



# Demand Response

Load Impact Protocols (LIP)

# Why?

- To make a determination on the value of DR for Qualifying Capacity (QC) using the Load Impact Protocols (LIPs)
  - Guidelines\* to estimate aggregate load drop (impacts) of DR programs
  - 27 Protocols
  - Ex-post (historical) performance informs ex-ante (forecast)

\*Adopted in D. 08-04-050



# What?

- For QC, what is the resource's performance:
  - Under 1-in-2 weather year condition
  - On monthly system peak day
  - At portfolio-level (What happens under simultaneous dispatch?)
  - Between 4-9 PM
  - Using the counterfactual (what would have been)
  - At the premise-level



# How?

- Regression analysis
  - Relies on historical information about customer loads
  - Create a model to describe or draw out the relationship between dependent variable (energy use) and independent variables (temperature, when event is triggered, etc.)



# How? (con't)

- Example

$$E_i = a + bT_i + c(T_i)(D_i) + e, \text{ where}$$

$E_i$  = 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

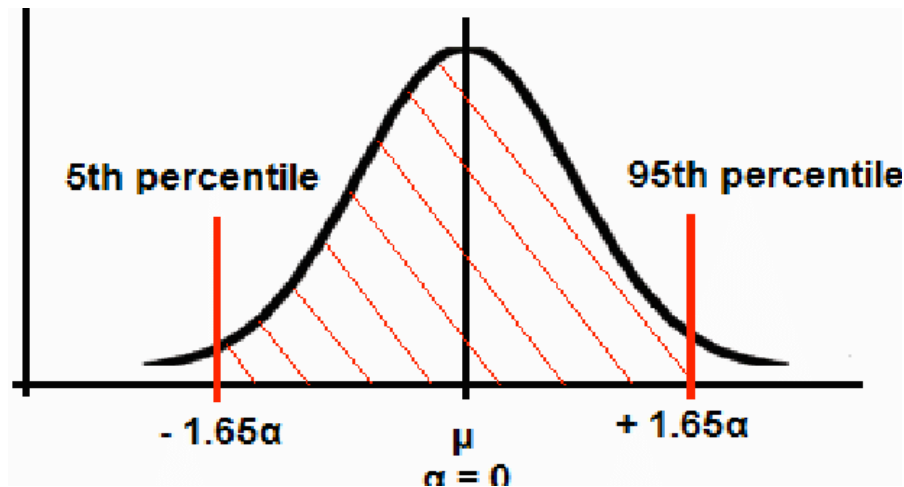
$D_i$  = resource variable (= 1 when event is in hour 1; otherwise = 0)

$e$  = regression error term



# How? (con't)

- Impact estimates are reported between a range of percentiles:
- The probability distribution reflects the uncertainty associated with the estimates for the adjusted load impacts
  - If the 10<sup>th</sup> percentile, the adjusted impact is 100 MWs, which means there is 90% probability that the impact is  $\leq 100$  MWs.



# How? (con't)

- Factors used to Rate MWs
  - Number of enrolled customers
  - Assumptions of statistical method
  - Change in rates
  - Drop-out rates
  - Deployment schedule



# When?

## Final Schedule for Obtaining QC for DR Resources Through LIPs for 2021 RA Year (excluding the preceding Draft Evaluation Plan process)

Action	IOUs	DRPs and LCR Contracts
Draft LIP Report due	March 18, 2020	May 1, 2020
Stakeholders, parties, and DRMEC comment on Draft Report	March 25, 2020	May 15, 2020
Final LIP Report due (including responses to comments)	April 1, 2020	May 29, 2020
LIP Report Workshop	May 1, 2020	June 5, 2020
Energy Division (ED) DR Section submits eligible DR capacity to RA Section	June 22, 2020	August 17, 2020
IOUs Only: ED RA Section finalizes and posts final QC values on RA website	July 1, 2020	
Initial RA requirements assigned to LSEs	July 2020	July 2020
Non-IOUs Only: ED RA Section finalizes QC values		September 1, 2020
Final RA requirements assigned to LSEs	September 2020	September 2020
DRPs Only: DRPs submit capacity buyers and associated MWs to ED RA + DR Sections		October 15, 2020
LSEs submit RA Year-Ahead compliance filing to ED RA Section	October 31, 2020	October 30, 2020





# Thank you.



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