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CAISO Comments: Methodology Minimum Components

Submit comments to: Tom.Flynn@energy.ca.gov

Comments are due Thursday, Oct 21 by 5:00 p.m.
Partial or draft responses may be discussed on Monday, Oct 18. Please contact Tom by Thursday, Oct 14 if you are interested in presenting.
All comments received will be posted to CEC Docket 21-DR-01

Instructions (Sponsors only): CEC staff is requesting stakeholder clarification on QC methodology proposals from sponsors of the initial QC methodologies and hybrid approaches. This comments template includes two components considered the minimum required for a complete proposal, as well as three other components that may support a methodology proposal but are not required.

For each component, please describe what is proposed under the proposed methodology with as much specificity as possible and explain how the proposed methodology satisfies each component. The status quo approach has been completed as an example.

Minimum Required Components

1. ***Ex ante* Resource Capability Profile:** Resource capabilities refer to the characterization of load impacts over a coming term (e.g. RA showing month). Capabilities may be influenced by factors including ambient temperature, day of the week, time of the day, and locational marginal price (LMP), among others. Typically, these are modeled from historical load impacts. Resource capabilities also includes resource constraints such as dispatch time, maximum number of dispatches or dispatch hours, load impacts outside of dispatch hours (such as pre-cooling and snapback). Finally, resource capabilities include any predicted changes in enrollment and customer composition.
    a. **Status Quo (LIP+CPUC):** The LIPs include a regression of load impacts over the availability assessment hours (AAH), which are currently 4–9 p.m. on non-holiday weekdays. For weather-sensitive DR resources, the regression is specified as a function of temperature. The results are summarized as an hourly supply curve for a "peak day" for each month. For aggregations of small resources such as residential customers, capabilities are expressed per customer, then adjusted by forecasted enrollment.

b. **ELCC:** The ex ante capability profile is an input into ELCC to represent the resource's availability across all 8760 hours of the year and under varying weather conditions. The ELCC methodology is flexible with regard to the representation of a resource's availability that is input into the model. While actual performance is the preferred input, DR's limited dispatches in the CAISO market make the use of this input challenging. Additionally, actual performance is not available for expected new programs. Thus, a proxy method is likely necessary. These proxies could include historical bids, synthetic bids, and tested performance data used for contract capacity. In all of these cases, the inputs can be scaled based on future customer enrollment.

   The CAISO has used historical bids as a proxy for availability as bids represent the available load curtailment potential of the resource as communicated to the CAISO in or close to real-time operations. This is a liberal approach at valuing capabilities for three reasons. First, bids are not capped by existing capacity values. Therefore, DR resources can bid above their QC values if they have incremental load curtailment available to the market. Second, bids can be shaped (versus a flat QC value) to represent the maximum capability as reflected in the market. Third, actual performance may be lower than the bid so this methodology errors on the side of potential greater availability.

   PG&E has proposed using "LIP profiles." This is an example of what the CAISO refers to as synthetic bids. These synthetic bids represent all 8760 hours and take into account relevant factors such as the weather, day type, etc. This representation is meant to capture expected performance across a range of conditions. This can also help capture data for DR programs that do not have historical bid data. If this approach is used, care would need to be taken to ensure these synthetic bids do not overstate the true capability of the DR resources given the incentive of DR providers who would develop these synthetic bids.

   Lastly, parties have suggested using contract capacity as a viable means of representing DR's capabilities. The CAISO has concerns that this approach does not have a basis in reliability. However, the CAISO could support the use of contract capacity, depending on the rigor and availability of test data used in developing the resource's capability, as an input to ELCC or an ELCC-like reliability evaluation.

2. ***Ex ante* Qualifying Capacity:** *Ex ante* QC is the translation of resource capabilities (above) to a single value capacity value representing a contribution to reliability. Crucially, this value (and the capacity price) directly determines the capacity compensation DRPs earn. QC is calculated annually for supply planning and monthly for RA showing.
   a. **Status Quo (LIP+CPUC):** QC is the average predicted load impact under the utilities' monthly 1-in-2 peak temperature forecast conditions over the AAH. The AAH were selected to reflect the hours under which loss of load probability (LOLP) tends to be highest and in that way attempts to quantify contribution to reliability. However, the AAH windows are prescriptive, and the methodology does not account for the variability in factors like LOLP or LMP over that timeframe. These calculated QC values are then

sent to the CPUC, which makes a reasonableness determination of the claimed values and adjusts them at staff discretion.

b. **ELCC:** ELCC determines a resource's ex ante QC value by evaluating its reliability contribution using a loss of load probability (LOLP) model that runs time-sequential simulations over 60 historical weather years. The model also assesses and incorporates interactive effects with other energy-limited resources. The output MW ELCC is the equivalent quantity of "perfect capacity" that can be provided by the variable or energy-limited resource across all 8760 hours of the year. This is the capacity amount the resource contributes without increasing the system loss of load expectation (LOLE). Once set up, the ELCC model can be refreshed at the required frequency; ex ante changes are reflected by updating the capability profile that is input into the ELCC model.[1]

Additional Components

The following components may not be required for determining QC but are identified as important interrelated aspects of a QC methodology proposal. If relevant, describe any changes required for your proposed methodology relative to the status quo for each of the following.

1. **Event Load Impacts:** Load impacts are the calculated reductions in electric demand relative to some baseline for a given DR event or dispatch. One topic of the CPUC request for the CEC to address through this working group is the "alignment of DR M&V methods in the operational space for CAISO market settlement purposes with methods to determine RA QC in the planning space." Describe the extent to which the methodology addresses any misalignment in load impact calculation methods between settlement (i.e., operational) and in determining QC (i.e., planning).
    a. **Status Quo (LIP+CPUC):** Under the Load Impact Protocols (LIPs), load impacts are typically calculated by independent evaluation, measurement, and verification (EM&V) consultants. The accepted methods to do so are generally the same as those used in CAISO settlements: day-matching, weather-matching, and control groups. However, some demand response providers (DRPs) have reported barriers to implementing control groups for settlements and still others have reported barriers implementing control groups for QC valuation. As such, weather-dependent DR resources are at risk of being undervalued in both markets.
    b. **ELCC:** The methodology for determining the resource's capability profile should reflect alignment with event impacts and settlements. As the ex ante QC valuation methodology, ELCC measures contribution to reliability which is distinct from the MW load impact measured in settlements.

[1] For more details on ELCC, *see* E3, *Demand Response ELCC*, June 24, 2021, available at: http://www.caiso.com/Documents/E3-CAISODemandResponseELCCStudyUpdate2021-Combined-.pdf

2. **Capacity Measurement & Verification:** The CPUC asks the CEC "to develop recommendations for a comprehensive and consistent M&V strategy, including a new capacity counting methodology for DR addressing *ex post* and *ex ante* load impacts." Describe the role of M&V in the proposed capacity counting methodology.
    c. **Status Quo (LIP+CPUC):** DR performance is measured by bids during the AAH. So long as these bids are entered into the market, there is no assessment of actual performance to CEC staff's knowledge. To the extent DR resources do not perform when dispatched, they are subject only to replacing the energy in the spot market.
    d. **ELCC:** M&V should be reflected in the determination of a resource's capability profile. As the profile is input into ELCC, the ELCC QC value will in turn reflect M&V.

3. **Incentive Mechanisms:** Incentive mechanisms exist to ensure DRPs accurately claim, offer, and deliver capacity awards. Typically, incentive mechanisms exist as financial penalties for underperformance. The ELCC methodologies enumerated in the CPUC request include requested exemptions to the Resource Adequacy Availability Incentive Mechanism (RAAIM). Describe whether the RAAIM, no incentive mechanism, or an alternate mechanism would be appropriate. Include a description of any alternate mechanisms or proposed changes to the RAAIM if appropriate.
    e. **Status Quo (LIP+CPUC):** The RAAIM is imposed on resources that fail to bid their capacity obligations over the AAH. Because the AAH are fixed and do not account for the variable nature of DR, DRPs are concerned they would be penalized for placing realistic bids that are less than QC. However, the RAAIM is not imposed on resources <1 MW, so many DRPs have simply aggregated their underlying participants into resources under 1 MW, leaving DRPs with no availability penalty in practice.
    f. **ELCC:** ELCC meets the CAISO's required principles for a resource's QC methodology in order for that resource to be exempted from RAAIM.[2] Therefore, no incentive mechanism is required.

Any additional comments

Please provide any additional comments that your organization would like to make. You may use this space to describe aspects of the proposal not otherwise covered in the above components, such as process improvements.

[Add responses here:]

[2] CAISO, *Resource Adequacy Availability Incentive Mechanism (RAAIM) Exemption Option*, July 6, 2021, p. 2, available at: http://www.caiso.com/Documents/RevisedFinalProposal-RAAIMExemptionOption-DRResources.pdf.