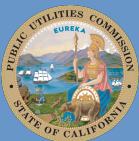


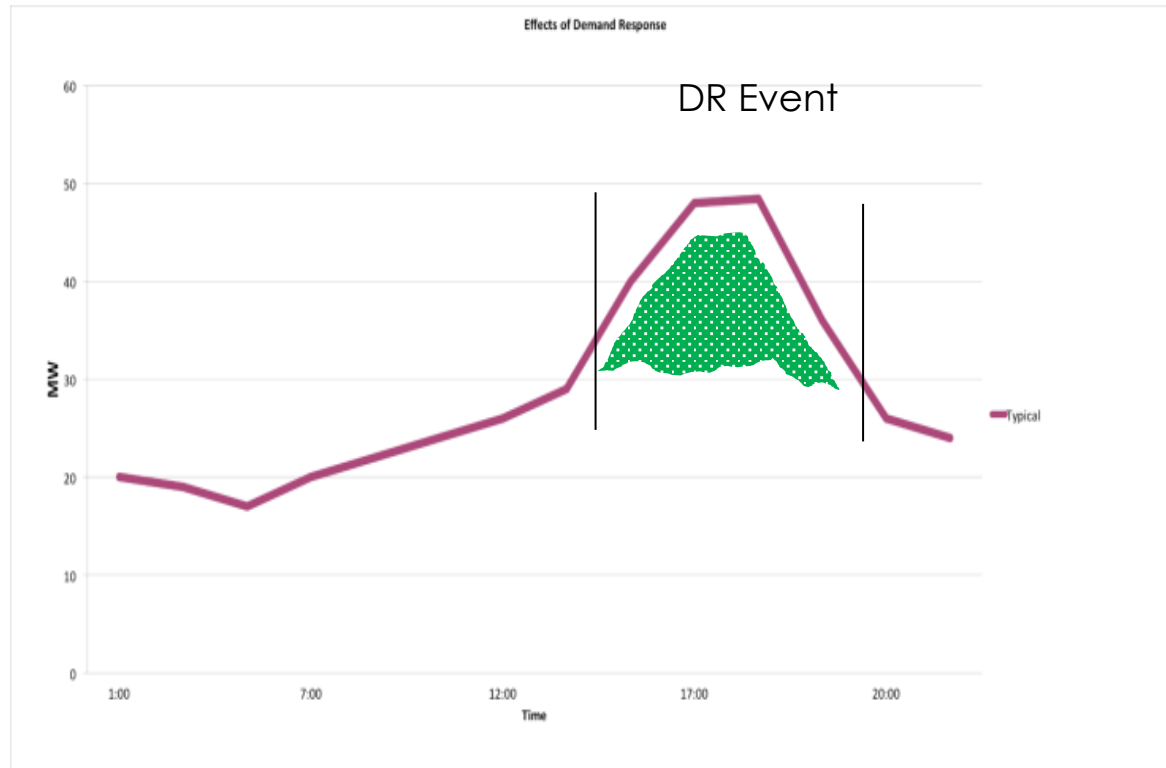
Introduction to Demand Response Load Impact Protocols (LIP)



California Public
Utilities Commission

How is Demand Response Measured?

- Determine the counterfactual:
 - What would a consumer *have* consumed in the absence of a DR event?
 - Apply a set of guidelines on how to perform measurement (Protocols)



What are the Protocols?

- We measure the counterfactual using a set of guidelines, the Load Impact Protocols.
- Guidelines are used *estimate* the aggregate load drop (impacts) of DR programs.
- 27 Protocols cover how to measure historical (ex-post) performance, which informs future (ex-ante) performance.
- The accepted impacts is granted a Qualifying Capacity (QC) value.
- Starting 2019: End of exemption from LIPs for third-party DRPs.

What Do Evaluators Look For?

Observed Customer Performance Under:

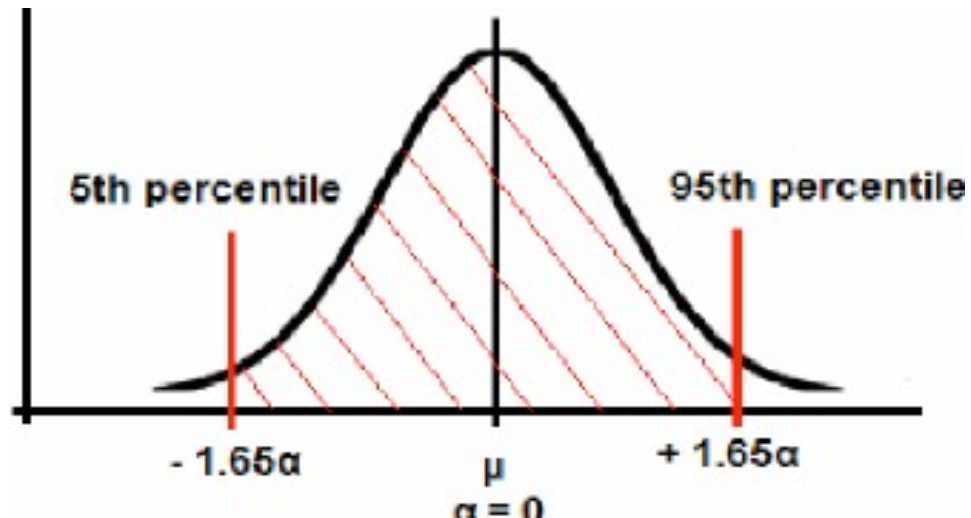
- 1-in-2 weather conditions (A weather condition that occurs 50% of the time)
- At the portfolio level (What would happen if *all* programs were simultaneously dispatched?)
- Between 4- 9 PM (When resources are needed most)
- At the premise level
- Monthly Utility system peak day

How is Performance Analyzed?

- Regressions:
 - Conducted on historical customer loads to:
 - Create model to describe or draw out/determine relationship between dependent (energy use) and independent variables (e.g., temperature, when event is triggered, etc.)
 - Example of Model: $E_i = a + bT_i + c(T_i)(D_i) + e$, where
 - E_i = energy use in hour i
 - a = constant term
 - b = the change in load given a change
 - T_i = the temperature in hour i
 - c = change in load given change in temperature when event is called
 - D_i = resource variable (= 1 when event is in hour i ; otherwise = 0)
 - e = regression error term

How is Performance Reported?

- Impact estimates are reported between a range of percentiles
- Probability distribution reflects the uncertainty associated with the estimates for the adjusted load impacts
 - For example, if at the 10th percentile, the adjusted impact is 100 MWs, there is a 90% probability that the impact is \leq 100 MWs.



What Are the Relevant Factors Used to Rate MWs?

- Number of enrolled customers
- Assumptions used in model inputs
- Change in rates
- Drop-out/attrition
- Deployment schedule

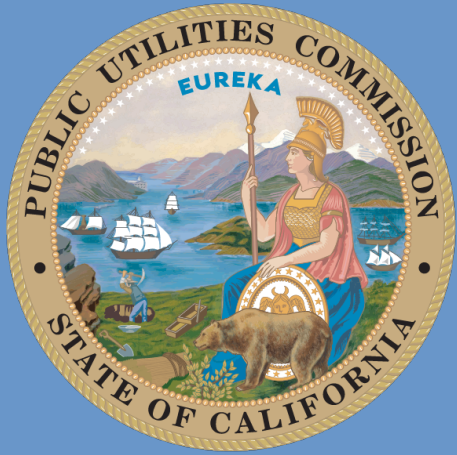
2021 LIP Schedule

Schedule for Obtaining Qualifying Capacity (QC) for DR Resources Through the LIPs				
Item	Filing Requirement (DRPs and IOUs)	Deadline for Filing Year 2021 (RA Year 2022 only)		Deadline for Filing Year 2022+ (RA Year 2023+)
		DRPs + SCE LCRs	IOUs and LSEs	DRPs and IOUs
1.	Draft Evaluation Plan distribution to service lists and to the DRMEC	February 1, 2021	October 4 – December 2020	October 4 – December 31
a.	Stakeholders and DRMEC comment on Draft Evaluation Plan via service lists	February 16, 2021 (15 days after submission)	15 days after submission	15 days after submission
b.	Filing Party publishes a summary of comments from the DRMEC and stakeholders, and how they are addressed.	For 2021 filing only, see LIP Filing Guide.	For 2021 filing only, see LIP Filing Guide.	No date requirement.
2.	Draft LIP Report due to service lists; include Item b. for 2021 filing only	March 19, 2021	March 19, 2021	March 11, 2022
a.	Stakeholders, parties, and DRMEC comment on draft LIP Report via service lists	March 29, 2021	March 29, 2021	March 25, 2022
3.	Updated QC requests (1 of 2) for initial RA requirements due via service lists	April 2, 2021	April 2, 2021	April 1, 2022

2021 LIP Schedule (continued)

Schedule for Obtaining Qualifying Capacity (QC) for DR Resources Through the LIPs				
Item	Filing Requirement (DRPs and LSEs)	Deadline for Filing Year 2021 (RA Year 2022 only)		Deadline for Filing Year 2022+ (RA Year 2023+)
		DRPs + SCE LCRs	IOUs and LSEs	DRPs and IOUs
4.	Final LIP Report due (including responses to comments) via service lists	April 16, 2021	April 1, 2021	April 1, 2022
a.	Host LIP Report workshop	April 30 + May 3, 2021	April 30 + May 3, 2021	April 29 + May 2, 2022
5.	Energy Division DR Section reviews LIP filings	May – August 2021	May – August 2021	May – August 2022
6.	Initial RA requirements assigned to Load Serving Entities (LSEs)	June 2021	June 2021	June 2022
	Energy Division RA Section finalizes QC values. a. For IOUs, results are posted on the RA website and credits are submitted to CAISO; b. For DRPs, Transmission and Distribution (T&D) and Planning Reserve Margin (PRM) adders are submitted to CAISO.*	July 2, 2021	July 2, 2021	July 1, 2022
6.	Updated QC requests (2 of 2) for final RA requirements due via service lists	July 2, 2021	July 2, 2021	July 1, 2022
7.	Final RA requirements assigned to Load Serving Entities (LSEs)	September 2021	September 2021	September 2022
8.	DRPs submit names of capacity buyers and associated MWs to Energy Division RA and DR Sections	October 2021		October 2022
9.	LSEs submit RA Year-Ahead compliance filing to Energy Division RA Section	October 29, 2021	October 29, 2021	October 28, 2022

* Acceptance of adders for both the IOUs and DRPs is pending Decision in R. 19-11-009 on Energy Division Demand Response Proposals (“DR Proposals”) and on CAISO’s determination on the treatment of these adders.



California Public Utilities Commission

Thank you.

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