# Comments of Powerex Corp. on
# RA Enhancements Straw Proposal – Part 2

| Submitted by | Company | Date Submitted |
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Powerex appreciates the opportunity to submit comments on CAISO's Straw Proposal in Part 2 of the Resource Adequacy Enhancements stakeholder proceeding. In the Straw Proposal, CAISO sets out a range of proposed modifications to the CAISO tariff rules respecting Resource Adequacy. Specifically, CAISO proposes to:

- Develop a methodology for reflecting the forced outage rate in evaluating the quantity of capacity that a resource can provide, and eliminate substitution for forced outages;
- Modify CAISO's backstop procurement authority to allow it to compensate both for load serving entities' ("LSE") unforced capacity ("UCAP") deficiencies and for capacity deficiencies that arise as a result of planned outages; and
- Review the Maximum Import Capability ("MIC") framework, which is used to allocate intertie capacity for Resource Adequacy purposes.

Powerex strongly supports CAISO's efforts to strengthen the Resource Adequacy program in this proceeding and appreciates the significant effort that CAISO has made in evaluating the efficacy of the existing program and identifying potential solutions. As described further below, Powerex believes that the concepts outlined in the Straw Proposal represent a critical step forward towards achieving the objective of securing the long-term reliability of the CAISO grid.

Over the past several years, it has become increasingly clear that the existing Resource Adequacy framework is not sufficient to maintain the reliability of the CAISO grid in the face of a rapidly evolving resource mix, both in California and across the west. More specifically, there is growing evidence that the California Resource Adequacy program:

- Substantially underestimates Resource Adequacy requirements by setting System Resource Adequacy procurement requirements in a manner that does not accurately reflect system needs; and

- Substantially overestimates the ability of committed capacity to actually meet Resource Adequacy requirements by failing to take into account resource availability in evaluating the quantity of capacity that a resource can provide and by allowing resources to obtain Resource Adequacy commitments that have little ability to actually supply capacity to the CAISO.

Collectively, the result of these gaps has been that the quantity of resources with Resource Adequacy commitments that have actually been available to the CAISO has regularly fallen below

actual system needs. This is reflected in historical public data for the summer months of 2016 through 2018, shown in the table below, which demonstrates that the System Resource Adequacy Requirement set by the California Public Utilities Commission ("CPUC") has been, at best, just enough to cover CAISO actual peak hourly demand plus required contingency reserves in several months (and has actually been below actual system requirements in two months).

| | | CEC 1-in-2 Forecast Peak[1] (MW) | *plus* 15% PRM (MW) | **RA Target[2] (MW)** | Actual Peak Hourly Load[3] (MW) | Required Contingency Reserve[4] (MW) | **Total Capacity Required (MW)** | RA Surplus (Deficiency) (MW) | Unit Outages[5] (MW) | **Resource Adequate?** |
|---|---|---|---|---|---|---|---|---|---|---|
| **2016** | June | 39,625 | 5,944 | **45,568** | 44,454 | 2,590 | **47,044** | (1,476) | (7,152) | ***No*** |
| | July | 44,364 | 6,655 | **51,018** | 45,981 | 2,716 | **48,697** | 2,322 | (6,222) | ***No*** |
| | August | 46,848 | 7,027 | **53,875** | 43,812 | 2,548 | **46,360** | 7,515 | (5,944) | ***Yes*** |
| | September | 42,388 | 6,358 | **48,747** | 42,810 | 2,460 | **45,270** | 3,477 | (7,309) | ***No*** |
| **2017** | June | 41,834 | 6,275 | **48,109** | 44,184 | 2,659 | **46,843** | 1,266 | (9,454) | ***No*** |
| | July | 45,259 | 6,789 | **52,048** | 45,374 | 2,627 | **48,001** | 4,047 | (7,088) | ***No*** |
| | August | 45,967 | 6,895 | **52,862** | 47,297 | 2,778 | **50,075** | 2,787 | (6,151) | ***No*** |
| | September | 45,489 | 6,823 | **52,312** | 49,909 | 2,871 | **52,780** | (468) | (5,885) | ***No*** |
| **2018** | June | 37,596 | 5,639 | **43,235** | 37,803 | 2,594 | **40,397** | 2,838 | (7,228) | ***No*** |
| | July | 43,080 | 6,462 | **49,542** | 46,487 | 3,026 | **49,513** | 29 | (4,780) | ***No*** |
| | August | 44,923 | 6,738 | **51,661** | 45,021 | 2,734 | **47,755** | 3,907 | (6,181) | ***No*** |
| | September | 42,579 | 6,387 | **48,966** | 38,536 | 2,374 | **40,910** | 8,056 | (5,275) | ***Yes*** |

*1* 2016 monthly values are from CPUC 2016 RA Report, Tbl. 3 (for CPUC-jurisdictional LSEs only) scaled to "Total CAISO Coincident Peak" for 2016 from final CEC Mid-Baseline Mid AAEE Savings forecast in 14-IEP-1
2017 values from https://www.caiso.com/Documents/AgendaandPresentation_2018AnnualReviewofAvailabilityAssessmentHoursJun6-2017.pdf (at 32);
2018 values from http://www.caiso.com/Documents/Presentation-CapacityProcurementMechanismSignificantEvent.pdf (at 4, "CAISO-RA")

*2* Equal to CEC 1-in-2 peak forecast plus PRM; does not reflect reductions due to demand response or other factors, and hence may exceed the System RA that LSEs are required to show.

*3* From CAISO OASIS, "CAISO Demand Forecast" for "Actual" process and "CAISO-Total" region.

*4* From CAISO OASIS, "AS Requirements" of Spin and Non-Spin for "AS_CAISO_EXP" region during hour of peak load for respective month. Does not include Reg-Up, which is approximately 350 MW during peak hours.

*5* From CAISO report "Curtailed and Non-Operational Generators in California" on day of peak load in respective month.
http://www.caiso.com/market/Pages/OutageManagement/UnitStatus.aspx.

This data also shows that, even in those months where the System Resource Adequacy requirement has covered actual system needs, virtually every resource committed to meet Resource Adequacy requirements would be required to be available and perform in order to allow CAISO to meet reliability needs. In practice, however, a significant portion of the resources contracted to provide Resource Adequacy capacity have not performed during this period. For instance, the data above shows that the quantity of resources contracted to provide Resource Adequacy that have actually been available to the CAISO has regularly fallen below actual system needs during these periods when resource outages have been taken into account. The net result is a shortfall of several thousand MWs of available Resource Adequacy capacity below the level required to meet actual peak load plus contingency reserves in most summer months.

Powerex believes that CAISO's effort to address the shortcomings of the existing Resource Adequacy program are coming at a critical time when changes in the grid in California and throughout the west are creating new challenges. Historically, CAISO has been able to compensate for the gaps in the existing Resource Adequacy framework by making short-term purchases of energy from neighboring regions in the day-ahead and real-time timeframes. However, as states outside of California increasingly face their own capacity and flexibility challenges as they retire coal generation resources and transition towards greater reliance on variable energy resources, it is increasingly likely that the short-term supply available from neighboring regions in any given hour may not be sufficient to assist the CAISO in maintaining reliability.

Powerex believes that the proposals that are being considered as part of this proceeding represent a critical step forward in addressing these Resource Adequacy gaps in a manner that will ensure the long-term reliability of the CAISO markets. In particular, Powerex strongly supports CAISO's efforts to:

- Prevent speculative and non-firm supply from counting towards meeting Resource Adequacy requirements;
- Implement measures to take resource availability into account in determining the quantity of capacity that a resource can actually be counted upon to provide and restricting the availability of resource substitution;
- Disqualify resources that are not capable of performing when called upon by the CAISO from obtaining resource adequacy commitments; and
- Remove barriers to the supply of RA by external physical suppliers.

Each of these reforms has the potential to significantly strengthen the Resource Adequacy framework. By taking steps to prevent the speculative supply of capacity and ensure that resource availability is taken into account, CAISO's proposals will help ensure that sufficient resources are committed on a forward basis to allow CAISO to operate its system, and also that the resources committed to supply capacity can actually be counted to perform when called upon by the CAISO. CAISO's proposals also will reduce the potential that physical suppliers will be "crowded out" from supplying Resource Adequacy by speculative and non-firm suppliers that do not invest in the physical capacity and transmission necessary to actually meet their delivery obligations.

Powerex believes that the outcome of this proceeding is critical to the ongoing reliability of the CAISO grid as well as efforts to cultivate broader regional western markets. If successful, the reforms that CAISO is considering in this proceeding have the potential to help secure the ongoing reliability of the CAISO grid as it transitions to greater reliance on variable energy resources. Ensuring that the Resource Adequacy program commits sufficient resources on a forward basis to meet CAISO's reliability needs also will help the stage for efforts to further develop and expand regional markets, such as through the Extended Day-Ahead Market ("EDAM") initiative, by reducing the likelihood that CAISO will be unable to pass a future EDAM resource sufficiency framework, and by reducing the potential need to design an EDAM that permits CAISO to lean on the capacity investments of external regions and utilities to maintain reliability.

If CAISO's efforts to close the gaps in the existing Resource Adequacy framework are unsuccessful, then it will be critical for CAISO to focus on strengthening its backstop procurement authority, such as the Capacity Procurement Mechanism ("CPM"). Powerex recognizes that the California Resource Adequacy program is coordinated by the CAISO, the CPUC, and the California Energy Commission. As a result, it may not be feasible for CAISO to unilaterally close all of the significant gaps in the existing Resource Adequacy framework. If CAISO is unable to address the shortcomings in the existing Resource Adequacy framework and continues to experience periods where the capacity committed on a forward basis is not sufficient to meet system needs, then it will be incumbent on CAISO to ensure that it has adequate backstop

authority to compensate for the failings of the Resource Adequacy framework and reliably operate its system. In that case, CAISO should focus on working to expand the CPM to ensure that it has the authority necessary to procure additional forward capacity when the quantity of capacity committed on a forward basis under the Resource Adequacy program is not sufficient to meet actual system needs.

The failure to implement a robust Resource Adequacy framework and/or backstop procurement mechanism is sure to lead CAISO and its customers down the road to greater reliability risks and act as a direct impediment to the development of regional markets. The vast majority of other organized markets throughout the United States have either a robust Resource Adequacy program or a centralized capacity market that ensures that there are sufficient resources to serve the load of all participating utilities, states, and regions.[1] Right now, CAISO has neither. Until the Resource Adequacy framework is sufficiently robust to ensure that CAISO does not need to lean on the capacity investments of other participants to maintain reliability, Powerex believes that it may prove unpalatable for other regions outside of the CAISO that have invested in the resources necessary to meet their own needs to participate in an expanded day-ahead market that involves any region that is systematically short on capacity.

As noted above, Powerex supports CAISO in closing the gaps of the existing Resource Adequacy program and strongly supports the concepts that are outlined in the Straw Proposal. In particular, as discussed further below, Powerex strongly supports CAISO's proposals to:

- incorporate the use of the UCAP measure in its Resource Adequacy framework and eliminate the use of resource substitution; and
- modify the MIC allocation framework to prevent the stranding of intertie capability and eliminate barriers to the competitive supply of Resource Adequacy by external resources.

## I. Powerex Supports The Proposal To Evaluate The Unforced Capacity Of Resource Adequacy Capacity

In the Straw Proposal, CAISO proposes to establish a new framework that would incorporate the historical forced outage rate of resources in evaluating the quantity of capacity that a resource can be counted upon to provide. Under this proposal, CAISO plans to calculate an UCAP value for all resources, based on the historical forced outage rate of the resource. CAISO also proposes to establish a minimum UCAP value that all LSEs would be required to meet during the showing process. More specifically, during the showing process, the CAISO will evaluate LSE Resource Adequacy showings and resource supply plans to ensure that there is sufficient UCAP shown to meet identified reliability needs. In the event that an LSE fails to meet its UCAP requirement, or there is insufficient UCAP shown on a system-wide basis, CAISO proposes to procure the additional capacity through its backstop authority and allocate the associated costs to deficient

[1] The sole exception to this is the market operated by the Electric Reliability Council of Texas, which relies on robust scarcity pricing and an offer cap of up $9,000/MWh to provide signals for the development and maintenance of capacity necessary to maintain reliability.

LSEs. As part of its proposals, CAISO also proposes to eliminate the availability of resource substitution for forced outages.

Powerex strongly supports CAISO's effort to ensure that resource availability is taken into account by incorporating the use of UCAP in the Resource Adequacy framework. One of the primary purposes of the Resource Adequacy framework is to ensure that sufficient resources are committed on a forward basis to allow CAISO to reliably operate its system. In practice, the ability of the Resource Adequacy program to achieve this objective has been hampered by the failure to take into account outages in evaluating the capacity that can be provided by resources committed to meet Resource Adequacy requirements. As noted above, the result has been that the quantity of committed Resource Adequacy resources actually available to the CAISO in certain months has been well below actual system requirements, with a large quantity of resources unavailable due to outages or some other factor. For that reason, Powerex supports CAISO's proposals to calculate a UCAP rating for resources and to evaluate UCAP as part of the showing process.

Powerex believes, however, that the objective of ensuring that the Resource Adequacy framework commits sufficient resources on a forward basis to maintain reliability would be better served by calculating UCAP in a manner that takes into account the performance of resources more generally rather than adopting a measure focused *solely* on forced outages.

From a reliability perspective, whether a resource that has been committed to provide Resource Adequacy is unavailable due to a forced outage or planned outage is immaterial. In either case, CAISO will not be able to rely on the resource to meet reliability requirements, increasing the risk that CAISO will be forced to rely on short-term procurement to compensate for the resulting shortfall. Relying on substitution to maintain reliability is inconsistent with the objectives of the Resource Adequacy program, as it effectively relies on the short-term markets to compensate for the insufficient forward procurement of resources. Rather than resorting to short-term, backfill procurement, the goal should be to ensure that Resource Adequacy program requirements take into account information about the anticipated availability of resources to ensure that the quantity of capacity procured on a forward basis is sufficient to cover expected system needs with expected outages taken into account

Similarly, the result is the same if a resource has not declared a forced or planned outage, but fails to submit an offer in accordance with its must-offer obligation or respond when dispatched by the CAISO. In short, anytime that a committed Resource Adequacy resource is unavailable and/or fails to perform – regardless of the cause – there is a risk that the quantity of resources committed on a forward basis will not be sufficient to allow CAISO to reliably operate its system and that CAISO will be forced to rely on short-term measures (*e.g.,* substitution or backstop procurement) to compensate for the resulting shortfall. Moreover, a UCAP methodology that is based on a resource's historical availability will provide appropriate incentives for sellers of Resource Adequacy to ensure a resource is actually available during the times of greatest system need.

In order to ensure that the Resource Adequacy framework achieves its objectives, Powerex encourages CAISO to adopt a measure that takes into account the historical performance of a

resource rather than historical forced outages alone. This could be achieved by basing the calculation of the UCAP rating of a resource on the average unavailability/non-performance of a resource in the highest 1-2% of net load hours of each year of a defined historical period (*e.g.*, five years). Under this approach, a resource's UCAP could take into account the quantity of capacity that was unavailable during a particular period—regardless of whether the resource was unavailable due to a forced outage, planned outage, failure to submit an offer, or failure to respond to dispatch instruction. In the case of a new resource, CAISO could calculate the UCAP rating based on the average availability/performance of other resources employing similar technology until CAISO obtained sufficient unit-specific availability/performance information to calculate the UCAP of the individual unit. Powerex believes that such an approach could be applied broadly to both internal and external thermal and hydroelectric resources, while maintaining use of the ELCC methodology for wind and solar resources.

Powerex notes that such a measure would be similar to the approach that is being pursued in other organized markets. For instance, rather than focusing narrowly on outages, the Alberta Electric System Operator ("AESO") has decided to base its calculation of UCAP on actual resource performance during critical hours. Under the AESO approach, a resource's UCAP is based on the quantity that the resource made available to the market during the 250 tightest supply hours each year, averaged over a five-year period. To the extent a resource fails to comply with its must-offer obligation or with a dispatch instruction issued by the AESO during these hours, AESO will reduce the UCAP value of the respective resource.[2]

Powerex believes that taking into account the actual unavailability/non-performance of a resource in the UCAP calculation would help achieve the objective of ensuring that the resources committed on a forward basis through the Resource Adequacy program are sufficient to meet actual system needs. By ensuring that the right quantity of resources is committed on a forward basis, such a measure would reduce the need to rely on resource substitution and other short-term procurement mechanisms to compensate for resource outages. .

## II. Powerex Supports CAISO's Efforts To Modify The MIC Allocation Framework To Avoid The Inefficient Stranding Of Capacity

In the Straw Proposal, CAISO explains that it is reevaluating the MIC allocation framework in response to stakeholder concerns that the existing framework acts as a barrier to the efficient and competitive supply of Resource Adequacy. In particular, CAISO notes that stakeholders have raised concerns that LSEs that receive an allocation of the MIC under the existing framework are not required to make unused MIC available to other parties, effectively "hoarding" this capacity to the detriment of both small LSEs and external suppliers. In response to these concerns, CAISO explains that it is considering: (1) modifying the framework to provide for the release and reallocation of unused import capability after initial monthly RA showings; (2) incorporating an auction or market-based mechanism for the allocation of MIC; and (3) modifying the provisions respecting the reassignment and bilateral trading of import capability among LSEs.

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[2] *See* Overview of the Alberta Capacity Market, AESO (June 29, 2018), *available at* https://www.aeso.ca/assets/Uploads/Consolidated-proposal.pdf.

Powerex strongly supports CAISO's decision to pursue modifications to the existing MIC allocation framework. As Powerex and other stakeholders have noted, the existing MIC allocation framework acts as a barrier to the competitive supply of Resource Adequacy by allocating the vast majority of intertie capability to the largest California LSEs, who have no obligation to use this import capability or release unused capability to other parties. Because there currently is no mechanism to ensure that unused intertie capability is made available to support RA contracts, unused capability is effectively "stranded" and unavailable to support Resource Adequacy commitments with other smaller LSEs and external suppliers unless the LSE holding the intertie capability voluntarily elects to sell this capability to another market participant—often at a significant premium.

Indeed, historical information shows that the result of the existing MIC allocation framework is to allocate the vast majority of the intertie capability on major CAISO interties to the largest CAISO LSEs. For instance, as shown in the table below, the majority of the import capability on the Pacific AC Intertie and Pacific DC Intertie has been allocated to Southern California Edison and Pacific Gas & Electric, despite the fact that these LSEs consistently fail to use all of their allocated capability.

| | 2018 | | 2017 | | 2016 | | 2015 | |
|---|---|---|---|---|---|---|---|---|
| | PACI | PDCI | PACI | PDCI | PACI | PDCI | PACI | PDCI |
| Total MIC Allocated | 1808 | 1267 | 2108 | 1283 | 2232 | 1544 | 2113 | 1544 |
| *% to SCE and PG&E** | *86%* | *82%* | *84%* | *78%* | *82%* | *75%* | *77%* | *75%* |
| All MIC Used In Annual RA Showing? | | | | | | | | |
| SCE | NO | NO | NO | NO | NO | NO | NO | NO |
| PG&E | NO | NO | NO | NO | NO | NO | NO | NO |

Powerex believes that there are a number of alternative approaches that could be implemented that would avoid the shortcomings of the existing MIC allocation framework. In evaluating potential alternatives to the existing framework, Powerex believes that CAISO should be driven by the following principles:

- First, any framework must ensure that the Resource Adequacy contracts at a given CAISO intertie do not exceed the quantity of energy that can actually be delivered in light of the physical constraints of the transmission grid;

- Second, the framework should ensure that import capability is available to support Resource Adequacy contracts with external resources to the maximum extent possible and limited only by the physical capability of the grid. Any alternative framework that is implemented must ensure that entities are not prevented from obtaining the intertie capability needed to support RA contracts or to be required to pay for intertie capacity when there is unused intertie capability.

- Finally, in the first instance, the entities that fund the embedded cost of the CAISO interties should be given the first opportunity to support a Resource Adequacy contract in each procurement timeline. If intertie capability is not used to support a Resource Adequacy contract, however, then that intertie capacity should be released and made available to other LSEs and market participants.

Powerex believes that one approach that is consistent with these principles is to allocate import capability based on the Resource Adequacy contracts that are actually executed at a given intertie. Specifically:

- In October each year, LSEs would be required to inform CAISO of the Resource Adequacy contracts that they had executed with external resources for the upcoming capacity commitment period.
- CAISO would then evaluate the total quantity of yearly import Resource Adequacy contracts executed at a given intertie:
    - If the total quantity of executed yearly import RA contracts on an intertie does not exceed the intertie's transmission capacity, each LSE would be granted the MIC associated with its submitted year Resource Adequacy contracts.
    - If the total quantity of executed yearly Resource Adequacy contracts on an intertie exceeded the intertie transmission capability, then the capability at the relevant intertie would be allocated among the LSEs based on an appropriate allocation factor (*e.g.,* load ratio share basis).

Powerex notes that, under this framework, any intertie capability allocated in the year-ahead process would not be reduced in the month-ahead process. In other words, a preference would be given to using intertie capability to support year-ahead Resource Adequacy contracts, with intertie capability only made available to support monthly contracts to the extent that intertie capability remains after the year-ahead allocation process is complete. Powerex believes that providing a preference for year-ahead procurement is consistent with the objective of ensuring that the Resource Adequacy framework results in the forward commitment of capacity on an annual basis.