BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Annual Local and Flexible Procurement Obligations for the 2019 and 2020 Compliance Years.	Rulemaking 17-09-020 (Filed September 28, 2017)

COMMENTS OF POWEREX CORP. ON PROPOSED DECISION CLARIFYING RESOURCE ADEQUACY IMPORT RULES

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Pursuant to Rule 14.3 of the California Public Utilities Commission ("Commission") Rules of Practice and Procedure, Powerex Corp. ("Powerex") offers these comments on the September 6, 2019 *Proposed Decision Clarifying Resource Adequacy Import Rules* ("Proposed Decision").

I. INTRODUCTION

Decisive and effective action is needed to strengthen California's Resource Adequacy program. The California Independent System Operator ("CAISO") has clearly documented how the Resource Adequacy program falls short of securing sufficient physical resources necessary to safely and reliably operate the grid in real-time.[1] Meeting California's reliability needs will

[1] CAISO, Dept. of Market Monitoring, *Import Resource Adequacy* at 3 (Sept. 10, 2018) (stating that on July 24, 2018, "only 84 percent [of Resource Adequacy import capacity] was accepted in the day-ahead market in hour-ending 20 with a system marginal energy price of $979/MWh"), available at: http://www.caiso.com/Documents/ImportResourceAdequacySpecialReport-Sept102018.pdf. *See also* CAISO, Intertie Deviation Settlement, Draft Final Proposal at 34-37 (Feb. 13, 2019), available at: http://www.caiso.com/Documents/DraftFinalProposal-IntertieDeviationSettlement-UpdatedFeb13-2019.pdf. (*See Comments of Powerex on Assigned Commissioner's Ruling Seeking Comment on Clarification to Resource Adequacy Import Rules* at 7, nn. 2 and 3. According to DMM's analysis, after accounting for all import Resource Adequacy obligations during the 210 highest load hours in 2018, DMM has concluded that "a net total of only 53 percent to 63 percent of RA imports may actually be deliverable in the real-time market[.]" *Comments of the Department of Market Monitoring on Resource Adequacy Enhancements Revised Straw Proposal* at 3 (July 24, 2019), available at: http://www.caiso.com/Documents/DMMCommentsResourceAdequacyEnhancements-RevisedStrawProposal.pdf. (Reply Comments of Powerex on *Assigned Commissioner's Ruling Seeking Comment on Clarification to Resource Adequacy Import Rules* at 2, n.2). For instance, in its Report on Market Issues and Performance for Q2 2017, the CAISO DMM identifies the RA shortfall for June: [d]uring the peak load period of June, the sum of monthly 1-in-2 peak load estimates for resource adequacy requirement setting provided by the California Energy Commission, 37,900 MW, was less than

require greater quantities of Resource Adequacy capacity to be procured from external resources (*i.e.,* "import Resource Adequacy").[2] However, import Resource Adequacy will only contribute to reliability if it represents the forward commitment of genuine physical capacity instead of "paper capacity." Accordingly, Powerex strongly supports efforts by the Commission and the CAISO to strengthen the Resource Adequacy program through carefully crafted measures to eliminate the participation of import Resource Adequacy arrangements not supported by the forward commitment of real physical capacity and the ability to deliver energy when called upon. However, the measures outlined in the Proposed Decision would not achieve the critical objective of encouraging the advance commitment of genuine physical resources to meet California's needs for several reasons.

First, the Proposed Decision will require the actual delivery of energy from import Resource Adequacy resources, even when such deliveries lead to economic losses for the delivering party. This will create new and severe impediments to procuring Resource Adequacy from entities that can commit physical generation resources on a forward basis, thus undermining the very arrangements that would be of greatest benefit to reliability and to California ratepayers.

Second, the Proposed Decision will lead to multiple unintended adverse consequences for California ratepayers as well as for the reliability and efficiency of the grid, including:

- California load-serving entities ("LSEs") will find that existing import Resource Adequacy contracts are no longer eligible, and will need to enter into new contracts, exposing their ratepayers to additional costs.
- Import Resource Adequacy contracts are likely to be more costly and less available, reflecting the risk of significant economic losses due to the must-flow requirement.

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both day-ahead forecast of load and actual load. CAISO. Dept. of Market Monitoring, Q2 Report on Market Issues and Performance at 18-19 (Sept. 25, 2017). Powerex Track 1 Proposals at 3 (Feb. 16, 2018).

[2] *See* CPUC Energy Division, *State of the Resource Adequacy Market* (Sept. 2019), available at: http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M312/K062/312062524.PDF

- In the large number of must-flow hours when interties are already full, the must-flow requirement will simply exacerbate congestion rather than result in the delivery of additional energy to serve California consumers.
- The must-flow requirement would replace CAISO's economic dispatch of import offers.
- The must-flow requirement raises numerous legal concerns.
- The must-flow requirement would limit the potential benefits of a regional market by encumbering substantial transmission capacity, making it unavailable to support economic transfers between western entities.

Third, the Proposed Decision only addresses one aspect of the problem of paper capacity—where the seller has no intention of delivering energy and instead consistently submits very high-price energy bids to avoid being dispatched for energy that the seller does not have. The Proposed Decision would not address the problem of paper capacity where the seller of import Resource Adequacy speculates on the future availability of energy in the short-term markets to supply any energy that might be dispatched. Continued participation by this form of paper capacity leaves the CAISO grid critically exposed to reliability risks, as the times of greatest CAISO need are closely correlated with the times in which speculative sellers are least likely to be able to procure energy in the short-term energy markets to meet their obligations.

Accordingly, the Commission should not adopt the Proposed Decision. Instead, the Commission should work with CAISO to implement more effective and direct measures that can ensure import Resource Adequacy represents real physical resources committed in advance to help meet CAISO's needs.

II. THE COMMISSION SHOULD NOT ADOPT THE PROPOSED DECISION BECAUSE IT NEITHER IMPROVES RELIABILITY NOR DELIVERS COST SAVINGS FOR RATEPAYERS, BUT DOES CREATE A NUMBER OF SEVERE NEGATIVE UNINTENDED CONSEQUENCES

The Proposed Decision requires that all import Resource Adequacy capacity contracts include "must flow" energy provisions. This requirement will be enforced during "at least" the CAISO Availability Assessment Hours (the five hours from 4 p.m. to 9 p.m. on weekdays, excluding U.S. federal holidays).[3] The Commission should not adopt the Proposed Decision because this requirement will neither improve reliability nor deliver cost savings for ratepayers. Instead, it will cause energy to be delivered in all specified hours even if it is uneconomic to do so, causing substantial economic losses for sellers of import Resource Adequacy and creating several severe adverse unintended consequences for California ratepayers and for the reliable and efficient operation of the grid.

A. The Proposed Decision Will Neither Improve Reliability Nor Deliver Cost Savings for Ratepayers, But Will Harm Sellers of Legitimate Import Resource Adequacy

The Proposed Decision explains that "[o]ne of the goals of the RA program is to ensure that sufficient energy capacity flows into California when the system is peaking in order to maintain grid reliability."[4] However, the proposed must-flow requirement fails to meet this goal. It will not result in any additional flows into California during any hours that the transmission facilities are already at their maximum import limits. Data from 2018 on CAISO day-ahead imports at COB and NOB shows these interties were at their maximum import limits during approximately 40% of the proposed must-flow hours.[5] Stated differently, there will be a large

[3] Proposed Decision at 8-9, 13 (Conclusion of Law 2), and 14 (Ordering Paragraph 2). Powerex further notes that the wording of the Proposed Decision appears to leave open the possibility that the Commission may view the "must deliver" obligation as applying to all hours of the contract (e.g., "While RA import contracts should consist of energy flowing at all times covered by the contract, we find that 'firm' energy should encompass energy delivery, at a minimum, during the Availability Assessment Hour (AAH) window…." Proposed Decision at 8-9 (emphasis added).

[4] Proposed Decision at 8.

[5] *Source:* CAISO OASIS. In 2018, the day-ahead shadow price for the MALIN500 constraint was negative in 511 out of 1,255 proposed must-flow hours (41%); the day-ahead shadow price for the NOB_ITC constraint was negative in 449 out of 1,255 proposed must-flow hours (36%).

number of hours in which the proposed must-flow requirement will not result in any additional energy delivered to the CAISO grid. Thus it will neither improve reliability nor lower day-ahead energy prices at CAISO load locations. Rather, it will simply create or exacerbate congestion at major interties into the CAISO grid.

Furthermore, even when there is import capability available at an intertie to accommodate additional energy imports, the Proposed Decision's must-flow requirement would often expose genuine import Resource Adequacy sellers to significant risk that the CAISO day-ahead price received for their energy deliveries will be less than the cost of supplying that energy. The Commission can approximate the potential financial losses for genuine import Resource Adequacy suppliers from Pacific Northwest hydro resources by comparing 1) CAISO day-ahead market prices at COB or at NOB from 2018 during the proposed must-flow hours; and 2) CAISO's recently-filed Default Energy Bid for a hydro resource with one month of storage located in the Northwest, plus applicable transmission losses.

For entities with hydro resources in the Northwest, the Proposed Decision would result in an external hydro resource being forced to deliver energy at a price below its Default Energy Bid in approximately 70% of the proposed must-flow hours.[6]

	COB	NOB
Total Hours (HE17-21)	1,255	1,255
of which uneconomic	877	897
%	*70%*	*71%*
Average loss when uneconomic ($/MWh)	($32.13)	($28.39)
Annual loss when uneconomic ($, for 1 MW)	($28,178)	($25,466)
$/kW-mo	**($2.35)**	**($2.12)**

[6] A similar outcome is observed when testing whether deliveries would be economic from a hypothetical flexible natural gas-fired resource with no start-up costs and a heat rate of 15,000 Btu/kWh. Such a resource would have been forced to deliver energy to COB or NOB at a price below its estimated variable cost in approximately 56% of the proposed must-flow hours during 2018.

Analysis based on 2018 data for HE17-21 on weekdays excluding U.S. federal holidays. Uneconomic hours are hours in which the CAISO day-ahead Locational Marginal Price at Malin_5_N101 (COB) or SylmarDC_2_N501 (NOB) is less than the CAISO's proposed Hydro DEB for a resource with 1 month of storage and a default hub of Mid-C, minus losses.

The actual cost of these uneconomic deliveries may be significantly higher for at least two reasons. First, the above estimate assumes a hydro resource with relatively limited storage, but the potential losses for resources with longer-term storage will generally be greater as their marginal costs are generally higher. Second, the above estimate is also based on historical CAISO day-ahead market prices at COB and at NOB from 2018 when the proposed must-flow requirement did not apply. Adding significant quantities of must-flow energy schedules can cause significant additional import congestion and lower the CAISO day-ahead market price paid for that energy at the applicable import location. This can both increase the number of uneconomic hours as well as the magnitude of the losses from delivering energy during those uneconomic hours.

B. The Proposed Decision's Requirement for Uneconomic Delivery Will Have Significant Unintended Adverse Consequences for Ratepayers

Under the Proposed Decision, jurisdictional LSEs could only include import Resource Adequacy contracts in their submissions to the Commission if those contracts provided for actual delivery of energy during the specified must-flow hours. As shown above, this must-flow requirement can be expected to entail large financial losses for sellers, with significant risk those losses could grow. There are at least six distinct and adverse consequences that would flow from this requirement and would collectively cause significant harm to California ratepayers by creating new barriers, risks, and costs to contracting for import Resource Adequacy with sellers that have genuine physical supply and the ability to reliably deliver energy to California.

1. Existing Contracts Will No Longer Be Eligible to Satisfy Resource Adequacy Requirements

California LSEs with executed import Resource Adequacy contracts that do not contain a must-flow provision will be unable to use those contracts to satisfy their 2020 Resource

Adequacy requirements. The affected California LSEs would be required to enter into new Resource Adequacy contracts that do qualify, incurring additional costs. Depending on the specific language contained in the existing (but no-longer-eligible) contracts, the LSEs may renegotiate or terminate the existing contract; however, to the extent this does not occur, the California LSEs will face costs for both the new contracts and the disallowed contracts, with the duplicate costs likely to be ultimately passed on to their ratepayers.

2. Import Resource Adequacy Is Likely to Be Less Available and Will Cost More

The Proposed Decision can be expected both to increase the cost of import Resource Adequacy contracts to California LSEs and also to reduce the willingness of suppliers to enter into import Resource Adequacy contracts in the first place. Thus, the Proposed Decision's must-flow requirement will likely increase the cost of import Resource Adequacy capacity paid by California ratepayers.

As shown above, the proposed must-flow requirement can be expected to lead to financial losses of more than $2/kW-month: a cost that should be expected to be reflected in the price paid by California ratepayers for import Resource Adequacy. This implies additional costs to California ratepayers of approximately $25 million per year for every 1,000 MW of import Resource Adequacy affected by the must-flow requirement. Given Commission staff's analysis indicating a need to increase import Resource Adequacy to nearly 9,000 MW or more by 2021, the costs of the must-flow requirement are potentially very substantial.

Moreover, the above calculation is based on 2018 data, and does not reflect the significant increase in congestion that will likely result from adding large quantities of must-flow energy schedules. The Proposed Decision's must-flow requirement therefore creates large uncertainty and risks about the level of economic losses that will be incurred by the delivering party. This risk can be expected to discourage entities from selling import Resource Adequacy altogether, while the entities willing to enter into such contracts can be expected to reflect that

risk in the pricing of their offers to enter into import Resource Adequacy contracts. In both cases, ratepayers will bear the additional costs.

3. Must-Flow Deliveries Will Increase Congestion on CAISO Interties

Transmission constraints limit additional must-flow energy that can actually be injected into the CAISO grid. As discussed above, the intertie delivery points at COB and NOB in 2018 were already full in approximately 40% of the proposed must-flow hours. In such circumstances, any additional uneconomic must-flow deliveries would supply no additional energy to serve California ratepayers. Instead, they would merely displace deliveries from other external resources delivering to the same import location. When transmission limits result in must-flow deliveries displacing other external supply rather than increasing aggregate energy flows into the CAISO grid, there is no reduction in energy prices at load locations within California, but simply greater congestion charges at CAISO's interties. And as the volume of must-flow deliveries increases, the number of congested hours will only increase.

4. Must-Flow Requirements Will Lead to the Operation of Higher-Cost and Higher-Emitting Resources

The Proposed Decision will likely result in the dispatch and operation of physical resources outside of California in a highly inefficient manner. Reflecting this concern, a majority of stakeholders described the imposition of an "actual delivery" requirement as fundamentally problematic.[7]

[7] *See, e.g.*, CAISO Comments at 2 (July 19, 2019) ("The CAISO does not believe [RA] import contracts need to include terms for actual energy delivery absent a CAISO market award. Actual energy delivery needs should be determined by the CAISO market rather than pre-determined by [must-take] contract terms that ... reduce the flexibility of the system resources needed to operate the grid."); DMM Comments at 7(July 19, 2019) ("DMM urges the CPUC to avoid RA import requirements that could increase the amount of self-scheduled imports."); SDG&E Comments at 7-8 (July 19, 2019) (identifying the proposal as "ill-conceived" – a requirement that "would materially interfere with the efficient operation of the CAISO energy markets, increase costs for customers, and do little or nothing to ensure supply reliability"); NRG Comments at 4-5 (July 19, 2019) (characterizing an "actual delivery" requirement as "both operationally and financially problematic."); Public Generating Pool Reply Comments at 2 (July 26, 2019) ("Requiring RA import contracts to include actual delivery and deem bidding-only obligations insufficient for RA is not necessary to deter speculative contracts nor to ensure the integrity of the RA program considering the enhancements being proposed by the CAISO. Further, such a requirement could compromise the efficiency of the power system") (July 26, 2019); BPA Comments at 2 (July 19, 2019)

For example, an entity that owns a natural gas-fired generator in the Northwest may sell import Resource Adequacy to a California LSE for a calendar year. Under the Proposed Decision, the seller will be required to make deliveries during the must-flow hours. During the spring season, when the Northwest typically experiences very high levels of hydro output and may even need to curtail certain renewable resource production, it makes no sense to operate a natural gas generator with higher costs and greenhouse gas emissions in lieu of other more economic available clean resources. Similarly, the Proposed Decision could cause the dispatch of an energy-limited hydroelectric generator with long-term storage, depleting limited water that could have been conserved for production in a later period when it has greater value.

Arguably, the sellers of import Resource Adequacy contracts could attempt to procure alternative supply to meet their must-flow obligation (rather than dispatching their own resource). However, this relies on each seller being able to successfully find and negotiate a purchase of energy from the most economic resource available across the region during each and every must-flow hour, and to successfully secure transmission rights and arrange delivery from the applicable resource to the CAISO grid.

5. The Must-Flow Requirement Raises Legal Concerns

The requirement to self-schedule or otherwise ensure deliveries to the CAISO grid will have inevitable ramifications for the wholesale energy prices determined under the CAISO's tariff. In particular, the Proposed Decision's must-flow requirement will replace CAISO's economic dispatch of bids and offers with the must-flow deliveries from whichever seller was selected to contract with a California LSE. These uneconomic deliveries will inflate congestion charges and depress energy prices at CAISO's interties.

Additionally, it is unclear whether resources located inside the CAISO grid will be subject to requirements that are comparable to the proposed must-flow requirement for external sellers.

("the Commission decisions should not require RA import contracts to include actual delivery of firm energy with firm transmission and should not deem a bidding obligation insufficient to meet RA rules.").

Accordingly, the must-flow requirement raises significant concerns about the legality of the Proposed Decision.

6. The Must-Flow Requirement Will Block Economic Transfers and Impede Greater Regional Coordination

While the Proposed Rule's appropriate focus is on trying to ensure the reliability of the California grid, the actions of the Commission and CAISO regarding Resource Adequacy are also of great importance as entities throughout the West explore efforts at greater regional coordination of their respective electricity grids. One of the potential benefits frequently cited for a regionalized grid is for transfers between participating entities to be based on the optimized economic dispatch of resources across an expanded geographic footprint. The ability to engage in economically-driven transfers with the California grid would be severely limited if a large and growing quantity of import Resource Adequacy is *required* to flow in peak hours each day, regardless of each resource's energy costs relative to alternative available resources participating in the market.

III. THE PROPOSED DECISION WILL NOT MEANINGFULLY ADDRESS RESOURCE ADEQUACY REFLECTING PAPER CAPACITY

At the same time that the Proposed Decision inhibits the contracting activity that is most able to meet California's reliability needs, the Proposed Decision will be largely ineffective at eliminating Resource Adequacy contracts from sellers speculating on the availability of short-term energy supply.

Under the Proposed Decision, a speculative seller will still be able to sell import Resource Adequacy to a California LSE and support this commitment with nothing more than an expectation of purchasing energy in the short-term bilateral markets during each day of the contract. This is because nothing in the Proposed Decision requires that the seller demonstrate or attest that it actually has procured sufficient physical supply *on a forward basis*. The Proposed Decision merely requires that the seller deliver energy in the defined must-flow hours. It will thus still be possible for sellers to enter into import Resource Adequacy contracts without

committing real physical capacity on a forward basis, but instead speculating that they will be able to acquire any necessary energy in the short-term bilateral markets.

The Proposed Decision also declines to affirmatively require import Resource Adequacy contracts to be supported by investments in firm transmission service necessary for delivery. Instead, the Proposed Decision affirms previously-adopted requirements, which, absent any changes to the CAISO tariff, can be satisfied merely by specifying the CAISO intertie *location* where the contracted capacity will be made available.[8]

The Proposed Decision therefore does not directly require the commitment of physical capacity or transmission service well in advance of when the CAISO may need it. Consequently, the Proposed Decision does very little, if anything, to increase the reliability of the CAISO grid, or to reduce the risk of service interruptions to California ratepayers, as it still leaves the grid completely exposed to the voluntary availability of surplus energy in the daily and hourly bilateral markets.

Furthermore, the penalties under the CAISO's Resource Adequacy Availability Incentive Mechanism likely cannot ensure that speculative sellers deliver when it matters most. The penalties appropriately include tolerance levels for non-performance, in recognition that all forward commitments are subject to some risk of non-performance due to outages or de-rates of generating units or transmission facilities. But these same tolerances enable a speculative supplier to fail to deliver during the few but critical hours when there are tight conditions across the Western grid and the CAISO grid is in greatest need of the Resource Adequacy capacity. Whereas resource and transmission outages are typically random events, delivery failures by speculative suppliers will occur *precisely* when Western grid conditions are tightest, and hence when the consequences of non-delivery are greatest.

[8] Proposed Decision at 11, citing requirements adopted in D.04-10-035 ("Qualifying capacity for import contracts is the contract amount, provided the contract: … (3a) is delivered on transmission that cannot be curtailed in operating hours for economic reasons or bumped by higher priority transmission ***or*** (3b) specifies firm delivery point (i.e., not seller's choice)" (emphasis added).

IV. IMPORT RESOURCE ADEQUACY FROM PAPER CAPACITY THREATENS THE RELIABILITY OF CALIFORNIA'S GRID AND NEEDS TO BE COMPREHENSIVELY ADDRESSED

While the Commission should not adopt the Proposed Decision, robust measures are needed to address critical gaps in the Resource Adequacy program rules that enable parties to enter into import Resource Adequacy contracts without committing genuine physical generating capacity and obtaining necessary transmission rights to ensure delivery of energy to the CAISO grid when needed. Most problematically, the current rules enable two types of paper capacity arrangements:

1) **Paper capacity with no intention of energy delivery**, where the seller relies on submitting day-ahead energy bids at or near the price cap to avoid being called upon to deliver energy to the CAISO grid that it does not have; and
2) **Paper capacity reflecting speculation on availability of voluntary short-term energy supply**, where the seller relies on successfully purchasing energy in the short-term bilateral markets to meet any deliveries that are required.

While the participation of paper capacity in the Resource Adequacy program may historically have posed limited risks and economic consequences, the continued participation of such arrangements is now clearly presenting growing reliability risks to the CAISO grid and becoming significantly more harmful to California ratepayers.

Commission staff, CAISO and other parties have documented that, unlike years past, import Resource Adequacy contracts representing paper capacity now expose the CAISO grid and California ratepayers to significant reliability risks and growing economic consequences. For example, resource retirements in California have made supply conditions tighter, increasing reliance on imports from external resources. At the same time, the entire Western grid is experiencing a significant tightening of supply conditions as resource retirements have not been limited to California. Tightening Western grid conditions make it increasingly risky for any entity in the West—not just the CAISO—to rely on last-minute energy purchases to meet its reliability needs. In other words, the "safety net" of generally-available uncommitted surplus

energy that previously muted the economic and reliability consequences of paper capacity Resource Adequacy arrangements no longer exists. In today's environment, continued reliance on Resource Adequacy arrangements that merely reflect paper capacity undermines the reliability of the CAISO grid and causes significant economic harm to California ratepayers.

A. Paper Capacity Undermines Reliability

Reliability is undermined by the participation of paper capacity in the Resource Adequacy program since it does not result in the forward commitment of real physical resources that will be available to the CAISO to reliably operate the grid. When the CAISO seeks to obtain energy from Resource Adequacy contracts reflecting paper capacity, it is exposed to the risk that the seller will be either unwilling or unsuccessful in procuring last-minute energy supply in the external bilateral markets and/or in procuring the transmission service necessary to deliver the energy to a CAISO intertie.

B. Paper Capacity Reduces Economic Efficiency of the CAISO Day-Ahead Market

Efficiency in the CAISO day-ahead market suffers when sellers of paper capacity Resource Adequacy contracts consistently submit energy bids at very high prices to meet their Resource Adequacy must-offer obligations while avoiding being dispatched for energy that they don't have. This stands in stark contrast to Resource Adequacy contracts supported by real physical supply. Such contracts generally result in sellers submitting energy bids at competitive prices to try to maximize their likelihood of being dispatched whenever market prices are economic relative to their estimates of the marginal costs of the resources actually held aside to fulfil the must-offer obligation.

C. Paper Capacity Harms California Ratepayers

California ratepayers are harmed, as they fund the payments to sellers of paper capacity Resource Adequacy contracts but receive no associated reliability benefits in return. This harm is increasing as the cost of Resource Adequacy contracts rise (because of the tightening of supply

throughout the Western grid) and as the quantity of import Resource Adequacy procurement increases (because of tightening supply specifically within the CAISO area).

D. Paper Capacity "Crowds Out" Real External Physical Supply From Providing Import Resource Adequacy Capacity

Real external physical supply is "crowded out" from providing import Resource Adequacy capacity in several respects. As an initial matter, entities that are able to commit genuine physical capacity on a forward basis and who have invested in transmission rights for delivery to the CAISO grid face direct costs and opportunity costs that paper capacity sellers do not. As a result, those entities that are selling paper capacity – who avoid the costs associated with physical capacity and transmission rights – are able to undercut genuine physical suppliers on price. Suppliers of paper capacity not only reduce the physical import capability available to support Resource Adequacy contracts with genuine physical supply, but also provide the erroneous appearance that LSEs have committed sufficient physical capacity to meet system needs.

The adverse reliability and economic consequences of both types of paper capacity Resource Adequacy arrangements are summarized in the table below, which contrasts them to the positive benefits of Resource Adequacy supported by the forward commitment of real physical capacity.

	Contribution To Reliability	Typical Day Ahead Offer Price Behavior	Impact To Day Ahead Market Prices
Paper Capacity: Seller Has No Delivery Intention	**None**: Never Delivers	Energy consistently offered at or near bid price cap	Increases day ahead market prices by displacing Import RA contracts backed by real physical supply from sellers that would have likely offered energy supply in day-ahead supply at seller's estimated marginal opportunity cost
Paper Capacity: Seller Speculates On Short Term Supply Availability	**Limited, if any**: Delivery failures during tight conditions in western markets Deliveries that do occur would generally occur anyway, with or without RA contract (either by seller or alternate supplier, based on short-term market economics)	Energy often offered at seller's estimate of marginal opportunity cost, but may be offered at or near bid cap when seller can't find supply in short-term markets	Increases day ahead market prices during hours that seller is unable to find supply as seller either (i) submits offers at or near offer price cap or (ii) fails to deliver on its energy market awards, raising real-time prices and, in turn, day-ahead prices

Physical Capacity With Deliverability	**Full Contribution**: Capacity and energy deliveries are generally incremental, as capacity and energy deliveries would likely be committed to other regions as forward capacity or forward firm energy sales, particularly in critical peak hours	Energy consistently offered at seller's marginal opportunity cost (since capacity is already committed, seller is strongly incented to offer energy at prices that result in deliveries whenever economic)	Increases competition in day ahead market through submission of physical supply offers at seller's estimate of marginal opportunity cost

E. The Commission Should Develop Targeted Measures That More Directly Eliminate Import Resource Adequacy Contracts Reflecting Paper Capacity

The Proposed Decision correctly aims to ensure that import Resource Adequacy contributes meaningfully to supporting the reliable operation of the California grid. However, the particular approach in the Proposed Decision will not achieve this objective, will significantly increase costs to California ratepayers, and will be highly disruptive to efforts of California LSEs to secure import Resource Adequacy capacity for 2020 and beyond.

Developing an appropriate set of targeted rules and requirements that achieve this objective will require a coordinated approach between the Commission and CAISO, as the necessary measures will likely include changes to both the Commission's requirements and also the CAISO tariff. Powerex is very committed to working with the Commission and CAISO in their respective proceedings and workshops on this critical issue, and is hopeful that efficient and effective targeted measures can be developed in a timely manner.

For the foregoing reasons, the Commission should not adopt the Proposed Decision and instead work with the CAISO to implement more effective and direct measures that can ensure import Resource Adequacy represents real physical resources committed in advance to help meet CAISO's needs.

Respectfully submitted,

/s/

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APPENDIX A

Powerex does not support the adoption of the Proposed Decision. Thus, Powerex does not offer specific revisions to the Proposed Decision.