Demand Response Capacity Counting For Slice of Day

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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
- Supports accurate measurement of load reduction and removal of non-performing customers from BIP to maintain a gold standard reputation

RA Reform needs counting proposals for all resources

- The CEC's February workshop report on demand response counting methods will be for an interim methodology for 2023 RA compliance year; does not address Slice of Day
- No timeline of when DR counting methods for Slice of Day would be completed in a future CEC process
- The February RA workshop report needs proposals to count **all** resources, including DR, so that implementation will not be delayed for 2024 RA compliance year
- A future CEC workshop process can consider this proposal and other proposals for CPUC consideration

Slice of Day requires different capacity values for each slice

Revised Slide

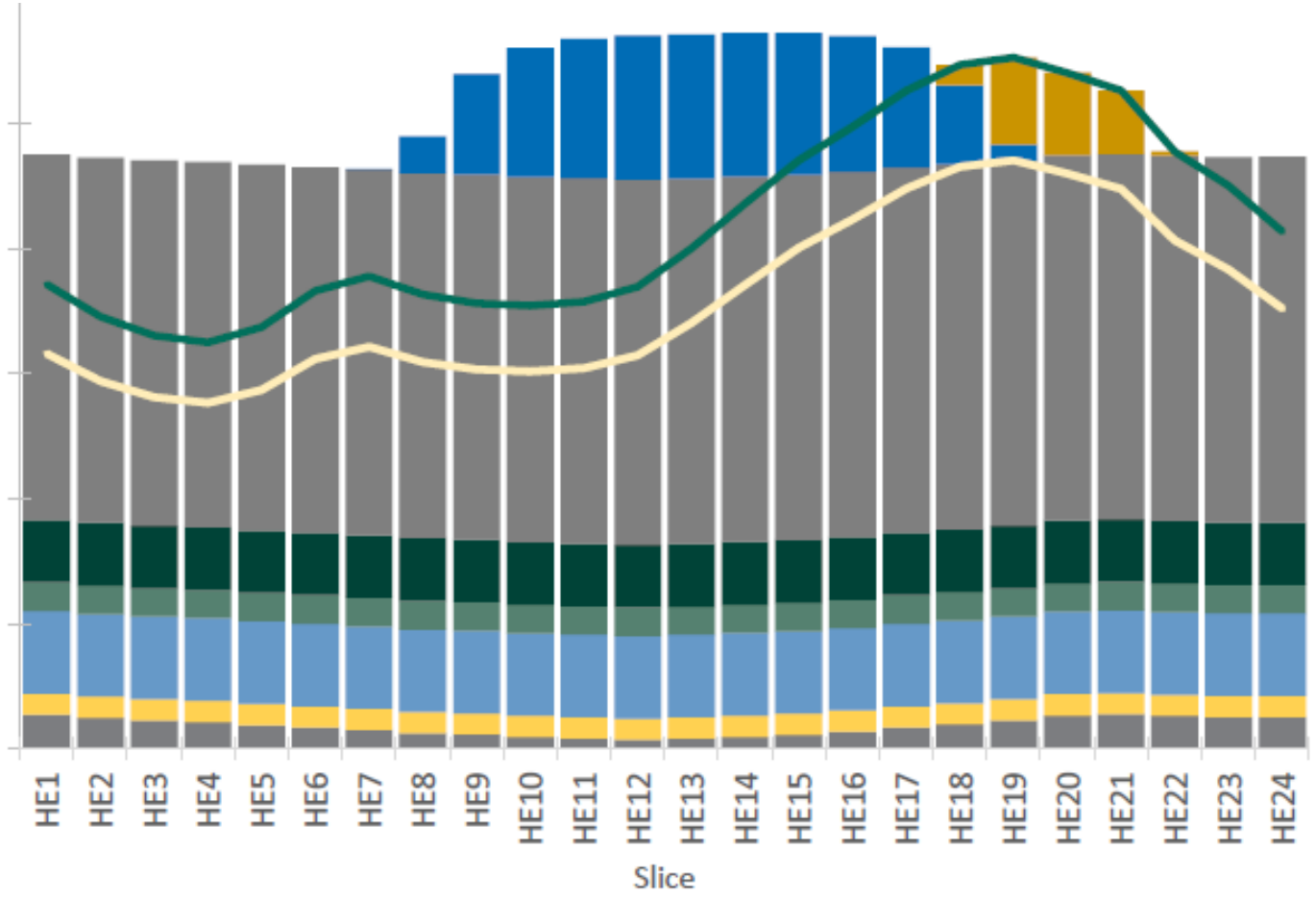
- The RA program is moving away from annual or monthly peak resource showings
  - Meeting just the peak load does not ensure reliability
- Need expected hourly load reduction values for a defined slice
- The use of a single monthly values is incompatible with the Slice of Day design and would result in under or over procurement

Slice of Day proposals have focused on two proposals

- 24 hours by 12 months
  - Many parties support using an exceedance approach for wind and solar to develop hourly expected values
- 2 point (peak and net peak) for each month
  - Proponents recommend use of single monthly effective load carrying capability (ELCC) for use limited resources
  - The same QC would be used for both slices, except solar which would be given zero QC for the net-peak
- Both options require values which will capture the resources' availability and expected output for each slice

24-Hourly Slice framework

- show sufficient resource stack to meet the load for each slice



DR Counting Proposal for 24 hours by 12 months Slice of Day

- The hourly qualifying capacity (QC) value is the hourly expected load reduction for a DR program call
  - Each DR resource will have its own hourly profile based upon is program design
- Need a method to calculate on an hourly basis the expected load reduction which should incorporate performance and weather variation (if applicable)
- The regressions supporting the load impact protocols can be used (already vetted by the CPUC)

DR Counting Proposal for 24 hours by 12 months Slice of Day Example

- Data from SCE's Commercial Summer Discount Plan A/C Cycling Program for a 4-9 pm call
  - Note: SDP is 6-hour program, but only five hours shown because LIP assumes 4-9 pm
- Other call options such as HE18-22 are possible

	SCE-SDP-Commerical	
	Load Impact	
HE	MW	
16	0	
17	28.95	
18	23.72	
19	18.78	
20	14.90	
21	12.61	
22	-2.81	
23	-1.21	

DR Counting Proposal for 2-point Slice of Day

- Since the load is different between peak and net peak, the QC should reflect DR capability at those times
  - i.e. one value for peak and another for the net peak
- Existing LIP QC (avg of 4-9 pm) or single monthly effective load carrying capability (ELCC) to determine a single value would either under- or over-count DR at the time of peak or net peak

Comparisons of Proposals for 2-point Slice of Day

- The use of a simple avg or use of single monthly ELCC results in under-counting at the peak and over-counting at the net peak
- The hourly load impacts properly count DR's response for each slice

	Hypothethcial Load Impact		
HE	LOLE	MW	
16	0.0%	0	
17	1.4%	250	
18	25.2%	250	Peak
19	42.1%	100	
20	22.5%	20	Net Peak
21	7.5%	20	
22	1.4%	0	
23	0.0%	0	
	100.0%		
	Avg of HE17-21	128	
	ELCC	115	
(weighted by LOLE HE17-22)			

LOLE from CAISO July 2021 DR ELCC Study

Issue: What is the preferred expected capacity shape for DR to meet load?

- Is DR optimized to meet the system need requirement or an LSE's load shape?
- If system reliability is optimized, DR is based upon a defined program call window, currently between 4-9pm
  - The critical time window would need periodic updating as the resource mix changes the distribution of LOLE
- If LSE resource mix is optimized, the DR is applied to best fit its load shape and resource mix
  - An LSE with load from 9 am - 5 pm could optimize its A/C cycling DR to its own load shape, which maximizes the DR benefit to its load shape

Review of Load Impact Protocols

- Produces an expected hourly load reduction based upon historical event and test performance data
  - Weather assumption is 1 in 2 monthly peak and a DR call is from 4 – 9 pm
    - Note: Some programs can be called outside these hours and for longer duration
- Hourly impacts are based upon 50% percentile
- Already vetted and adopted by the CPUC