Submit comment on Feb 5 working group kick-off meeting

Initiative: Demand and Distributed Energy Market Integration

1. Please provide your organization's feedback on the guiding Principles presented in the February 5th working group session; Efficiency, Competition, Feasibility, Simplicity, Reliability/Compliance, and Jurisdictional Roles and Responsibilities. Do these appropriately align with your organization's perspective?

These guiding Principles broadly align with the Joint DR Parties' perspective. We would also suggest including a seventh principle focused on expanding capacity available to the CAISO market. Distributed energy resources are a somewhat unique resource class because there are still a number of barriers to DER participation in the CAISO market, which prevent the CAISO from accessing the capacity that some of these DERs can provide to the grid. In their 2024 Phase 4 California DR potential study, the Lawrence Berkeley National Laboratory concluded that at current enrollment rates, the state will only have access to 20 percent of the DR capacity that can economically be deployed. This is especially concerning given ongoing concerns about capacity constraints in California that, absent regulatory barriers, DERs could help address.

Although some of the existing principles tangentially address this issue, the Joint DR Parties recommend creating an additional principle to make sure that the importance of getting capacity to market is kept in view. This principle could be called "Utilization" and be defined as "cost-effective DR capacity is visible and accessible to CAISO, maximizing its use as a grid resource." This principle is not meant to suggest that DR capacity should be utilized at the expense of other market principles (e.g., efficiency, reliability), but its inclusion will help ensure that CAISO is appropriately considering the capacity benefits that DR can provide when making its decisions on which proposals to advance.

2. In addition to the 2024 Catalog requests received, please provide your organization's proposed problem(s) or issue(s) to be addressed for potential scoping moving forward.

Links to 2024 Annual policy initiatives roadmap process: https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/Annual-policy-initiatives-roadmap-process-2024Appendix B: https://stakeholdercenter.caiso.com/InitiativeDocuments/2024-Final-Policy-Initiatives-Roadmap-and-Disposition.pdf

The Joint DR Parties provide and proposal for Device-Level Measurement as well as comments in support of DR Alternative Baselines.

Device-Level Measurement

Issue Description:

Currently, very few investor-owned utility ("IOU") customers are enrolled in a demand response program, so the vast majority of existing smart devices are not currently measured or controlled for the purpose of demand flexibility. One major obstacle to participating in a market-integrated DR

program is the requirement that electricity customers authorize their meter data to be shared via their IOU's Click-Through Process ("CTP"), a cumbersome process that less than 50 percent of potential DR participants that begin the enrollment process ever complete.

The CAISO has established baseline options such as the Electric Vehicle Service Equipment ("EVSE") and Metering Generator Output ("MGO") that allow electric vehicles and distributed batteries to use device-specific load data to measure DR performance directly. However, to the Joint DR Parties' knowledge, customers using these options are still required to go through the CTP to be registered in CAISO's Demand Response Registration System ("DRRS"), removing one of the primary benefits of using device-level data to evaluate DR performance.

The California Energy Commission has recently tested the use of direct device enrollment in its Demand Side Grid Support ("DSGS") program, and it found that allowing device enrollment outside the CTP significantly increased participation. Rather than authorizing data sharing via the CTP, participants in the DSGS program consent to sharing their data via their contract with their device provider, allowing DR providers to enroll these customers in the DSGS program using their address as identifying information. In the first year that this enrollment option was offered, the amount of participating battery capacity exceeded the capacity that third-party DR providers had enrolled in Resource Adequacy.

In addition, directly-measured devices are required to meet overly strict accuracy standards that excludes most residential technologies. CAISO's Metering Business Practice Manual (Metering BPM) currently requires all metering to be in accordance with ANSI C12 standards, an extremely strict standard that most residential batteries are unable to meet. In addition, the Metering BPM establishes a 0.2 percent accuracy requirement for DER Devices applies if local regulatory standards do not exist, a standard that is not aligned with more recent accuracy requirements established by the CPUC. Where possible, metering accuracy standards should be recalibrated so as not to unduly obstructing DERs from making use of these device-level measurement options, referencing experience in programs like the DSGS program that have adopted different standards while maintaining accurate measurements of device performance.

Furthermore, if CAISO were to enable greater use of device-level data for a wider range of technologies, including thermal energy storage, heat pump water heaters, and smart thermostats, it would allow for more flexible participation by DR providers in CAISO's market. If the utility meter is used to measure DR performance, then all devices behind that meter need to be managed by the same entity. By contrast, if the use of device-level data was expanded, then each device could conceivably be bid into the CAISO market by a separate entity. With California homes increasingly hosting multiple DERs managed by different companies, this type of flexibility will be key to supporting large-scale participation of these resources in RA.

Overall, removing the above-mentioned barriers to the use of device-level data would provide a range of important benefits:

- Dramatically increased participation of DERs in the CAISO market;
- Faster and more accurate measurement of load curtailment;
- Improved situational awareness for CAISO operators with visibility into the quantity and types of devices responding to market signals;
- Dual participation in conflicting programs can be identified at the device level;
- Greater customer choice of DR provider for devices, aggregators, or IOUs.

Proposed Initiative Description:

CAISO's DRRS registration process should be modified to accommodate device-level locations for DR providers participating in the MGO or EVSE baselines. Specifically, DR participants who have authorized their DR providers to access data directly from their DER devices (e.g., through a direct contract or Terms & Conditions agreement) should be eligible to register those devices outside of the utility's CTP. Each device for which data sharing has been authorized would instead be added to the DRRS directly and identified by the specific device's serial number and, if needed, an additional piece of identifying information (e.g., customer address, meter ID, utility account number). The DR provider would then submit load data collected directly from the customers' device to evaluate and settle that device's performance in the market.

There is precedent for expanding the capabilities of the DRRS: the Energy Storage and Distributed Energy Resources ("ESDER") initiative allowed the designation of device types. Similar to the ESDER changes to the DRRS, the following modifications would identify participating devices and prevent dual participation of individual devices and premises:

- Expand the number of device types to include other DR-capable devices (e.g., smart thermostats, heat pump water heaters, and thermal energy storage);
- Add a field for device serial number.

There is also precedent for CAISO to revisit the accuracy standards that currently constitute an additional barrier for DERs to use of device-level measurement options. Specifically, the CPUC has previously adopted standards outside of CAISO's requirements for EVSE. In D.22-08-024, the CPUC concluded it should adopt submeter accuracy standards of 1 percent accuracy tolerance and 2 percent maintenance for EVSE. (p. 40). Per the language in Attachment G of the Metering BPM, the CAISO should apply this same standard to EVSE participating in its market. Similarly, it should amend its Metering BPM to adopt similar standards for distributed batteries. The specific standards could be worked out in discussions within this Working Group, with participants aligning on standards that strike an appropriate balance between the principles adopted to guide these Working Group's decisions.

Additional participation options should also be created that allow other DER technologies to submit DR performance data directly from the device. For example, the DSGS program has developed an option that uses runtime data from smart thermostats to assess that device's performance in DR events. CAISO should reference this experience to establish baseline methodologies similar to MGO and EVSE, but that allow performance by smart thermostats and other devices to be measured at the device level. Participation by these devices is currently hindered by the same obstacles identified above, and allowing their performance to be measured at the device level would further increase DER visibility and utilization by CAISO.

Adherence to Working Group Principles:

This Device-Level Measurement proposal largely satisfies the initial proposed Working Group principles. The Joint DR Parties explains exactly how below:

- **Efficiency:** The potential for several thousand MWs of new resources would enhance the efficiency of the CAISO's market by providing more resources that in turn would deliver more efficient market outcomes.
- **Competition:** This change would increase the number of DERs participating in the CAISO market, expanding competition in the market to the benefit of customers.

- **Feasibility:** This proposal would enable utilization of existing assets (in this case, smart devices) while requiring modest changes to the DRRS, tariff, and the Metering BPM.
- Simplicity: Since this only changes the data used to measure market participation without creating a new market product, it would not create any additional complexity in market design. Furthermore, it would simplify the process by which DR customers share their data to settle wholesale market transactions, streamlining market participation overall.
- **Reliability/Compliance:** By expanding the number of DERs available to provide capacity during peak demand, this proposal would support overall grid reliability, In addition, because this proposal would activate additional PDRs without requiring a change to the overall market design, it should have no negative impact on reliability or compliance overall. As long as data accuracy standards remain in line with those proven to be acceptable in similar programs, there should be no negative implications for reliability on this front.
- **Jurisdictional Roles and Responsibilities:** This proposal would support several legislative goals and targets in California. Senate Bill 100 ("SB 100") set ambitious goals for renewable and zero-carbon electricity, requiring 60 percent renewable energy by 2030 and 100 percent clean energy by 2045. However, this transition faces numerous challenges, including project development uncertainties, supply chain constraints, potential cost impacts from policy changes, increased demand due to electrification, transmission constraints, and competition for resources. Recognizing these risks, the North American Electric Reliability Corporation ("NERC") emphasizes the need for demand-side solutions to maintain system reliability. The 2023 NERC Reliability Issues Steering Committee Report highlights, among other things, the integration of DERs to enhance grid reliability and flexibility, which this proposal supports. In addition, this proposal would advance the CEC's 7 GW Load Shift Goal by reducing or eliminating the enrollment barriers described above.
- **Utilization (proposed):** This proposal would lead to significant amounts of new DER capacity being made visible and available to CAISO grid operators.

DR Alternative Baselines

Issue Description:

CAISO grid operators must assess the performance of resources participating in the CAISO market to ensure those resources meet their market obligations. For traditional generation resources, this is straightforward: operators measure the electricity injected directly into the grid. However, because DR resources reduce load rather than generate power, operators must instead estimate what a customer's "baseline" load would have been if a DR event had not been called to assess its impact accurately.

Today, most DR resources participating with CAISO use 5-in-10 or 10-in-10 baselines, comparing a customer's actual load during an event to their recent load profiles. While effective for large industrial users with stable load patterns, this method is inadequate for the new generation of DERs, including thermal and electric energy storage, and electric vehicles ("EVs"). These technologies can dispatch more frequently, but under current measurement methods, frequent dispatching distorts baseline calculations, creating challenges for DR to participate in the CAISO market with the same regularity as traditional resources.

Control group baselines, which CAISO currently provides as a baseline option in its tariff, can provide more accurate estimates of DR performance while also removing barriers to frequent participation. However, they require access to large-scale non-participant data, which is often unavailable in a timely manner, and sometimes not at all for non-IOU DR providers. To address these issues, the Council and Leap support the Working Group's consideration of alternative DR

baseline approaches, which can help address the ongoing issues with DR measurement that hinder this resource's potential in wholesale markets.

Proposed Initiative Description:

The Council and Leap support moving CAISO's baseline methodologies from its tariff to its Demand Response Business Practice Manual ("DR BPM"), which will allow for more flexibility in adjusting baseline methodologies by avoiding the need for a lengthy Federal Energy Regulatory Commission ("FERC") approval process to make future changes to these baselines. This would not only allow current baseline methodologies to be updated more quickly, it would also open the door to new baseline methodologies that require updates on a more frequent basis.

One potential option here is "prescriptive baselines," a DR measurement approach that has been used in the CEC's DSGS program since summer 2023. In the Option 3 participation model for residential batteries, the CEC established a static or "prescriptive" baseline for all batteries participating in the program. This prescriptive baseline is based on the average battery usage for residential battery customers in California, and it is updated every two years to ensure it accurately reflects current customer battery use patterns. If used for PDRs, this baseline methodology would allow batteries to be dispatched as frequently as they are able to supply capacity to the grid, calculating their performance using average battery demand as a counterfactual. This would streamline DR performance calculations while maintaining accuracy, because at the aggregate level, a resource composed of hundreds or thousands of batteries should have a counterfactual demand close to the overall state average.

CAISO already allows for DR performance by electric vehicles and distributed batteries to be measured using device-level data (via the EVSE and MGO baseline methodologies, respectively). It would be relatively simple for CAISO to allow customers using these baseline methodologies to measure their performance against average energy use for EVs and batteries in California, which are relatively uniform within customer types. Since the CEC already has experience constructing these types of baselines for the DSGS program, it could support the development and subsequent updates to prescriptive baselines in wholesale markets, potentially as part of its Integrated Energy Policy Report that it submits to CAISO on a biannual basis.

This approach could also be expanded to other technologies, such as thermal energy storage, smart thermostats, and heat pump water heaters, and customer types. Because prescriptive baselines are set up using historic load data, it is possible to design finely-tuned comparisons based on a number of conditions. For example, a household's response to a DR dispatch on a 100-degree day would be assessed against the average load of similarly sized customers at the same temperature over previous years. Essentially, this approach would introduce a new type of "control group" methodology in CAISO, but one where the control group is built in advance using historic customer load data rather than constructed in response to individual DR events.

Adherence to Working Group Principles:

By embracing a data-driven, prescriptive baseline approach, grid operators can move beyond existing measurement techniques and create a more flexible, fair, and efficient system for integrating DR resources into the CAISO market. The Council and Leap provide more details on how this proposal adheres to CAISO's proposed principles below.

- **Efficiency:** Prescriptive baselines would optimize market outcomes by allowing DR resources to be dispatch according to their marginal cost at all times, and not reduce the frequency of their bids based on a need to establish a 5-in-10 or 10-in-10 baseline.
- **Competition:** Prescriptive baselines would enable DR resources to dispatch on a regular basis, allowing them to more effectively compete against traditional "baseload" resources or utility-scale battery storage that do not have to limit their market dispatches in order to establish a baseline.
- **Feasibility:** Moving DR baseline methodologies from the CAISO tariff to the DR BPM is a highly feasible, no-regrets option that will allow baseline methodologies to be iterated on and refined more quickly. Prescriptive baselines have also proven to be feasible in programs like the DSGS program, and their implementation in the CAISO market could leverage existing points of coordination between CAISO and CEC (e.g., the IEPR forecasts).
- **Simplicity:** Prescriptive baselines would radically simplify DR performance calculations and increase transparency in DR performance assessments.
- **Reliability/Compliance:** As mentioned above, this proposal should have no impact on DR reliability because, at scale, an aggregated DR resource's counterfactual demand should be acceptably close to the state average. However, if the reliability of resources measured this way is a concern, CAISO could introduce additional rules. For example, prescriptive baselines might only be allowed for aggregations large enough that their counterfactual demand is statistically unlikely to deviate significantly from the state average.
- **Jurisdictional Roles and Responsibilities:** By allowing DR to more easily and regularly participate in CAISO's wholesale market, this proposal would expand the pool of DR resources available to CAISO, advancing the state objectives identified earlier (e.g. SB 100; the 7 GW Load Shift Goal).
- **Utilization (proposed):** EVs and energy storage could be dispatched more frequently, allowing CAISO to utilize them as a more consistent component of its resource mix.

3. Would your organization like to utilize this Working Group to provide additional education on current demand and distributed energy market participation?

It is important for stakeholders to understand current demand and distributed energy market participation, and the Joint DR Parties would support using this Working Group to provide that education. However, this should be done in the service of advancing policy changes that improve DER participation, and CAISO should avoid prioritizing educational activities over efforts to develop and refine the policy proposals under consideration by the Working Group. Otherwise, the CAISO would risk losing the necessary momentum needed to make effective progress in moving key proposals forward.

4. What topic(s) would your organization be interested in presenting? What is the problem/issue seeking to be addressed, and what is the value in resolving it? Which stakeholders would it impact?

The Joint DR Parties would be happy to present on either of the two proposals included in its answer to Question 2, both of which would help resolve existing barriers to DR enrollment and provide benefits to both DR market participants and California electricity customers. In addition, if needed, the Joint DR Parties would be interested in presenting on the Modified Proxy Demand Resource (mPDR) proposal that was included in the 2024 CAISO Policy Roadmap. The mPDR mechanism addresses a significant issue in California's energy market by enabling better utilization of behind-the-meter ("BTM") storage capacity. This new approach would help solve the problem of underutilized battery capacity and benefit multiple stakeholders in the energy ecosystem.