Introduction to Demand Response Load Impact Protocols (LIP)
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 1; 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 ≤ 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

<table>
<thead>
<tr>
<th>Item</th>
<th>Filing Requirement (DRPs and IOUs)</th>
<th>Deadline for Filing Year 2021 (RA Year 2022 only)</th>
<th>Deadline for Filing Year 2022+ (RA Year 2023+)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DRPs + SCE LCRs</td>
<td>IOUs and LSEs</td>
</tr>
<tr>
<td>1.</td>
<td>Draft Evaluation Plan distribution to service lists and to the DRMEC</td>
<td>February 1, 2021</td>
<td>October 4 – December 2020</td>
</tr>
<tr>
<td>a.</td>
<td>Stakeholders and DRMEC comment on Draft Evaluation Plan via service lists</td>
<td>February 16, 2021 (15 days after submission)</td>
<td>15 days after submission</td>
</tr>
<tr>
<td>b.</td>
<td>Filing Party publishes a summary of comments from the DRMEC and stakeholders, and how they are addressed.</td>
<td>For 2021 filing only, see LIP Filing Guide.</td>
<td>For 2021 filing only, see LIP Filing Guide.</td>
</tr>
<tr>
<td>2.</td>
<td>Draft LIP Report due to service lists; include Item b. for 2021 filing only</td>
<td>March 19, 2021</td>
<td>March 19, 2021</td>
</tr>
<tr>
<td>a.</td>
<td>Stakeholders, parties, and DRMEC comment on draft LIP Report via service lists</td>
<td>March 29, 2021</td>
<td>March 29, 2021</td>
</tr>
<tr>
<td>3.</td>
<td>Updated QC requests (1 of 2) for initial RA requirements due via service lists</td>
<td>April 2, 2021</td>
<td>April 2, 2021</td>
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## 2021 LIP Schedule (continued)

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<td>4.</td>
<td>Final LIP Report due (including responses to comments) via service lists</td>
<td>April 16, 2021</td>
<td>April 1, 2021</td>
</tr>
<tr>
<td>a.</td>
<td>Host LIP Report workshop</td>
<td>April 30 + May 3, 2021</td>
<td>April 30 + May 3, 2021</td>
</tr>
<tr>
<td>5.</td>
<td>Energy Division DR Section reviews LIP filings</td>
<td>May – August 2021</td>
<td>May – August 2021</td>
</tr>
<tr>
<td>6.</td>
<td>Initial RA requirements assigned to Load Serving Entities (LSEs)</td>
<td>June 2021</td>
<td>June 2021</td>
</tr>
</tbody>
</table>
| a.   | 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.
Thank you.

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