

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE
STATE OF CALIFORNIA**

Order Instituting Rulemaking to Consider)
Annual Revisions to Local Procurement)
Obligations and Refinements to the Resource) Rulemaking 08-01-025
Adequacy Program) (Filed January 31, 2008)
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**RESPONSE OF THE CALIFORNIA INDEPENDENT
SYSTEM OPERATOR CORPORATION TO
APPLICATION FOR REHEARING OF DECISION D. 09-06-028**

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August 6, 2009

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Pursuant to Rule 16.1 of the California Public Utilities Commission (“Commission”) Rules of Practice and Procedure, the California Independent System Operator Corporation (“CAISO”) respectfully submits its response to the Application for Rehearing of Decision D. 09-06-028 (“The Decision”) filed by The Utility Reform Network (“TURN”), California Wind Energy Association (“CalWEA”), American Wind Energy Association (“AWEA”) and the Solar Alliance (referred to collectively as “Applicants”).

Among other things, The Decision adopted the recommendation set forth in a Joint Proposal submitted by the CAISO, Southern California Edison Company and San Diego Gas and Electric Company that an exceedance methodology be used to calculate the Qualifying Capacity (“QC”) of intermittent resources. The Decision approved the use of a 70% exceedance methodology. The Decision also adopted the following two modifications to the Joint Proposal’s exceedance methodology: (1) aggregating the diversity benefits of both solar and wind generation which was a concept recommended by CalWEA, AWEA and the Solar Alliance; and (2) aggregating intermittent resources on a statewide basis for purposes of determining the diversity benefit as recommended by the Energy Division Staff.

The Decision correctly noted that “there is little dispute regarding the contention that the current counting rule overstates the availability of wind resources during peak periods” and that “parties have not contested the findings that there is a negative correlation between wind production and loads on the CAISO controlled grid, and that wind production is extremely variable and difficult to predict in advance of the hour of

interest.”¹ The Decision appropriately found that the Joint Proposal, as modified, best meets the objectives of the RA program.² On the other hand, given the demonstrated extreme variability and unpredictability of wind production -- a point that was not disputed -- the current averaging methodology is inaccurate because it produces QC values that overstate, by a significant amount, the actual dependable RA capacity available to the CAISO during conditions in which monthly peaks are experienced.³ On the other hand, the Commission found that the Joint Proposal, as modified, will calculate more accurate QC values for intermittent resources that the CAISO rely on to serve peak load, thereby meeting the RA program’s reliability objective and mitigating backstop procurement by the CAISO.⁴

The aforementioned findings justifying the Commission’s approval of the Joint Proposal, as modified, are supported by overwhelming evidence submitted in the proceeding below as well as by reasoned decision making. Applicants essentially re-hash and re-litigate the same arguments they made in the proceeding below and which were rejected by both the ALJ and the Commission. They have not identified any legal error in the decision. Further, Applicants’ arguments against The Decision ignore the critical issue here -- what is a more accurate methodology for counting intermittent resources under the RA paradigm. The exceedance approach is a clear improvement over the existing methodology and is consistent both with how the CAISO operates the grid and with the fundamental purpose of the RA program to ensure there is sufficient available capacity to meet peak loads. Applicants offer no evidence in their filing to dispute the ALJ’s and the Commission’s key findings that (1) the current methodology overstates the availability of intermittent resources during peak periods, (2) there is a negative correlation between wind production and load, and (3) wind production is highly unpredictable. For the most part, Applicants make arguments that address tangential issues and do not offer any evidence that would support reversal of the Commission’s

¹ The Decision at 51.

² *Id.* As the CPUC noted, “providing assurance of dependable resource availability to the CAISO at peak demand periods is and should be the primary focus of the RA program not just another aspect of it.” *Id.* at 50. The CPUC also stated that “the adequacy of physical generation to meet peak demand plus reserves is a key objective for the RA program.” *Id.*

³ *Id.* at 51.

⁴ *Id.*

decision on the intermittent resource counting issue. Accordingly, the Commission should deny the Application for Rehearing of Decision D. 09-06-028.

I. APPLICANTS' CLAIM THAT THE EXCEEDANCE METHODOLOGY ADOPTED IN THE DECISION WILL HAVE A \$1.5 TO \$3.0 BILLION DOLLAR IMPACT ON RATEPAYERS IS BASELESS

Citing prior filings in this proceeding, Applicants' claim that as a result of derating the state's wind and solar resources due to implementation of a new exceedance counting methodology, additional gas-fired resources will have to be built to offset the capacity differential, and that will cost ratepayers between \$1.5 billion and \$3.0 billion (based on the Cost of New Entry of new gas-fired peaker units).⁵ Application for Rehearing at 3. Applicants also cite to DRA's similarly incorrect claim that if the QCs of wind resources are reduced, 1,200 MW of new capacity will need to be constructed to offset the decreased QC values at a total cost of \$1.2 billion, or \$180 million on an annual basis. *Id.* These arguments are baseless.

First, the Decision does not increase the total MW quantity LSEs will have to procure under the Resource Adequacy program. LSEs will provide the same level of RA capacity that CAISO can rely on to serve California consumers. The Decision merely shifts the procurement of the "derated" capacity to other unit(s) which would provide the differential between the current intermittent QC values and any reduced QC values. *No "additive" MW will need to be procured as a result of implementation of the new counting methodology.* Thus, the claim that the new counting methodology will result in significant *additional* RA procurement is simply incorrect.

⁵ Applicants' cost numbers are based on claims in the February 27, 2009 Reply Comments filed by CalWEA, AWEA, and the Solar Alliance (p.8) that adoption of the proposed exceedance methodology would require the procurement of an additional 1,500-2,000 MW of new generation at a cost of \$1,00 to \$1,500 per k/W based on the cost of new entry of a new gas-fired peaker. CalWEA/AWEA/Solar Alliance Reply Comments at 8. In their Opening Comments on the Proposed Decision of ALJ Wetzell (p.8), CalWEA, AWEA, the Solar Alliance, and the Large Scale Solar Association claimed that 2,100 MW of new capacity would be required if the exceedance methodology were adopted. In their February 17, 2009 Opening Comments and January 15, 2009 Proposal, they claimed that adoption of the CAISO's exceedance proposal would require 2,000-2,500 MW of new gas-fired peaking capacity at a cost of \$1,00 to \$1,500 per k/W (for a total cost of \$2.0-\$3.75 billion). Opening Comments of The California Wind Energy Association, American Wind Energy Association, and the Solar Alliance at 14, February 17, 2009 ("CalWEA/AWEA/Solar Alliance Opening Comments"); *see also*, Proposal From the California Wind Energy Association and American Wind Energy Association, at 13, January 15, 2009 ("CalWEA/AWEA January 15 Proposal")

Second, the counting methodology adopted in The Decision will not require the construction of new generation capacity in order to offset the capacity that has been derated as a result of use of an exceedance methodology. Analysis conducted during the proceeding below shows that current QC methodology counts approximately 660 MWs of wind during the month of May, and the Joint Proposal's exceedance methodology would still allow approximately 290 MWs of installed wind capacity to count for RA purposes during May and that number will increase as a result of incorporating the diversity benefit modifications adopted in The Decision.⁶ There are less than 400 MW (or less) of capacity that would need to be replaced as a result of adoption of the new counting methodology. Because there is a substantial surplus of capacity that is not RA,⁷ to the extent intermittent resources count less than they do today as the result of the new more realistic counting methodology, any difference can more than be made-up by procuring from existing resources and through Demand Response. There will not be a need to construct additional gas-fired capacity as Applicants claim. The CAISO also notes that as new wind and solar resources come on-line in order to meet RPS standards, they too will be eligible to provide RA capacity that can meet the capacity differential resulting from the changed counting methodology.⁸ *In any event, no new generation will*

⁶ The analysis shows the following results for the other summer months: (1) 675 MWs under the current methodology in June and 334 MWs under the exceedance methodology; (2) 531 MWs under the current methodology in July and 150 MWs under the Joint Proposal; (3) 412 MWs under the current methodology for August and 150 MWs under the Joint Proposal; and (4) 451 MWs under the current methodology for September and 66 MWs under the Joint Proposal. *See* Supplemental Information To Joint Proposal Submitted on January 15, 2009, filed February 11, 2009. These numbers do not take into account the increased QCs resulting from the diversity benefit modifications adopted by the Commission.

⁷ The CAISO's 2009 Summer Assessment (P.4) shows a 32.6% planning reserve margin – 14,719 MW. The RA program provides for a 15% reserve margin.

⁸ Applicants erroneously claim that the costs will be higher in the future because even more new generation will be needed to replace derated intermittent resource RA capacity in order to meet the 2020 target of 33% renewables. Application for Rehearing at 3. This argument reflects a fundamental misunderstanding of the basis for RA capacity requirements. RA capacity requirements are based on annual load forecasts; they are not based on the amount of renewable generation that will be online. Stated differently, the mere increase in renewable generation to meet RPS standards -- does not and cannot -- increase total RA capacity requirements. Indeed, the additional renewable capacity that is constructed in the future to meet RPS requirements will be able to count toward fulfilling RA capacity requirements and, along with the significant surplus in existing capacity, such quantities will easily offset the "derating differential" that results from the new counting methodology. Applicants also ignore ISO analyses showing that that new gas-fired resources may need to be built anyway to ensure the effective integration of the significant new quantities of renewable resources that are expected to be connected to the grid in the future (*e.g.* to provide needed ramping and quick-start capabilities. *See* CAISO Phase II Comments at 35-36. This need will arise regardless of any change in the RA counting methodology for intermittent resources. In

be required as a result of the change in counting methodology. Given the surplus, procurement of any replacement capacity should result in competitive prices for existing resources.

In a related cost impact issue, Applicants take issue with the Commission's finding that if the existing counting rule does not result in sufficient RA capacity being available during peak periods, the CAISO will incur costs under its backstop procurement mechanisms to offset the shortfall in wind and solar output. Application for rehearing at 3-4. Applicants object to the fact that there was no estimate as to the expected amount and total cost of such backstop capacity. *Id.* at 4.

Applicants ignore the fact that the CAISO implemented a brand new market design on April 1, 2009 with new backstop capacity mechanisms, namely the Residual Unit Commitment ("RUC") procedure which results in a daily capacity payment, the Exceptional Dispatch process which results in a monthly capacity payment for a single Exceptional Dispatch, and the Interim Capacity Procurement mechanism ("ICPM") which can result in capacity payment for a month or longer. Even if the CAISO has to commit thermal RA units when intermittent resources are not available, the CAISO will have to pay such units their Start-Up and Minimum Load costs which can be considerable. Applicants also ignore the undisputed facts in the record regarding the extreme variability of wind production and the difficulty in predicting wind production in advance of an hour-ahead basis. Under these circumstances, it is difficult to see how the CAISO or the Commission could make any kind of reasonable estimate regarding the anticipated extent (and cost) of the CAISO's backstop procurement. Further, any estimate would be speculative because no one can predict outages, hydro conditions, the availability of imports, or future peak load conditions.

The only certainty is that any CAISO backstop procurement costs will be additive to the capacity payments that will have already been made to the intermittent RA resources that were not available when needed. This will result in duplicative capacity payments being made for the provision of the same service. That is poor RA policy and was found to be unacceptable by The Decision.

any event, the change in the counting methodology does not itself require the construction of new gas-fired generation.

II. THE EXCEEDANCE METHODOLOGY IS CONSISTENT WITH INTERMITTENT RESOURCE COUNTING METHODOLOGIES USED IN OTHER JURISDICTIONS AND IS APPROPRIATE GIVEN THE DESIGN OF THE RA PROGRAM AND THE PARTICULAR CONDITIONS THAT EXIST IN CALIFORNIA

Applicants object to the Commission's failure to address the intermittent resource counting practices being employed in other jurisdictions. Citing to Attachment A of the CalWEA/AWEA January 15 Proposal, Applicants claim that the record in this case shows that other control areas use counting rules similar to the existing counting rule, including ERCOT, and that no control area in the US uses an exceedance method for determining the capacity values of intermittent resources. Application for Rehearing at 10. Applicants further claim that the record contains significant documentation showing that the Effective Load Carrying Capacity ("ELCC") approach is the industry's state of the art method for evaluation the RA value of intermittent resources.⁹ *Id.* at 11. As one basis for this claim, Applicants stressed in the proceeding below how ERCOT -- the balancing area authority with the most installed wind capacity -- has moved to use of an ELCC methodology.¹⁰ Applicants also note that the Commission adopted the use of the CEC's ELCC results in the RPS program. Applicants claim that the Commission failed to reconcile its rejection of the ELCC approach for RA counting purposes with its use of ELCC for RPS purposes.

There is no basis for the claim that an ELCC approach is the "best practice" for counting intermittent resources for an RA program or that an exceedance approach is inconsistent with the methodologies that other grid operators are using. Attachment A to CalWEA's and AWEA's January 15 Proposal, to which Applicants refer, shows that grid operators are using a variety of different methodologies to "count" intermittent

⁹ In a footnote, Applicants complain about the ALJ's decision not to allow into the record a report prepared by the Integration of Variable Generation Task Force. As the CAISO thoroughly explained in its June 8, 2009 Response to Motion for Expedited Consideration of May 27 ALJ's Ruling, the task force report was appropriately kept out of the record. The CAISO also demonstrated how the report did not provide any basis for adoption of an intermittent resource counting methodology different than the one adopted by the ALJ, and now by the Commission.

¹⁰ CalWEA/AWEA/Solar Alliance Opening Comments on Proposed Decision at 8, June 4, 2009; CalWEA/AWEA/Solar Alliance Opening Comments at 9, February 17, 2009.

resources including exceedance, ELCC, averaging, probabilistic, and other approaches.¹¹ Therefore, it is clear that there is no single “best practice” in use. Rather, grid operators use methodologies that work best given (1) the particular conditions they face (*e.g.* the level of installed wind capacity, the correlation between wind production and load on their systems, and the level of wind variability and unpredictability on their systems), and (2) the particular purpose of their analysis (*e.g.*, RA program requirements, planning, reporting, operations).¹² Just because some jurisdictions use counting methodologies that are different than the methodology adopted by the Commission does not mean that such methodologies are appropriate for California. For example, the eastern ISOs do not have the levels of wind penetration and aggressive RPS standards that are present in California. Also, they do not have backstop procurement mechanisms that could result in duplicative capacity payments when intermittent resources are not available to meet peak loads.

The Commission must choose the counting methodology that best supports the goals of its RA program, meets the CAISO’s operational needs, and reflects the actual performance characteristics of intermittent resources in California. As discussed in The Decision, the following factors, among others support use of an exceedance methodology and not an averaging (or ELCC) methodology: (1) the RA program is based on meeting monthly peak needs and the key features of the program are designed based on peak demand; (2) the existing averaging methodology overstates the availability of wind resources during peak periods; (3) wind production in California is not positively correlated to load, is extremely variable, and is difficult to predict in advance of an hour-ahead timeframe; and (4) if intermittent resources are not available the CAISO may have to procure backstop resources which will result in duplicative capacity payments and unnecessary increased costs to ratepayers. Applicants offer no factual evidence to dispute the Commission’s findings on these key points.

CalWEA’s, AWEA’s and the Solar Alliance’s argument that ERCOT has now adopted use of ELCC is misleading. ERCOT is using ELCC *on a temporary basis* for the

¹¹ Attachment A to CalWEA/AWEA January 15 Proposal, “Determining the Capacity Value of Wind: An Updated Survey of Methods and Implementation” at 12-20 (June 2008) (“Attachment A Survey”).

¹² The Attachment A Survey shows that SPP (85%), IdaCorp (70%), and MAPP (median) use exceedance type approaches, and Public Service Company of New Mexico uses a probabilistic approach similar to exceedance to count intermittent resources.

sole purpose of calculating the system's reserve margin. The results of this study are reflected in an annual report that forecasts future demands and resources for the energy based markets run by ERCOT.¹³ ERCOT is not using ELCC for operational purposes or to determine capacity based RA obligations for LSEs. Indeed, to ensure resource adequacy on a daily basis, ERCOT uses the exceedance approach, not ELCC, to determine available wind capacity. In that regard, under both its current market design and future nodal market design, ERCOT determines how much additional capacity it will need to procure each day (under the current Replacement Reserve Service or the nodal market's Reliability Unit Commitment process) based on an 80% exceedance wind forecast.¹⁴ ERCOT has found that use of an 80% exceedance forecast for wind resources is necessary to ensure that it procures and commits sufficient additional resources each day to maintain reliability. ERCOT's use of the exceedance methodology to count wind in order to support reliable grid operations and meet expected loads is consistent with the exceedance approach adopted in The Decision.

The fact that the Commission used the CEC's ELCC method as a means to help LSEs evaluate the bids of renewable resources under the RPS program does dictate how intermittent resources should be counted for RA purposes. ELCC, which calculates capacity values by looking at wind performance every hour of every day, is fundamentally at odds with both the basic purpose of the RA program, *i.e.*, to meet peak reliability needs, as well as the key elements of the RA program which are designed based on peak hours. Adoption of ELCC would turn the RA paradigm upside down. No party offered evidence to demonstrate that the fundamental underpinnings of the RA program should be abandoned. ELCC is not appropriate for an RA program that is based on meeting monthly peak demand conditions. By looking at production during every hour of every day, an ELCC approach ensures that intermittent resources will be over counted

¹³ The Attachment A Survey notes ERCOT concluded that "the ELCC methodology should be used until better (*i.e.* more) actual performance data becomes available to make an accurate determination of the true capacity value of wind in ERCOT. Attachment A Survey at 17. *see also*, Electric Reliability Council of Texas Generation Adequacy Task Force, Recommended Changes to the ERCOT Reserve Margin calculation Methodology, March 7, 2007. http://www.ercot.com/meetings/tac/keydocs/2007/0330/11._Draft_GATF_Report_to_TAC_-_Revision_2.doc

¹⁴ CAISO Reply Comments on Proposed Decision at 2, June 9, 2009, citing ERCOT Protocols, Section 4.4.15. <http://www.ercot.com/content/mktrules/protocos/current/04-060109.doc> ERCOT Nodal Protocols, Section 4.2.2 http://nodal.ercot.com/protocols/2009/05/04/04-050109_Nodal.doc

during peak periods. When these resources do not “show up” during peak periods, there will be potential reliability problems and increased costs as the result of the CAISO’s need to procure backstop capacity from other resources.

Finally, the CAISO notes that The Decision’s exceedance approach is comparable to the Commission’s approach for counting hydro resources under the RA program. That counting rule is based on the expectation that the resource will meet its RA capacity for a given month in four out of five years, *i.e.*, it applies an 80% exceedance factor. There is no reason why an exceedance approach should not also be applied to intermittent resources given they have use limitation characteristics comparable to those of hydro resources.

III. THE DECISION ADEQUATELY SUPPORTS THE NEED FOR A NEW COUNTING METHODOLOGY FOR INTERMITTENT RESOURCES

Applicants claim that the record does not contain any evidence showing that a change in the RA counting metric is necessary to achieve a specific measure of overall system reliability. Application for Rehearing at 7. They also argue that there is no need to change the RA counting rule now because there is currently a surplus of capacity. *Id.* at 15. Finally, Applicants state that there is no justification for use of a 70% exceedance factor and that the choice of that exceedance level was subjective. *Id.* at 7.

Applicants’ arguments miss the key issue here -- the current counting rule overstates the availability of wind resources during peak periods. Overwhelming evidence shows this too be the case, and Applicants do not dispute this fact -- nor can they.¹⁵ Accordingly, the overriding goal -- as recognized by both the ALJ and the Commission -- should be to implement a more accurate RA counting methodology for intermittent resources that better supports the RA program’s primary goal of ensuring that dependable resources will be available to the CAISO when needed during peak demand periods. As the Commission recognized in the Decision, the adopted exceedance methodology better supports that goal compared to the existing methodology.

¹⁵ See, e.g., CAISO Comments on the Proposed Decision at 2-3, June 4, 2009, CAISO Phase II Comments at 12-13, 24-26, February 17, 2009. CAISO Phase II Reply Comments at 14, February 27, 2009.

Applicants fail to acknowledge that an inaccurate counting methodology that understates the dependable availability of resources during peak periods could cause significant reliability problems during the times when the CAISO needs the resources most. Applicants do not consider this to be a problem because there is currently a surplus of capacity. Thus, they claim that there is no urgency to change the existing methodology and that it is acceptable to leave an indisputably inaccurate counting methodology in place. Yet, a counting method that does not acknowledge a very real need for available capacity is essentially suggesting that such capacity is not needed and therefore can be allowed to shut down. This is not only an untenable position, but also very dangerous from a system planning perspective. It is not acceptable to leave an unquestionably flawed methodology in place only to see effective resources that already exist removed from operation. The exceedance methodology addresses the flaws in the existing methodology, will produce more accurate peak period QCs for intermittent resources, and is ready for immediate implementation.

As indicated above, if intermittent RA capacity is not available when needed during peak (or other) periods, the CAISO will need to engage in backstop procurement, thereby resulting in duplicative capacity payments and unnecessary increased costs to ratepayers. These costs can be avoided by adopting a more accurate counting methodology. Applicants' argument essentially suggests that it is acceptable for certain RA resources to consistently "lean" on other resources when they do not perform during peak periods. Under these circumstances, such resources are being paid a capacity payment for a service they are not providing. The Commission should not countenance this concept as it constitutes a direct assault on the expectations, reliability benefits, and cost considerations that have been incorporated into the RA program, as well as considerations of fundamental fairness.

With respect to the issue of the specific exceedance level that should be used, the CAISO does not deny that there is some subjectivity in determining an ultimate exceedance level. However, there is some degree of subjectivity involved in every counting methodology for intermittent resources because they are not dispatchable, and their production is extremely variable and unpredictable.

There are a number of reasons why an initial exceedance level of 70% is both reasonable and fair to intermittent resources. By their own admission, CalWEA, AWEA and the Solar Alliance have indicated that a 50% exceedance level is comparable to an averaging methodology.¹⁶ In the record below, the CAISO clearly delineated why an averaging approach is inappropriate for wind resources whose production is extremely variable and unpredictable.¹⁷ The record also showed that the current counting methodology -- which is based on average availability -- greatly overstates the availability of intermittent resources during peak periods. As the Commission recognized in The Decision, there was little dispute on this fact. The Decision at 51. A 50% exceedance approach is inappropriate for similar reasons. Indeed, using a 50% exceedance level may be no more accurate than flipping a coin to determine whether a resource will be available or not to serve peak load. Reliability requires more than that. Given the extreme variability and unpredictability of wind resources, the foremost consideration should be identifying a dependable level of performance that can be expected so that reliability can be maintained and backstop procurement costs mitigated. The exceedance approach adopted by the Commission achieves this objective. It provides a high level of confidence that resources required to serve California during peak system demand will be available.

The Joint Proposal recommended an initial exceedance level of 70% that ultimately would be increased to 80%. An 80% exceedance level is essentially the same level used for hydro resources whose QC counting rule equates to the expectation that the resource will meet its RA capacity for a given month in four out of five years. For intermittent resources, the 80% exceedance factor equates to the expectation that the given resource will meet or exceed its RA capacity in four out of five peak load hours. The CAISO argued that there is no reason why intermittent resources should be treated more or less favorably than hydro resources for RA purposes given that the weather ultimately determines each of these resources' availability.

However, the CAISO recognized that some transition to an 80% exceedance methodology might be appropriate given that the change from an averaging methodology

¹⁶ CalWEA/AWEA/Solar Alliance Opening Comments at 8, February 17, 2009.

¹⁷ CAISO Phase II Comments at 23-25.

to an exceedance methodology. The CAISO suggested that an initial exceedance level of 70% recognizes that some transition may be appropriate to mitigate the impact of changing from an averaging approach to an exceedance approach. Also, a 70% exceedance level better reflects the dependable capacity of intermittent resources -- and provides significantly more reliability benefits -- than the averaging approach that is currently in place and which both the ALJ and the Commission found overstates the availability of intermittent resources during peak periods. Finally, as indicated above, other jurisdictions have used exceedance values in the 70% to 85% range. A 70% exceedance level is not unreasonable under these circumstances.

IV. THE FACT THAT NO QC VALUES FOR INDIVIDUAL RESOURCES WERE CALCULATED BASED ON THE MODIFICATION TO THE JOINT PROPOSAL DOES NOT RENDER THE DECISION LEGALLY FLAWED

Applicants suggest that The Decision is flawed because it does not indicate the exact impact that the adopted methodology would have on the QC values of individual intermittent resources. Application for Rehearing at 5-6. In that regard, The Decision modified the 70% exceedance methodology contained in the Joint Proposal to allow for a diversity adjustment based on the aggregate of wind and solar production for the entire state. Applicants object to the fact that the Commission did not know the exact impact that this particular modification would have on the QC results of the Joint Proposal. *Id.* Applicants suggest that under these circumstances, the Commission might not have an accurate understanding of the impact of the modification on the capacity values for wind and solar resources, as well as its impact on the RA program's reliability objectives and goal of mitigating backstop procurement.¹⁸ *Id.* at 6.

¹⁸ Applicants also claim that although the CEC circulated the comparative analyses of each party's proposals, TURN was unable to obtain timely access and was unable to verify the CEC's numbers. Application for Rehearing at 5. Applicants also state that the CEC data on the nameplate capacities of existing RA resources was suspect and needs further scrutiny. *Id.* Any flaws in the data are just that – data flaws. They are not flaws in the methodology itself. Indeed, any flaws would apply to all of the methodologies considered in the proceeding, including the existing counting methodology. Interestingly, despite claiming that there were flaws in the data, TURN stated that it “was able to reproduce most of the CEC's results either exactly or very closely.” TURN Comments on Proposed Decision at 4, June 4, 2009.

The CEC analyzed the QC impacts of the 70% exceedance methodology proposed in the Joint Proposal. The CEC did not analyze the impacts of the modification to the Joint Proposal to account for the aggregate diversity of wind and solar resources on a statewide basis. The CAISO submits that it was not necessary for the Commission to have the exact QC values resulting from this modification prior to making a decision. The modification does not materially change the underlying exceedance methodology that was approved; it merely “tweaks” that methodology to give recognition to the diversity benefits of wind and solar resources. The modification to the Joint Proposal adopted by the Commission can only increase the QC values of intermittent resources, it cannot lower them. The Commission had sufficient “baseline” information to make a decision on adopting an exceedance methodology because it knew the QC impacts resulting from the Joint Proposal and the shift from an averaging approach to an exceedance approach. The QC values could not go any lower than those numbers. Also, because any diversity benefit is based on actual production, there should not be any material impact on reliability or backstop procurement.

It is curious that Applicants are raising an objection to an aspect of the Commission’s order that benefits them by increasing their resources’ QC values. Their objection is particularly curious because it was CalWEA, AWEA and the Solar Alliance that first raised the argument that the RA counting rule for intermittent resources must consider the aggregate value of both wind and solar resources.¹⁹ .However, Applicants now object to the statement in both The Decision and Proposed Decision that the modification to the Joint Proposal to incorporate the diversity benefits of wind and solar was their “proposal.”²⁰

¹⁹ See Opening Comments of The California Wind Energy Association, the American Wind Energy Association, and the Solar Alliance at 9-11, February 17, 2009; CalWEA/AWEA/Solar Alliance Reply Comments at 4-6.

²⁰ Whether deemed a proposal or something else, the fact is that the idea of the need for a wind and solar benefit was raised by Applicants. Applicants broached this concept both in their Opening Comments and their Reply Comments in the proceeding below and dedicated several pages to discussing this concept in each of their filings. See CalWEA/AWEA/Solar Alliance Opening Comments at 9-11; CalWEA/AWEA/Solar Alliance Reply Comments at 4-6. For example, Applicants argued that one of the five principles that should guide the Commission in adopting a counting rule for intermittent resources is to “[c]onsider the Aggregate Value of Diverse and Dispersed Intermittents.” CalWEA/AWEA/Solar Alliance Opening Comments at 4,9. They specifically stated that the RA Counting Rules should recognize the diversity of wind and solar resources. *Id.* at 9. Applicants noted that the exceedance methodology in the Joint Proposal failed to reflect such diversity and argued that “it is vital for the Commission to consider that

In their filings in the proceeding below, CalWEA, AWEA and the Solar Alliance did not provide any quantification of the QC impacts that would result from their recommendation and did not obtain any QC impacts from the CEC regarding the impact of incorporating an aggregate wind and solar diversity factor. Applicants are essentially claiming that The Decision is flawed because it adopts their own recommendation for a diversity factor that aggregates wind and solar production and for which they failed to provide any supporting numbers or get the CEC to put together such supporting numbers. The Commission should not permit any inadequacy in Applicants' own recommendation to serve as the basis for rejecting the entire exceedance methodology proposal for which there was adequate support and numerical analysis. If the Commission believes that there is an issue regarding the sustainability of the proposed modification to aggregate wind and solar resources, then the appropriate course of action is to remove only that element from The Decision and adopt the specific methodology proposed in the Joint Decision without modification. The lack of numerical support for that particular modification should not infect the remainder of The Decision that was fully supported and justified (including CEC analyses of QC impacts).

The CAISO notes that the Joint Proposal contained a diversity benefit which aggregated the benefits of wind resources by wind region. The ALJ found that the Joint Proposal was the only comprehensive proposal ready for immediate implementation. The Commission affirmed this determination. The Decision at 53. Accordingly, if the Commission determines that it is not appropriate to adopt the modification to aggregate wind and solar resources because of the lack of data showing the impact of that modification, then the Commission should adopt the diversity benefit contained in the

there are diversity benefits not only among projects of a single technology...but also between wind and solar generation because these two resources have complimentary diurnal profiles." *Id.* at 9-10. Applicants even suggested that incorporating a diversity benefit that aggregates wind and solar resources into the exceedance methodology could produce QC values that were not too different from the QC values produced by the current counting rule. *Id.* at 10-11. Applicants repeated many of these same arguments in their Reply Comments. Importantly, they claimed that a weakness of the Joint Proposal was its failure to incorporate the diversity of all intermittent resources. CalWEA/AWEA/Solar Alliance Reply Comments at 4-5. They recognized that the Joint Proposal had recognized the diversity benefits of wind resources within an individual Wind Resource Area, but argued that the record showed that there is also significant diversity across intermittent renewable technologies, *i.e.*, wind and solar, that needs to be recognized. *Id.* Applicants then went on to discuss incorporation of a wind and solar diversity benefit into the exceedance methodology. *Id.* at 5. Under these circumstances, it is not credible for Applicants to claim that they were not responsible for the wind and solar diversity modification that was adopted by both The Decision and Proposed Decision.

Joint Proposal. In no event, however, should the lack of justification for Applicants' own concept -- that they supported in two filings leading up to the Proposed Decision -- cause rejection of the exceedance methodology reflected in the Joint Proposal which both the ALJ and the Commission found will (1) best support the Commission's RA objectives, (2) result in a more accurate counting convention for intermittent resources, and (3) best mitigate CAISO backstop procurement.

V. CONTINUATION OF THE MCC BUCKETS DOES NOT JUSTIFY RETENTION OF THE EXISTING COUNTING METHODOLOGY FOR INTERMITTENT RESOURCES

Applicants' claim that because the Commission has retained the Maximum Cumulative Capacity ("MCC") buckets for use-limited resources there is no need to change the current counting rule for intermittent resources. Application for Rehearing at 12. They claim that the MCC buckets will ensure that there is no over reliance on intermittent resources for RA purposes. *Id.*

This argument is misplaced and, like Applicants' other arguments, misses the key point -- the existing counting methodology overstates the availability of intermittent resources during peak hours. The retention of the MCC buckets has no bearing on the issue of what the appropriate methodology is for more accurately counting the RA capacity values of intermittent resources. MCC buckets merely limit the MW quantity of capacity from use-limited resources that can be procured within each so-called MCC "bucket." The MCC buckets are not used for purposes of calculating the QC values of individual resources. Accordingly, the MCC buckets do not -- and cannot -- eliminate any "overcounting" of the capacity values of the resources procured within each bucket. That can only be accomplished by using a more accurate counting methodology. The reliability, backstop and other problems created by a methodology that overstates the capacity of intermittent resources does not disappear because of the existence of MCC buckets. The fact is that if the procured RA resources within each bucket are not available at their RA QC values, then even fewer resources will be available to the CAISO than planned for under the counting rules. Obviously, this can create reliability problems. It also results in capacity payments being made to resources that are not fully performing

the capacity service for which they were procured. Under these circumstances, such resources will essentially be leaning on other RA, and non-RA, resources. This will also increase the amount of backstop procurement that the CAISO must undertake.

VI. THE DECISION DOES NOT UNDULY DISCRIMINATE AGAINST INTERMITTENT RESOURCES

Applicants' claim that the exceedance methodology adopted in The Decision discriminates against intermittent resources compared to other types of generation, including thermal generation. Application for Rehearing at 12-13. Applicants argue that an exceedance approach would derate wind capacity twice: first, by using the actual capacity factor of intermittent renewable generation over a peak period, and, second, by applying an exceedance factor that ignores all renewable energy that cannot be produced at the 70% capacity factor of a conventional baseload plant. *Id.* at 12. Applicants also assert that an exceedance method would require wind and solar generators to absorb, in the form of lower NQCs, most of the impact of ambient conditions on their output, while the NQCs of fossil-fueled generators would not include any adjustments for ambient conditions or forced outages. *Id.* at 13.

Contrary to Applicants' claims, the exceedance methodology does not unduly discriminate against wind and solar resources because intermittent and thermal resources are not similarly situated. Applicants ignore the significant, and relevant, differences between intermittent resources and thermal resources. Unlike thermal unit production, the production of wind resources is extremely variable and unpredictable from day-to-day (and even hour-to-hour). Again, this fact is not disputed. Both the ALJ and the Commission correctly recognized that an exceedance methodology best captures this extreme variability that is not present with thermal resources. An exceedance methodology will produce more accurate QCs and dependable capacity that the CAISO can rely on to meet monthly peak load needs. Use of a strict averaging methodology as recommended by Applicants -- even if it uses only peak generation output -- fails to adequately capture the extremely large variances (both positive and negative) between the average historical output and actual output on any given day during peak periods

when capacity is most needed to serve load and support reliable grid operations.²¹ That extreme variability can have a significant adverse impact on system operations and reliability, particularly during peak load periods.²² In that regard, the high variability of generation output from wind resources can produce average values that are considerably higher than actual production.²³ On the other hand, thermal resources generally produce at a steady output on a given day.

In contrast to an averaging approach, an exceedance approach explicitly accounts for variances in intermittent resource production, thereby resulting in a QC that is more closely correlated to the expected output of intermittent resources during peak periods. Indeed, the exceedance factor approach increases the likelihood that the actual output of intermittent resources during peak hours will meet their QC consistent with the adopted exceedance level (e.g., 70% of the time). Although solar resources may not experience the same magnitude of variances as wind resources, the use of an exceedance factor

²¹ See, e.g., CAISO Phase II Comments at 24-26, citing the 2007 Resource Adequacy Report prepared by the Energy Division Staff, at 20 (Figure 3), comparing actual output to the QC of wind resources under the current averaging methodology. The 2007 Resource Adequacy Report can be accessed through the following link: <http://docs.cpuc.ca.gov/PUBLISHED/REPORT/81717.htm>. As the Resource Adequacy Report observes, “it is evident that daily production deviates broadly, in both directions, from the established QC.” Resource Adequacy Report at 20. See also, Resource Adequacy Report at 21-23 for further discussion regarding the variability of wind production. Similarly, in the CAISO’s 2008 Summer Assessment, the CAISO noted that “wind energy production is extremely variable, and in California, it often produces its highest energy output when the demand for power is at a low point. During some period of the year, wind generation is hard to forecast because it does not follow a predictable day-to-day production pattern,” 2008 Summer Assessment at 10-11. The 2008 Summer Assessment is available at the following link: <http://www.caiso.com/1fb7/1fb7855eed50.pdf>. Likewise, the CAISO’s *Integration of Renewable Resources Report* (Nov. 2007) recognizes that “wind generation output varies significantly during the course of any given day, and there is no predictable day-to-day generation pattern.” *Integration of Renewable Resources Report* at 57. The CAISO’s *Integration of Renewable Resources* is available at the following link: <http://www.caiso.com/1ca5/1ca5a7a026270.pdf>. The report shows an example of the significant variation in hourly wind generation from 2006. *Integration of renewable Resources Report* at 64. See also, *Renewable Integration Presentation* at 17 for an example of the volatility of wind production compared to average production. Each of these documents were referred to and linked in the CAISO’s Phase II Comments.

²² See *Integration of renewable Resources Report* at 57-87 for a discussion of the operational issues that the CAISO faces in integrating renewable resources, including issues resulting from the variability in wind production.

²³ For example: wind resources in the San Geronio region reflected outputs over a three-year period from 2005 to 2007 of 4.9%, 2.4% and 40.4% of nameplate capacity, respectively. The three-year average would result in a QC value of 15.9%. CAISO Phase II Comments at fn. 16. Use of this average number as the QC number would result in an over forecast of the actual output by more than 300% for two of three years (15.9% compared to the actual output of 4.9% and 2.4%).

approach is equally applicable to solar resources for purposes of determining a QC value for solar resources.

Applicants also ignore that the Commission applies an exceedance-type approach for counting hydro resources. As discussed above, there is no reason -- and Applicants have not offered any reason -- why wind and solar resources should be treated in a manner dissimilar to hydro.

Applicants' "double de-rating" claim is based on the flawed assumption that an average value of wind is the correct value for the purposes counting intermittent resources under the RA program. As discussed herein and in The Decision, an averaging approach is not appropriate and overstates the actual availability of wind resources when needed to meet peak loads.

Finally, Applicants ignore the fact that under the Standard Capacity Product mechanism that will be applied to non-exempt Resource Adequacy Resources starting January 1, 2010, ambient derates due to temperature will count against the availability of thermal units. As a result, thermal units will be subject to a financial charge when an ambient derate causes their availability to drop below the target availability level. To avoid these potential charges, thermal unit owners will need to sell less RA capacity than otherwise would be the case. On the other hand, intermittent resources such as wind and solar are exempt from SCP and will not be assessed with an availability charge due to their ambient derates (and forced outages).

The RA program, in conjunction with SCP, recognizes that intermittent resources are not similarly situated to thermal units with respect to ambient de-rates. In that regard, for RA purposes intermittent resources are counted based on the last three years operational experience. To the extent they face forced outages or derates due to ambient conditions, any resulting reduction in availability will be reflected in their QC values for the following RA compliance year. To avoid any type of "double penalty" the CAISO will not assess intermittent resources an availability charge for forced outages and ambient derates. On the other hand, the QC of thermal resources is not counted based on historical performance. Thus, such resources do not receive a QC adjustment for the next compliance year based on their forced outages and ambient derates over the past three years. Instead, under SCP, they will be assessed an availability charge from the CAISO to

the extent forced outages or ambient derates cause their availability to fall below the target availability level.

Thus, wind and solar receive a QC adjustment based on their actual experience, and thermal resources are assessed a financial charge based on their actual experience. Because the two resources are not similarly situated for RA counting purposes, there is no undue discrimination in not adjusting QC levels for thermal resources as Applicants contend. If that were to occur, thermal resources would be penalized twice for the same derate -- once in the form of a SCP financial charge and again with a QC reduction in the following compliance year. Resources should only be “charged” once for a derate, either in the form of a financial charge or a QC adjustment depending on the methodology used to count their capacity value). Thus, both thermal resources and intermittent resources are “penalized” for ambient derates, albeit in different ways. There is no undue discrimination though.

In conclusion, The Decision does not discriminate against intermittent resources. It adopts a counting methodology that accounts for the unique characteristics of intermittent resources, compared to thermal resources. Compared to the existing counting methodology, an exceedance approach provides a more accurate reflection of intermittent resources’ expected availability during the peak hours measured by the RA program and better accounts for the distinct production characteristics of such resources.

VII. THE DECISION IS NOT BASED ON A FLAWED MISREPRESENTATION OF APPLICANTS’ POSITION

Applicants state that they support continuation of the current RA counting rule for wind and solar which counts such resources based on the average production of each resource over the summer on-peak period. They claim that the Commission erroneously mischaracterized their position as emphasizing the need to assure reliability during off-peak periods. Application for Rehearing at 7-10. Applicants assert that the Commission rejected the current counting rule on the erroneous grounds that that “we find this emphasis on off-peak hours to be incompatible with the key objective of the RA program to meet peak demand.” *Id.* at 8.

Applicants mischaracterize the Commission's statements. The sentence from The Decision cited above was referring to the ELCC methodology's incompatibility with the RA program objectives, *not* the existing averaging methodology. In that regard The Decision reads:

For example, in their January 15, 2009 workshop proposal, CalWEA and AWEA state that [i]mportantly, the ELCC measures the capacity value of a resource across all hours of the year, and does not focus on just a few peak hours." (CalWEA/AWEA proposal at 5.

We find this emphasis on off-peak hours to be incompatible with the key objective of the RA program to meet peak demand.

In the sentence Applicants find objectionable, the Commission clearly was referring to the CalWEA's and AWEA's statements regarding the ELCC methodology (which assesses production in all hours), not the existing RA counting methodology. Thus, Applicants' claim that the Commission rejected the current counting rule on the erroneous grounds that it is based on off-peak hours is simply incorrect.

Applicants also claim that The Decision sets up a false dichotomy between the supporters of the current counting rule who purportedly were concerned with reliability in all hours, and the proponents of change who placed an emphasis on peak hours. Application for Rehearing at 8. Applicants stress that although the ELCC methodology analyzes all hours, this does not mean -- "as the decision implies" -- that all hours are weighted equally. *Id.*

The Commission has not created any false dichotomy. Applicant's pleadings in this proceeding contain numerous statements expressing their support for ELCC and the need to evaluate production during hours other than just the peak hours.²⁴ In The

²⁴ For example, the quote from CalWEA's and AWEA's January 15, 2009 Proposal cited in The Decision (page 49) stresses that the measurement of a resource's contribution to reliability needs to look at hours beyond the peak hour. The Commission was simply responding to this and other similar statements made by Applicants. For example, TURN argued that "the Effective Load Carrying Capability (ELCC) approach proposed by CalWEA/AWEA and DRA is the best current approach to estimating intermittent NQCs and that the Commission should therefore only change those NQCs based on an ELCC study." Comments of The Utility Reform Network On The Proposed Decision of ALJ Wetzell at 3-4, June 4, 2009. Similarly, in their Opening Comments on the Proposed Decision, CalWEA, AWEA, the Solar Alliance, and the Large Solar Association made the following statements regarding ELCC: (1) "[t]he record in this case shows that the state-of-the-art methodology for determining the contribution of a renewable generator to system

Decision, the Commission was merely responding to the statements made by Applicants regarding the appropriateness of using an ELCC methodology that assesses production in all hours. Nowhere did the Commission state that the existing counting rule is based on an assessment of non-peak hours. The Commission correctly found that an ELCC analysis is not appropriate under the RA paradigm. In any event, Applicants arguments detract from the real issue in this proceeding and do not undermine in any way the Commission's reasoned and fully supported decision to replace the existing intermittent resource counting methodology with an exceedance approach.

Applicants also suggest that The Decision implies that because the ELCC approach analyzes all hours, all hours are weighted equally. Application for Rehearing at 8. No where does The Decision make this assumption. In any event, the fact that the ELCC methodology does not weight all hours equally misses the point. The fact is that the ELCC in fact assesses all hours, and the ultimate QC that is calculated for a resource will be based on production during some hours other than the peak hours. The Commission correctly recognized that this approach is inconsistent with the RA program's goals and fundamental framework.

As the CAISO argued in the proceeding below, an ELCC study that looks at performance every hour of every day of the year is not only inappropriate, it is fundamentally at odds with the basic purpose of the Commission's RA program -- to meet peak reliability needs. Moreover, it is fundamentally at odds with entire structure of the RA program. In that regard, the following elements of the RA program are all

reliability is the ELCC approach;" (2) the Commission should admit the NERC task force report which allegedly shows that ELCC is becoming the industry standard for evaluating the RA value of intermittent resources; (3) the Commission has endorsed the use of the CEC's ELCC analysis as a measure of wind resource capacity for RPS purposes; (4) the results of the Proposed Decision are inconsistent with an ELCC analysis; and (5) the Proposed Decision does not discuss why the Commission should reject the industry best practice method -- ELCC -- in favor of an exceedance methodology. CalWEA, AWEA and the Solar Alliance made numerous similar statements in their Opening and Reply Comments in the proceeding below. For example, in their Opening Comments, they claimed that "the most rigorous way to measure a resource's contribution to reliability is to assess that contribution *across all hours*, using an approach such as the Effective Load Carrying Capacity (ELCC) method. Opening Comments of the California Wind Energy Association, American Wind Energy Association and the Solar Alliance at 4, February 17, 2009 (emphasis added). Even in their Application for Rehearing (p.15) Applicants request the Commission to delay a change in the RA counting rule for wind and solar in order to allow for an ELCC study to be undertaken. Applicants' prior pleadings contain additional comments regarding ELCC, but these constitute a representative sample. The Commission's statements in The Decision address Applicants' statements regarding the appropriateness -- or in this case inappropriateness -- of using an ELCC methodology under the existing RA framework.

designed based on peak demand hours: local RA studies; deliverability; QC for thermal resources; Path 26 counting convention; import capacity; load forecasts; and transmission system availability. The Commission has worked diligently over the past several years to develop a workable and effective RA framework that meets the reliability needs of its LSEs and the CAISO. An ELCC approach that assesses each and every hour of the day – as opposed to peak and near-peak hours -- would turn the CPUC’s RA paradigm upside down. Applicants have not offered any evidence to demonstrate that the fundamental underpinnings of the Commission’s RA program should be abandoned after the years of effort and thought that the Commission and parties have expended to develop the RA program.

An ELCC approach ignores the basic fact that the greatest reliability risk occurs during peak periods when demand is high and there may not be sufficient resources to serve load. On the other hand, there is less of a reliability risk during off-peak conditions where demand is low and there is a greater surplus of available supply to serve the reduced load. While an ELCC approach may be appropriate in conjunction with determination of an appropriate Planning Reserve Margin based on Loss Of Load Expectation that establishes an aggregate annual procurement level, it is not the appropriate approach for an RA program that is based on meeting monthly peak demand conditions (plus reserve margin) and upon capacity being fully available to the CAISO during those conditions. In other words, an ELCC approach will not result in RA resources that the CAISO can dependably rely on to be available to serve load during peak conditions. By looking at production during every hour of the year and not focusing on peak and near-peak hours, an ELCC approach ensures that intermittent resources will be “overcounted” and therefore inappropriately over-relied on during peak load conditions. When these resources do not “show up” as available RA capacity, there will be reliability problems and the potential for significantly increased costs as the result of the necessary procurement of backstop capacity from non-RA resources.

VII. CONCLUSION

Thus, for the foregoing reasons, the CAISO respectfully requests that the Commission deny Applicants' application for rehearing.

Respectfully submitted,

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Date: August 6, 2009

CERTIFICATE OF SERVICE

I hereby certify that I have served, by electronic mail and U.S. Mail, Response of the California Independent System Operator Corporation to Application for Rehearing of Decision D. 09-06-028 in Docket No. R.08-01-025.

Executed on August 6, 2009, at Folsom, California.

/s/ Anna Pascuzzo

Anna Pascuzzo
An Employee of the California
Independent System Operator