

Methodology

1. Calculate hourly load profiles for last 3 years (gross or net)
2. For each year...
 - a) Rank the hours from highest to lowest load for every HE in each month
 - b) Calculate the “average summer month”, with hours ranked by HE
3. Calculate the “average summer month” for last 3 years, with hours ranked by HE
4. Find the peak load (L_1) within the AAH for the average summer month
5. Find the N^{th} highest load (L_N) within the AAH for the average summer month
6. RA procurement limit for DR = $\frac{L_1 - L_N}{L_1}$

Example

Using top 24 gross load hours for 2019-2021 average summer month...

- $L_1 = 40,905 \text{ MW}$
- $L_{24} = 36,925 \text{ MW}$
- Procurement limit for DR = $\frac{40,905 \text{ MW} - 36,925 \text{ MW}}{40,905 \text{ MW}} = 9.7\%$

	A	P	Q	R	S	T	U	V	W
1	Avg Summer Month (Gross Load 2019-2021)								
2	HE	15	16	17	18	19	20	21	22
3	Rank								
4	1	38,182	39,601	40,466	40,905	40,515	39,427	38,223	36,272
5	2	36,972	38,577	39,649	40,267	39,978	38,949	37,743	35,824
6	3	36,279	37,791	38,777	39,262	38,892	37,943	36,870	34,982
7	4	35,181	36,699	37,599	38,268	38,099	37,173	36,063	34,265
8	5	34,465	35,946	37,095	37,785	37,610	36,705	35,714	33,916
9	6	33,844	35,423	36,598	37,389	37,244	36,326	35,331	33,616
10	7	33,470	35,036	36,174	36,925	36,826	35,988	34,937	33,216
11	8	33,094	34,555	35,755	36,466	36,446	35,605	34,670	32,940

Results

- Restricting to AAH **slightly increases** the RA procurement limit for DR
- Using net load instead of gross load **increases** the procurement limit
- Using top 12 hours instead of top 24 hours **decreases** the procurement limit

Methodology	DR Procurement Limit	Compare to Status Quo
Top 24 gross load hours of avg. summer month 2019-2021 (status quo)	8.5%	N/A
Top 24 gross load hours within AAH of avg. summer month 2019-2021	9.7%	+1.2%
Top 24 net load hours within AAH of avg. summer month 2019-2021	13.9%	+5.4%
Top 12* net load hours within AAH of avg. summer month 2019-2021	8.5%	+0.0%

*Note that Proxy Demand Resources must have the ability to be dispatched for at least 24 hours per month in order to qualify as Resource Adequacy Capacity per CAISO Tariff 40.8.1.13.

Discussion

- Increasing procurement limit for DR raises reliability concerns due to past performance, especially during CAISO Alert+ hours
- Program hours for DR do not always align with AAH
- RA requirements are based on gross load (renewables count)
- In practice, more correlation between DR dispatches and net load peak (higher prices)

Proposal for Imports

- Monthly Minimum criteria – 4 hours per day across the availability assessment hours, 6 days per week across the month. (6 X 4 min = ~100 hours across the month)
 - “For import resources, this could be a requirement to deliver energy for at least four hours during the AAHs from at least Monday through Saturday through the compliance month, consistent with the hours specified in the contract.”
- Bidding requirements established in D. 20-06-028 tied to hours specified in contract and RA showing.



California Public Utilities Commission

Thank you!

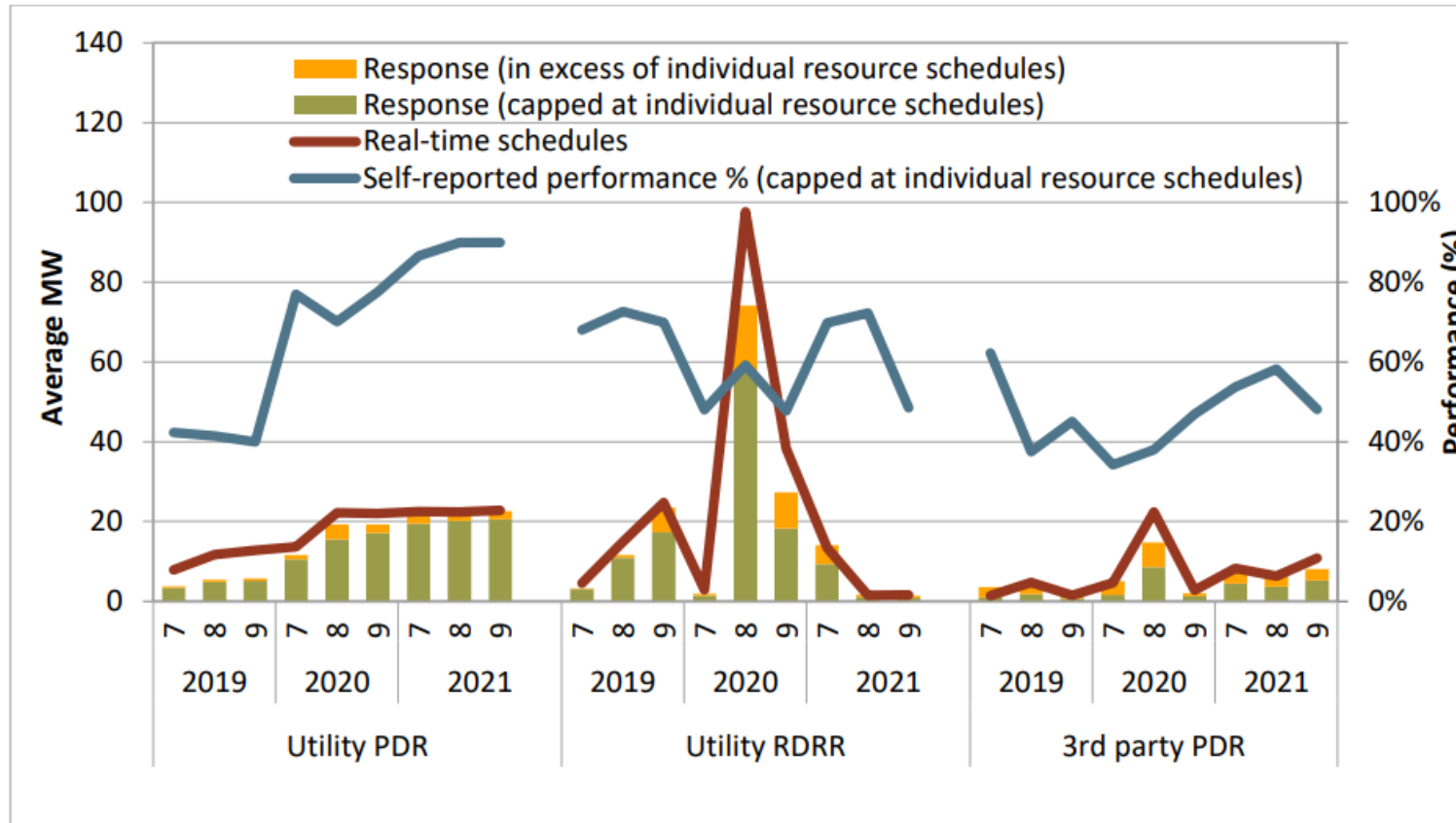
Appendix Slides



California Public
Utilities Commission

DR Performance in AAH (July-September)

Figure 1.29 Demand response resource adequacy performance - July to September (4-9 p.m.)



Source: CAISO DMM 2021 Annual Report

DR Performance in Alert+ Hours

- CAISO DMM 2021 Annual Report
 - 14 Alert+ hours in 2021
 - Hours when CAISO issued Alert, Warning, or Emergency notification
 - All occurred in June and July
 - DR underperformed relative to other resource types

Table 9.4 Average system resource adequacy capacity, availability, and performance by fuel type (Alert+ hours)

Resource type	Total RA capacity	Day-ahead market			Real-time market				Meter	Uncapped meter
		Capacity de-rate	Bids and self-schedules	Schedules	Capacity de-rate	Bids and self-schedules	Schedules	Uncapped schedules		
<i>Must-Offer:</i>										
Gas-fired generators	19,230	87%	87%	79%	86%	86%	82%	85%	80%	82%
Other generators	1,407	93%	93%	93%	93%	93%	93%	96%	92%	96%
Subtotal	20,637	88%	88%	80%	86%	86%	83%	86%	81%	83%
<i>Other:</i>										
Imports	2,771	97%	96%	88%	99%	88%	69%	70%	56%	57%
Imports - MSS	336	100%	85%	85%	100%	85%	85%	85%	78%	78%
Use-limited gas units	8,407	98%	97%	91%	96%	96%	84%	87%	78%	79%
Hydro generators	5,855	94%	88%	88%	92%	87%	64%	71%	62%	68%
Nuclear generators	2,867	100%	99%	99%	100%	99%	99%	101%	99%	101%
Solar generators	4,697	99%	35%	35%	97%	43%	38%	53%	35%	48%
Wind generators	1,468	100%	82%	82%	99%	93%	95%	231%	90%	204%
Qualifying facilities	844	99%	94%	90%	98%	94%	90%	107%	87%	106%
Demand response	257	100%	68%	9%	99%	46%	18%	18%	9%	10%
Storage	866	99%	89%	66%	99%	92%	71%	76%	54%	58%
Other non-dispatchable	354	96%	94%	94%	95%	94%	92%	101%	91%	99%
Subtotal	28,722	97%	84%	80%	97%	84%	72%	85%	67%	78%
Total	49,359	93%	85%	80%	92%	85%	77%	85%	73%	80%