

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

**California Independent System) Docket No. ER10-1706-000
Operator Corporation)**

**ANSWER TO MOTIONS TO INTERVENE AND COMMENTS, AND MOTION TO
FILE ANSWER AND ANSWER TO PROTESTS, OF THE
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION**

The California Independent System Operator Corporation (“ISO”)¹ hereby files its answer to the motions to intervene, comments, and protests submitted in this proceeding² in response to the ISO’s submittal on July 2, 2010, of its tariff amendment to establish interconnection requirements for asynchronous generating facilities.³ For the reasons explained below, the Commission should accept the tariff amendment as submitted, with the exception of modifications agreed to by the ISO in this answer. Specifically, the ISO agrees to exempt

¹ The ISO is also sometimes referred to as the CAISO. Capitalized terms not otherwise defined herein have the meanings set forth in Appendix A to the ISO tariff.

² The following entities filed motions to intervene, comments, and protests: the Bonneville Power Administration (“Bonneville”); California Department of Water Resources State Water Project (“SWP”); California Wind Energy Association (“CalWEA”) and American Wind Energy Association (“AWEA”) (together, “CalWEA/AWEA”); Calpine Corporation (“Calpine”); Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California; First Solar, Inc. and AV Solar Range 1, LLC (together, “First Solar”); Large-Scale Solar Association (“LSA”); Lompoc Wind Project LLC (“Lompoc”); Modesto Irrigation District; Pacific Gas and Electric Company (“PG&E”); San Diego Gas & Electric Company; and Sempra Generation (“Sempra”).

³ The ISO submits this answer pursuant to Rules 212 and 213 of the Commission’s Rules of Practice and Procedure, 18 C.F.R. §§ 385.212, 385.213 (2010). The ISO requests waiver of Rule 213(a)(2), 18 C.F.R. § 385.213(a)(2), to permit it to make an answer to the protests. Good cause for this waiver exists here because the answer will aid the Commission in understanding the issues in the proceeding, provide additional information to assist the Commission in the decision-making process, and help to ensure a complete and accurate record in this case. See, e.g., *Energry Services, Inc.*, 116 FERC ¶ 61,286, at P 6 (2006); *Midwest Independent Transmission System Operator, Inc.*, 116 FERC ¶ 61,124, at P 11 (2006); *High Island Offshore System, L.L.C.*, 113 FERC ¶ 61,202, at P 8 (2005).

Lompoc from the proposed interconnection requirements because Lompoc has already executed a generator interconnection agreement and has entered the ISO's interconnection queue to amend that agreement.

I. Answer

A. No Party Disagrees with the Need for or the Ability of Variable Energy Resources to Take an Increasingly Large Role in Maintaining Grid Reliability.

The ISO has explained that a primary reason for submitting this tariff amendment is to ensure that California's environmental policies are met while at the same time maintaining a reliable transmission grid. The obligation to comply with the 20 percent and 33 percent renewables portfolio standard ("RPS") targets and California's once-through cooling limitations will lead to the displacement of energy from conventional resources by variable energy resources in the coming years. As variable energy resources displace conventional generation certain technical characteristics from these conventional resources will also be displaced. The extent to which the grid can successfully integrate variable generation will be significantly influenced by the contribution of variable generation to support the reliability of the transmission system. The ISO's proposed tariff modifications will advance this contribution as well as the capabilities of variable energy resources.⁴

While some parties raise various procedural arguments or challenge the timeframe to implement the ISO's proposed requirements, no party seriously disputes the need for variable energy resources to increase their support of

⁴ ISO July 2, 2010 filing at 2-3.

system reliability in California. Moreover, no party contends that it is infeasible to modify variable energy resources to provide the technical characteristics proposed by the ISO.⁵

LSA argues that the North American Electric Reliability Corporation (“NERC”) and the Western Electricity Coordinating Council (“WECC”), not the ISO, should implement revised interconnection requirements for variable energy resources, and that the ISO’s tariff amendment will preempt the interconnection requirements that those entities plan to develop. LSA contends that the adoption of requirements by a single balancing area authority is counterproductive and wasteful.⁶

As explained in its July 2, 2010 tariff amendment, the ISO has carefully considered this issue. The ISO has determined that, although it is important to ensure consistent industry standards, the expected culmination of national and regional efforts is incompatible with the timing needs of the ISO and its interconnection customers.⁷ The fact that there is no comprehensive set of national or regional technical requirements relating to the interconnection of asynchronous generating facilities means that the ISO is faced with the choice of waiting for NERC and WECC to complete their processes or implementing

⁵ LSA asserts that the necessary equipment is either not available today or not available on a competitive basis, but even LSA concedes that this is only a “transitional” concern. LSA at 7. The ISO strongly disagrees with LSA. As demonstrated by the ISO’s prepared testimony, equipment is currently available to implement the proposed requirements. See July 2, 2010 filing, Attachment D, Prepared Testimony of ISO Witness Reigh Walling at 13-19 (“Walling Testimony”), and Appendix C thereto.

⁶ LSA at 4.

⁷ ISO July 2, 2010 filing at 5.

reasonable standards in the interim during a time in which the ISO is integrating significantly increased amounts of variable energy resources onto the ISO grid.

The ISO's proposed interconnection requirements will in no way preempt the efforts of NERC and WECC. The ISO recognizes the importance of maintaining consistent standards regarding the technical characteristics of generators, and will work to ensure that its own requirements operate, to the greatest extent possible, in conjunction with those that result from the NERC and WECC processes. Depending on the results of the NERC and WECC processes, this may require the ISO to revise its requirements in the future in order to maintain consistency. However, there will be no conflict between the ISO requirements and some other competing set of standards unless there is a unique reliability need to make the ISO's requirements more stringent than those adopted by NERC and WECC. In which case, the ISO expects it will have to demonstrate that need to the Commission. For these reasons, developers should have no difficulty in determining the applicable requirements and planning accordingly.

Because, as discussed above, the need for and feasibility of revisions to the current interconnection requirements are not in dispute, and since the ISO will not somehow preempt the NERC and WECC processes, the only remaining practical objection that parties have to the ISO's proposal to revise the interconnection requirements is that it is too costly for variable energy resources to satisfy the proposed requirements. In its tariff amendment, the ISO made a thorough demonstration that the costs of compliance with its proposed standards

are modest.⁸ No party provided any evidence to refute the ISO's showing. The Commission should find that the costs of compliance with the ISO's proposed standards are reasonable, and reject any unsupported allegations to the contrary.⁹

B. The Tariff Amendment Does Not Violate the Filed Rate Doctrine.

CalWEA/AWEA argue that the ISO's tariff amendment violates the filed rate doctrine by proposing that interconnection customers enter into agreements obligating them to comply with power management requirements before the proposed January 1, 2012, effective date of those requirements.¹⁰ There is no merit to that argument. A standard provision in the ISO's *pro forma* large generator interconnection agreement is that parties will be bound by any applicable tariff language that goes into effect after the date they execute the agreement. Article 3.2 of the *pro forma* large generator interconnection agreement ("LGIA") states that "[t]he Interconnection Customer will comply with all applicable provisions of the CAISO Tariff." Article 1 of the LGIA defines the CAISO Tariff as "the CAISO's tariff, as filed with FERC, *and as amended or supplemented from time to time, or any successor tariff*" (emphasis added).¹¹

⁸ See ISO July 2, 2010 filing at 12, 22; Walling Testimony at 15-16, 26-29.

⁹ See, e.g., *California Independent System Operator Corp.*, 125 FERC ¶ 61,338, at P 37 (2008) ("[W]e find that San Diego fails to provide any evidence that would justify the use of a demand-based billing determinant in favor of the volumetric-based charge proposed by the CAISO."); *Shell Energy North America (US), L.P.*, 126 FERC ¶ 61,120, at P 25 n.41 (2009) ("OSP has not offered any evidentiary support for its allegation.").

¹⁰ CalWEA/AWEA at 7-8.

¹¹ ISO tariff, Appendix V.

These same provisions are also included in the new *pro forma* large generator interconnection agreements proposed in the ISO's tariff amendment – the new Standard Large Generator Interconnection Agreement to be included in Appendix BB to the ISO tariff, and the new Large Generator Interconnection Agreement for Interconnection Requests in a Queue Cluster Window to be included in Appendix CC to the ISO tariff.¹² These large generator interconnection agreement provisions are entirely consistent with the filed rate doctrine.

CalWEA/AWEA argue that “a service agreement must be consistent with [the ISO's] governing tariff.”¹³ What CalWEA/AWEA fail to recognize, however, is that the provisions that constitute the governing tariff (*i.e.*, the ISO Tariff) can change from time to time, as discussed above.

There is also no validity to the argument of CalWEA/AWEA that it is a violation of the filed rate doctrine to exempt projects from compliance with the low voltage ride-through requirements if they can demonstrate commitments to purchase equipment as of May 18, 2010 that is incapable of complying with the requirements.¹⁴ The application of tariff provisions based on past actions or commitments is not a violation of the filed rate doctrine. CalWEA/AWEA confuse

¹² The ISO notes that the proposed LGIAs set forth in Appendices BB and CC should reflect numbered sections, followed by a series of supporting appendices. The collation value metadata in the ISO's July 2, 2010 filing, however, caused the supporting appendices for each LGIA to precede the numbered sections of each LGIA. This was an error. In order to correct this error, the ISO agrees to file new versions of the tariff records comprising the supporting appendices for each LGIA and amending the collation values for those records so that the supporting appendices will follow the numbered sections of each LGIA. In reviewing the LGIAs, the ISO also discovered that the table of contents in Appendix CC was inadvertently omitted. The ISO agrees to fix this error, as well, as part of any compliance filing in this matter.

¹³ CalWEA/AWEA at 7 (quoting *California Independent System Operator Corp.*, 112 FERC ¶ 61,009, at P 173 (2005)).

¹⁴ CalWEA/AWEA at 8.

the retroactive application of tariff modifications, which is generally impermissible, with the notion of differentiating between outcomes based on past actions, which does not in and of itself implicate the filed rate doctrine. For example, Section 40.8.1.5 of the ISO tariff provides for firm energy contracts executed prior to October 27, 2005 to count as qualifying capacity for resource adequacy purposes, if the contracts include liquidated damages provisions and a delivery point within the ISO's balancing authority area. These tariff provisions were originally filed with and accepted by the Commission in 2006.¹⁵ Tariff requirements regarding commitments made prior to October 27, 2005 do not violate the filed rate doctrine. Similarly, the Commission should find that the ISO's proposed exemption for equipment purchase commitments made as of May 18, 2010, is not a violation of the filed rate doctrine.

C. The Tariff Amendment Is Not Unduly Discriminatory.

CalWEA/AWEA and LSA argue that it would be unduly discriminatory to require new interconnecting wind and solar projects to comply with the ISO's proposed requirements in order to ensure reliability, without also directing new fossil generating units to satisfy the same requirements.¹⁶ This argument overlooks the fact that many of the ISO's proposed standards are already required of conventional generators. For instance, as explained below, the ISO's LGIA already requires that conventional generators provide reactive power support. Section 9.7.3 of the LGIA also requires that generators design high and

¹⁵ See *California Independent System Operator Corp.*, 115 FERC ¶ 61,172, at P 98 (2006). The tariff language quoted above was originally included in Section 40.13.5 of the ISO tariff.

¹⁶ CalWEA/AWEA at 9; LSA at 5-6.

low frequency ride-through, as required by the WECC.¹⁷ In addition, WECC requires that conventional generators meet standards relating to automatic voltage and reactive power control.¹⁸ With respect to power management requirements, the ISO's proposed requirements do not discriminate against asynchronous generators because conventional generators generally already possess the inherent ability to ramp in both directions.

Moreover, with respect to the low-voltage ride through requirements, the ISO's proposal is not unduly discriminatory because it merely clarifies and refines the requirements already adopted by the Commission in Order No. 661. Therein, the Commission explained that it was adopting standard procedures and technical requirements specific to the interconnection of wind plants – including ride-through requirements – in order “to meet our responsibility under Sections 205 and 206 of the Federal Power Act to *remedy* undue discrimination [Order No. 661] recognizes the technical differences of wind generating technology . . . while ensuring that reliability is protected.”¹⁹ Similarly, Commission acceptance of the ISO's proposed ride-through requirements will serve to prevent undue discrimination by closing the gap between the interconnection requirements applicable to variable energy resources and those

¹⁷ WECC Coordinated Off-Nominal Frequency Load Shedding and Restoration Plan. This document is located at: <http://www.wecc.biz/library/WECC%20Documents/Miscellaneous%20Operating%20and%20Planning%20Policies%20and%20Procedures/Off%20Nominal%20Frequency.pdf>.

¹⁸ WECC Minimum Operating Reliability Criteria, Section 2.B.5. This document is located at: <http://www.wecc.biz/Standards/WECC%20Criteria/WECC%20Reliability%20Criteria.pdf>.

¹⁹ *Interconnection for Wind Energy*, Order No. 661, FERC Stats. & Regs. ¶ 31,186, at P 1 (emphasis added) (“Order No. 661”), *order on reh'g*, Order No. 661-A, FERC Stats. & Regs. ¶ 31,198 (2005) (“Order No. 661-A”).

applicable to conventional generators, because the proposed tariff provisions will require variable energy resources (both wind and solar photovoltaic) to possess certain technical characteristics that are comparable to those required of conventional generators.²⁰

Finally, the ISO explained that solar photovoltaic facilities are designed pursuant to Institute of Electrical and Electronics Engineers (“IEEE”) Standard 1547, which provides that a generator should trip immediately in response to a system disturbance.²¹ As explained in the prepared testimony of ISO witness Reigh Walling, allowing solar photovoltaic facilities to continue to follow requirements designed for the distribution network in the absence of transmission network requirements is detrimental to the reliability of the transmission system.²²

D. Waiver of Prior Notice Is Appropriate and Will Not Disrupt Efforts of Interconnection Customers to Obtain American Reinvestment and Recovery Act Funding.

Good cause exists to grant waiver of prior notice of this tariff amendment pursuant to Sections 35.3 and 35.11 of the Commission’s regulations.²³ The ISO’s proposed requirements will support the integration of renewable resources and ultimately allow for additional output from variable energy resources to serve load connected to the ISO while maintaining a reliable transmission system.²⁴

²⁰ ISO July 2, 2010 filing at 3.

²¹ Walling Testimony at 7-8.

²² *Id.*

²³ 18 C.F.R. §§ 35.3, 35.11.

²⁴ See, e.g., *Southwest Power Pool, Inc.*, 127 FERC ¶ 61,283, at P 35 (2009) (“Lastly, we will grant waiver of the Commission’s prior notice requirement for good cause shown. SPP explains that its proposal will expedite the integration of wind generation into the SPP region.”).

The rush of asynchronous generating facilities to interconnect to the ISO grid in order to secure funding under the American Reinvestment and Recovery Act (“ARRA”) requires the ISO to request waiver of the Commission’s prior notice requirements to make the ISO’s tariff amendment effective as of July 3, 2010.

The proposed requirements will not, however, interfere with efforts to obtain ARRA funding. First Solar raises concerns that the proposed amendments may create delay in obtaining an executed large generator interconnection agreement for one of its projects in the ISO queue.²⁵ First Solar requests that the Commission act promptly on the ISO’s requested tariff amendment to advance the development of renewable energy and facilitate the use of ARRA funds for economic recovery.²⁶ The ISO concurs with First Solar and wishes to provide assurances that the acceptance of its tariff changes should not impede progress in obtaining an executed large generator interconnection agreement for any project. The ISO will work cooperatively with interconnection customers and participating transmission owners to ensure that the provisions of the ISO’s tariff amendment accepted by the Commission are incorporated into interconnection agreements pending execution. The ISO intends to conform interconnection agreements that require execution in the near term through a future amendment to incorporate the provisions of this tariff amendment, so as not to disrupt efforts to secure ARRA funding.

²⁵ First Solar at 3.

²⁶ *Id.* at 5-6.

E. The Commission Should Reject Parties' Suggested Alternatives to the ISO's Proposed Tariff Provisions.

As discussed below in this answer, some parties argue that, in the event the Commission does not reject the ISO's tariff amendment in its entirety, the Commission should adopt their proposed alternatives to the provisions contained in the ISO's tariff amendment. The ISO addresses these proposed alternatives below, but first addresses the legal framework in which the Commission must evaluate the ISO's proposals and the alternative proposals.

Despite the claims of each party that its proposals are superior to the ISO's, the proper legal standard is whether the ISO's proposals are just and reasonable under Section 205 of the Federal Power Act.²⁷ As the Commission has explained, "the courts and this Commission have recognized that there is not a single just and reasonable rate. Instead, we evaluate [proposals under Section 205] to determine whether they fall into a zone of reasonableness. So long as the end result is just and reasonable, the [proposal] will satisfy the statutory standard."²⁸ For the reasons explained below, the ISO's proposals fall well within the zone of reasonableness.

²⁷ See, e.g., *New England Power Co.*, 52 FERC ¶ 61,090, at 61,336 (1990), *aff'd*, *Town of Norwood v. FERC*, 962 F.2d 20 (D.C. Cir. 1992) (rate design proposed need not be perfect, it merely needs to be just and reasonable), *citing Cities of Bethany, et al. v. FERC*, 727 F.2d 1131, 1136 (D.C. Cir.), *cert. denied*, 469 U.S. 917 (1984) (utility needs to establish that its proposed rate design is reasonable, not that it is superior to all alternatives).

²⁸ *Calpine Corp. v. California Independent System Operator Corp.*, 128 FERC ¶ 61,271, at P 41 (2009) (citations omitted).

F. The ISO's Proposed Interconnection Requirements Should Apply to Projects that Have Not Executed a Generator Interconnection Agreement or that Have Not Been Tendered a Generator Interconnection Agreement.

The ISO's proposed interconnection requirements for asynchronous generating facilities generally apply to all asynchronous generating facility projects seeking to interconnect to the ISO grid on a going-forward basis. This approach ensures that new projects contribute on a non-discriminatory basis to the reliable operation of the electricity grid. These requirements will also apply to some projects currently in the interconnection queue. In developing its proposal, the ISO has crafted exemptions to the proposed requirement that recognize some projects are far enough along in the interconnection process that the requirement may disrupt their commercial and development efforts. The ISO also considered the potential commercial impact of its requirements on projects. As explained in the testimony of ISO witness Reigh Walling, the financial impact of these interconnection requirements on proposed projects is relatively small in proportion to total project costs.²⁹ No party has offered any evidence to rebut this fact.

Nevertheless, the ISO recommends that the Commission not apply the proposed interconnection requirements to those projects that have either executed an interconnection agreement or have been tendered an interconnection agreement following the issuance of the project's facilities study

²⁹ Walling Testimony at 15-16, 25-28, 34-38.

as of July 2, 2010.³⁰ The ISO also recommends that the Commission exempt generating units that are or have been interconnected to the ISO grid for the remaining life of the existing generating units.

In their comments, several parties seek to expand this exemption. LSA recommends that the Commission exempt all projects in the ISO's interconnection queue if the project developer can demonstrate the following: (1) permitting changes required to comply with the interconnection requirements would delay plant construction or operations; (2) the equipment needed to comply is not available from at least three suppliers by the plant commercial operations date; (3) the developer has an executed power purchase agreement for the generating facility; or (4) the generating plant is in the ISO serial interconnection study group.³¹ LSA does not justify these proposed exemptions except to assert that they are "sensible."³² But the exemptions recommended by LSA are overly expansive and subjective. If accepted, the proposed exemptions might prevent the application of the proposed requirements to the majority of asynchronous generating facility projects in the ISO's interconnection queue. In this light, they are not sensible. As explained in the ISO July 2, 2010 filing,

³⁰ The ISO has also proposed to exempt new interconnection customers from the proposed low voltage ride-through requirements in Section A (i) of Appendix H to the large generator interconnection agreement, if the interconnection customer can demonstrate a binding commitment as of May 18, 2010 to purchase inverters for thirty percent or more of the proposed asynchronous generating facility's maximum generating capability that are incapable of complying with the new requirements. This exemption recognizes prior investments in equipment made by developers up to the date on which the ISO Board of Governors authorized the ISO to propose these tariff changes. Absent this prior binding commitment, there is no compelling technical or cost reason why a new asynchronous generating facility should not comply with the proposed low voltage ride-through requirements.

³¹ LSA at 9.

³² *Id.* at 7.

asynchronous generating facility projects in the ISO interconnection queue may displace a large amount of energy from conventional generators that currently operate to support the reliable operation of the grid.³³ The resources providing this energy should support the transmission grid in a manner that is comparable to conventional generation, especially where it is technically feasible and not cost-prohibitive.

With respect to the various exemptions proposed by LSA, the proposed requirements should not result in permitting changes that would delay construction or operation for projects in the interconnection queue. The proposed requirements generally involve technology upgrades and should not require the acquisition or use of real property beyond what a proposed asynchronous generating facility project would otherwise require.³⁴ Moreover, determining whether a construction or operation delay will result from the ISO's interconnection requirements is a speculative venture that may be difficult, if not impossible, to assess. The equipment needed to comply with the proposed requirements is already available, including equipment to achieve the plant power management requirements proposed by the ISO.³⁵ The ISO has demonstrated that the cost implications of the proposed requirements are minor when compared to total project costs. As a result, execution of a power purchase agreement does not create good cause to exempt an asynchronous

³³ ISO July 2, 2010 filing at 2-5.

³⁴ See *generally* Walling Testimony at 13-39.

³⁵ *Id.* See *also* Appendix C to Walling Testimony.

generating facility from the requirements. Likewise, a project's position in the ISO's serial interconnection queue is not a meaningful reason to provide an exemption from the requirements. These projects vary in their stages of commercial development.

Lompoc argues that the proposed requirements should not apply to projects with existing power purchase agreements because these projects may need to renegotiate their financing.³⁶ Lompoc's argument is purely speculative and assumes that projects with executed power purchase agreements have completed the negotiation of their financing. The essence of Lompoc's argument is that the requirement will create material, unanticipated costs for developers. Lompoc does not and cannot offer evidentiary support for this argument. In his testimony, ISO witness Reigh Walling explains that the proposed requirements create minimal costs for project developers.³⁷

LSA also asks that a project receive an exemption from the proposed requirements, if the ISO has tendered a draft generator interconnection agreement to the interconnection customer for comment.³⁸ Sempra raises a similar concern.³⁹ The ISO agrees with these comments and has proposed to exempt projects from the proposed requirements if the ISO has tendered a generator interconnection agreement to the customer for that project. The ISO believes this exemption should apply to all interconnection customers that should

³⁶ Lompoc at 5-6.

³⁷ Walling Testimony at 13-39.

³⁸ LSA at 9.

³⁹ Sempra at 4.

have been tendered a generator interconnection agreement prior to July 3, 2010 as provided in Section 11.1.1 of the ISO's large generator interconnection procedures.⁴⁰ The ISO has issued a market notice to identify which projects have been tendered an interconnection agreement and appendices as of July 3, 2010 pursuant to the requirements of Section 11.1.1 of the large generator interconnection procedures or earlier interconnection rules.⁴¹

Lompoc asserts that the ISO's proposed requirements should not apply to its project on the grounds that Lompoc previously executed a generator interconnection agreement with PG&E that was approved by the Commission.⁴² Lompoc asserts it entered the ISO interconnection queue upon the request of the ISO and the participating transmission owner in order to transition to a large generator interconnection agreement. The ISO has considered Lompoc's arguments and agrees that they have merit. Lompoc is essentially in the process of amending a generator interconnection agreement that the Commission has already approved. The ISO does not oppose extending exemptions to Lompoc and similarly situated projects that are in the ISO's interconnection queue but have a prior executed generator interconnection agreement with a participating transmission owner. The ISO believes Lompoc is the only interconnection

⁴⁰ Section 11.1.1 of the large generator interconnection procedures provides in relevant part: "Within thirty (30) calendar days after the CAISO receives the Interconnection Customer's written comments, or notification of no comments, to the draft Interconnection Facilities Study report, the applicable Participating TO(s) and the CAISO shall tender a draft LGIA, together with draft appendices." The LGIP is contained in Appendix U to the ISO tariff.

⁴¹ <http://www.caiso.com/27da/27dac193e630.html>.

⁴² Lompoc at 2-5 (citing Commission Letter Order, *Pacific Gas and Electric Company*, Docket No. ER09-49-000 (Nov. 19, 2008)).

customer that is in this type of situation and thus is the only interconnection customer to which this exemption would apply.

LSA argues that the ISO's proposed exemption from power-management standards for plants that have already made a significant financial commitment to new, non-conforming inverters is not viable, because it would require filing of a non-conforming large generator interconnection agreement that might take the Commission "many months" to process.⁴³ This argument is without merit. In fact, the Commission routinely issues letter orders accepting non-conforming large generator interconnection agreements within 60 days of filing.⁴⁴ Therefore, there is no reason to believe that it would take the Commission many months to process a non-conforming large generator interconnection agreement due to power management exemptions.

G. Comments and Protests Regarding Technical Issues

1. The Commission Should Accept the ISO's Revisions to the Low Voltage Ride-Through Requirements.

In its tariff amendment, the ISO proposes to extend the low voltage ride-through requirements already adopted by the Commission for wind plants in Order No. 661-A to all asynchronous generating facilities. As part of this effort, the ISO revised the specific language for these requirements as explained by ISO witness Reigh Walling to ensure clarity and consistency of power system

⁴³ LSA at 6.

⁴⁴ For example, in Docket No. ER10-1376-000, the ISO and other parties jointly filed a non-conforming LGIA on May 28, 2010, and the Commission issued a letter order accepting the non-conforming LGIA on July 7, 2010. Also, in Docket No. ER10-739-000, Southwest Power Pool, Inc. filed a non-conforming LGIA on February 12, 2010, and the Commission issued a letter order accepting the non-conforming LGIA on April 7, 2010.

design.⁴⁵ These requirements are important to ensure that asynchronous generating facilities do not trip during disturbances on the electricity grid.

Lompoc asserts that the ISO's proposed ride-through requirements eliminate aspects of the fault clearing times in Order No. 661-A.⁴⁶ Lompoc is incorrect. Lompoc asserts that Order No. 661-A limits the applicable duration of abnormally cleared faults to nine cycles. But Order No. 661-A clearly states that the duration range of normally cleared faults is four to nine cycles, and there is no specified upper limit to the duration of abnormally cleared faults.⁴⁷ The ISO's proposed requirements squarely coincide with Order No. 661-A, which specifies that the upper limit of the applicable clearing for normally cleared faults is nine cycles. Because there is no such limitation in Order No. 661-A for abnormally cleared faults, the actual backup clearing time exclusively sets the duration.

Lompoc also asserts that the ISO improperly requires the application of a nine-cycle duration for normally cleared faults.⁴⁸ Lompoc seems to argue that the ISO is requiring resources to stay on-line for an unreasonable period of time

⁴⁵ Walling Testimony at 9-13.

⁴⁶ Lompoc at 16-17.

⁴⁷ Order No. 661-A at Appendix B ("Wind generating plants are required to remain in-service during three-phase faults with *normal clearing* (which is a time period of approximately 4 – 9 cycles) . . . The maximum clearing time the wind generating plant shall be required to withstand for a three-phase fault shall be 9 cycles after which, if the default remains following location-specific *normal clearing time* for three-phase faults, the wind generating plant may disconnect from the transmission system" (emphasis added).)

⁴⁸ Lompoc at 17-18. Lompoc also recommends the ISO direct participating transmission owners to reduce normal clearing times to four cycles and work with any generators that demonstrate non-compliance with existing requirements as opposed to developing new requirements. *Id.* These requirements already exist for wind generators and the Commission has not established a requirement for transmission owners to reduce normal fault clearing times to four cycles.

during low-voltage conditions. In fact, the ISO's requirements are consistent with Order No. 661-A and specifically provide that the normal fault duration shall not exceed nine cycles.⁴⁹ The ISO expects that the vast majority of normal clearing times for transmission faults on the bulk electric system will tend to be much closer to four cycles, rather than nine cycles. The ISO tariff, however, should apply to the entire system, which includes lower-voltage transmission lines and lines in remote areas that might rely on less sophisticated protection equipment than higher-voltage lines which may, in some cases, have normal clearing times that are longer than the typical clearing times which are near to four cycles. Specifying clearing times that may extend to nine cycles is necessary and consistent with Order No. 661-A.

Lompoc argues the tariff amendment proposes "enhanced" ride-through provisions.⁵⁰ Lompoc is incorrect. While the ISO has included language to clarify and make design requirements consistent for low voltage ride-through capabilities, these requirements are consistent with Order No. 661-A. By way of example, the ISO has clarified how to measure "normal clearing time." There are multiple fault locations that can degrade the voltage at the point of interconnection of an asynchronous generating facility. Each fault location is associated with a specific set of protective relays and circuit breakers that clear this fault. Each fault location has an associated normal clearing time. Order No. 661-A does specify the normal clearing time associated with the ride-through

⁴⁹ ISO's July 2, 2010 filing, Attachment A at 88, Appendix H to LGIA, Section A(i)(1).

⁵⁰ Lompoc at 18.

requirement. The ISO requirements specify the applicable normal clearing time as the maximum normal clearing time associated with any three-phase fault location that reduces voltage at the point of interconnection to 0.2 per unit of nominal voltage or less. As explained in Order No. 661, conventional transmission planning practice identifies three-phase faults as the most severe type of fault.⁵¹

Finally, Lompoc asserts that by applying the low voltage ride-through requirements if the voltage at the point of interconnection has remained within the range of 0.9 and 1.10 per-unit of nominal voltage for the preceding two seconds, the ISO is creating unreasonable burdens on generators.⁵² Lompoc argues that the band should reflect 0.95 to 1.05 per unit of nominal voltage on the grounds that if voltage falls outside of this range, the system is already in a weakened state and asynchronous generating facilities should not face a requirement to support the system during such extreme events. Again, Lompoc's arguments miss the point. The ISO's proposed requirement clarifies Order No. 661-A to relieve asynchronous generating facilities from compliance with fault ride-through for repeated fault events. The pre-fault voltage range stated by the ISO is intended to be a screen to define a prior fault. The pre-fault voltage range Lompoc recommends is not appropriate because the system normally operates in the 0.95 to 1.05 per-unit voltage range. Voltages can move outside of this

⁵¹ "A three-phase fault is an unintentional short circuit condition involving all three phases in an electric system. It is the most severe in its impact, but occurs least frequently. For complete reliability, it is virtually universal to design an electric system for three-phase faults." Order No. 661 at P 32 n.23.

⁵² Lompoc at 19-20.

range when the system is severely stressed. Periods of severe stress are the time when fault ride-through is of greatest importance to system security. There is no requirement that the asynchronous generating facility correct this wider voltage range but it is important for the reliable operation of both the system and the generator for *asynchronous* generating facilities to remain connected to the system during these disturbances.

2. The Commission Should Accept the ISO's Revisions to the Reactive Power Requirements and the Requirements Regarding Voltage Regulation and Control.

The ISO's proposed tariff amendment would require all asynchronous generating facilities subject to the interconnection requirements to have power factor design and operating capabilities. This proposal departs from prior Commission orders that place the burden on the transmission owner to demonstrate through a system impact study that an asynchronous generating facility must provide reactive power to support the reliability or security of the transmission grid.⁵³ In its filing, the ISO explained why, in light of projected changes to its generator portfolio requiring all asynchronous generating facilities to provide reactive power, it is essential to support the reliability of the transmission grid.⁵⁴ Moreover, the ISO offered testimony to explain the limitations of system impact studies to detect the need for reactive power over the planning horizon of ten years when many of the resources in the ISO's

⁵³ Order No. 661-A at PP 41-46; *Nevada Power Company* 130 FERC ¶ 61,147, at P 27 (2010).

⁵⁴ ISO July 2, 2010 filing at 11-14.

interconnection queue will displace conventional generators.⁵⁵ Commenting and protesting parties do not rebut these arguments. Instead they argue that the ISO's proposal places an unfair burden on asynchronous generating facilities and that transmission users should bear the costs of reactive power. The parties also raise various technical concerns that have no merit.

LSA asserts that the ISO has failed to demonstrate that the reactive power requirements for asynchronous generating facilities are the most efficient and cost-effective means to obtain the reactive power the ISO needs.⁵⁶ Lompoc raises similar arguments.⁵⁷ LSA mistakenly asserts that the ISO's tariff amendment requires only asynchronous generating facilities to provide reactive power.⁵⁸ These arguments fail to acknowledge that conventional generators interconnected to the ISO grid must provide reactive power capability to satisfy the requirements of Article 9.6.1 of the large generator interconnection agreement.⁵⁹ Variable energy resources should mature to provide comparable support to the ISO grid and shoulder their fair share of responsibility for maintaining grid reliability. Designing a generator to provide reactive power capability is a more effective means to support grid reliability when compared to

⁵⁵ ISO July 2, 2010 filing, Attachment E, Prepared testimony of ISO witness Nisar Shah at 7-9 ("Shah Testimony").

⁵⁶ LSA at 5.

⁵⁷ Lompoc at 9-10.

⁵⁸ LSA at 5-6.

⁵⁹ ISO tariff, Appendix V.

similar capabilities from static reactive devices.⁶⁰ With the exception of shunt capacitors/reactors, all other reactive power resources (synchronous condensers, static synchronous compensators, and static VAR compensators) will be more expensive than having the reactive power capability within the generator itself. Underscoring the need to have sufficient reactive power support is the fact that failure to have adequate reactive power margins was a key contributor to the 2003 Northeast blackout.⁶¹

LSA argues that renewable generators are often located in remote sites and the Commission should “[a]llow generators to choose to meet the new standards at either the generator terminals or through funding new equipment installation at the Point of Interconnection (POI) to the CAISO grid.”⁶²

CalWEA/AWEA similarly asserts that for generators with long generator lead lines, it may not be practical to control the power factor at the point of interconnection. Instead, they should have the option to establish the point of control at the high side of their generator step-up transformers.⁶³ The fundamental purpose of the ISO’s requirements is to ensure that all asynchronous generating facilities have sufficient reactive capability to contribute

⁶⁰ ISO July 2, 2010 filing at 13-14.

⁶¹ U.S.-Canada Power System Outage Task Force, *Final Report on the August 14, 2003 Blackout in the United States and Canada*, at 33-37 (Apr. 5, 2004) (explaining that “reactive reserves were fully depleted within the Cleveland-Akron area . . . Even FE’s own generation in the Ohio Valley had reactive reserves that could not support the sagging voltages inside the Cleveland-Akron area.”). This report is available at <https://reports.energy.gov/BlackoutFinal-Web.pdf>.

⁶² LSA at 10.

⁶³ CalWEA/AWEA at 10.

to the control of the voltage at their point of interconnection to the grid. By applying power factor criteria to these resources on a non-discriminatory basis, they will participate equally in providing reactive power to the grid based on their maximum generating capability. Measuring the power factor at the point of interconnection – as opposed to measurement at some other point – establishes a point common to all resources, thereby ensuring consistent measurements and sufficient reactive power capabilities across the ISO grid. Importantly, the Commission itself has recognized the point of interconnection as the appropriate point to measure power factor when a transmission operator demonstrates the need for this capability from a wind or solar photovoltaic facility.⁶⁴

The ISO proposes that asynchronous generating facilities can meet the power factor requirement by using power electronics designed to supply the required level of reactive capability or fixed or switched capacitors, or a combination of the two.⁶⁵ As a result, an asynchronous generating facility may install reactive support at the point where the collection circuit(s) of the facilities meet the point of interconnection. The generator also has the option to use the reactive capability of the generator inverter, or the generator itself, to meet the reactive power requirement. This should address LSA's concerns. If a facility has long generator lead lines (particularly over one mile in length), the ISO acknowledges it may face difficulties in meeting the power factor requirement, especially if the facility limits its reactive support to reactive power supplied solely

⁶⁴ Order No. 661-A at P 51.

⁶⁵ See ISO July 2, 2010 filing, Attachment A at 90, proposed Appendix H to large generator interconnection agreement, Section A (iii)(1)(c).

by the generator. This is one reason why the ISO specifically proposed allowing facilities to provide reactive power support either through the generators *or* by ancillary reactive devices such as capacitors. The capacitors may be placed on the generator's side of the collection circuit adjacent to the point of interconnection.

All things being equal, an asynchronous generating facility with a long generator collection line will face more interconnection challenges than an asynchronous generating facility with shorter collection circuits. The former will need to expend greater capital to interconnect to the point of interconnection and it will have higher operating costs due to greater line losses. This is true regardless of the ISO's proposed power factor requirements and underscores why the ISO proposes to allow generators to use shunt capacitors and other sources of reactive power (*e.g.*, static VAR compensators, static synchronous compensators), which are normally located at the point of interconnection.

Sempra asserts that substantial equipment cost and energy loss for photovoltaic generating facilities may result from reactive power requirements.⁶⁶ Sempra also asserts that photovoltaic generators should not be required to provide VAR absorption capability because the need for facilities to absorb reactive power will likely occur during low load periods (*i.e.*, during the night) when photovoltaic facilities are not operating.⁶⁷ The ISO does not agree that costs for photovoltaic facilities to comply with reactive power requirements are

⁶⁶ Sempra at 5.

⁶⁷ *Id.* at 7.

excessive. The ISO presented testimony outlining the projected costs to comply with the proposed requirements.⁶⁸ With respect to the capability of photovoltaic facilities to absorb reactive power, the ISO also disagrees with Sempra. There is no requirement to provide reactive power when there is no real power output from the facility, but it is important for solar photovoltaic facilities to have this capability to absorb reactive power. The ISO can experience light loads with potentially higher voltages during daylight hours in the early morning when solar photovoltaic facilities interconnected to the ISO grid are operating. This situation is especially true if the solar photovoltaic facility connected to the ISO grid is physically located in Arizona or Nevada (*i.e.*, east of California load centers). Accordingly, it is important for solar photovoltaic facilities to have the capability to absorb reactive power.

Lompoc argues that the ISO's proposed requirement for an asynchronous generating facility to remain within a range of - 6.6 percent and + 6.6 percent of the facility's real power rating when output is less than 20 percent of the maximum generating capacity is inconsistent with the ISO's proposed reactive power design capabilities.⁶⁹ Lompoc misreads the requirements for reactive power capability. The ISO's proposal requires that "the net reactive power shall remain within the range between -6.6 percent and +6.6 percent of the

⁶⁸ Walling Testimony at 26-27. Incremental costs for these facilities to comply with the proposed power factor design requirements are in the range of \$11 to \$22 per kW of plant rating, or 0.25 percent to 0.58 percent of total facility costs.

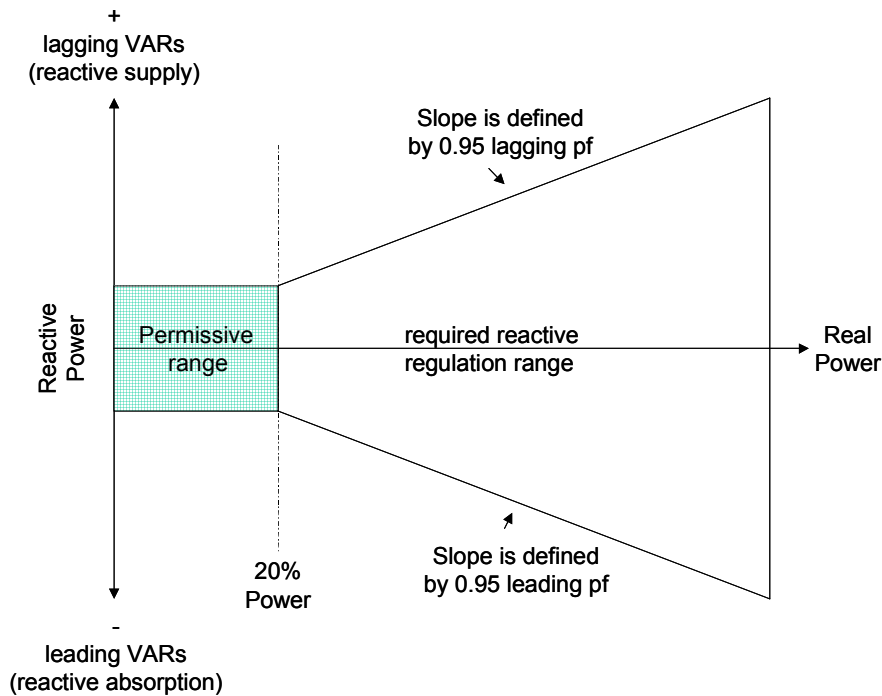
⁶⁹ Lompoc at 22-23.

Asynchronous Generating Facility's real power rating."⁷⁰ This requirement specifies a permissive range but does not require the facility to operate at either end of the range. The ISO is not proposing that a facility must operate at a specific point within the range at the direction of the ISO. Rather, the requirement permits any reactive power flow within the stated limits. For example, the plant can operate at unity power factor in this power range, if the generator operator so desires, because unity power factor represents zero reactive power flow, and zero reactive power flow is within the range between – 6.6 percent and +6.6 percent of the facility's real power rating.

The following figure depicts the permissive range for net reactive power when an asynchronous generating facility's output is less 20 percent of its maximum capacity. In this figure, the horizontal axis represents real power delivered and the vertical axis represents reactive power supplied or absorbed. When power output levels are above 20 percent of maximum capacity, the facility must provide whatever reactive power is needed to maintain the voltage schedule, to the extent that the net aggregate power factor of the facility is between 0.95 leading and 0.95 lagging. A fixed power factor defines a reactive power flow that is proportionate to the real power flow; thus, the sloped lines in the figure reflect the required leading and lagging power factor. The required reactive power capability range is defined by a trapezoid in the real-reactive power plane. At power output levels less than 20 percent of rated power, the facility may deliver or absorb any amount of reactive power that is within the

⁷⁰ ISO July 2, 2010 filing, Attachment A at 91, proposed Appendix H to large generator interconnection agreement, Section A (iii)(2)(c).

bounds of -6.6 percent to $+6.6$ percent of its maximum capacity and is not required to maintain the scheduled voltage. This permissive region is defined by a rectangle in the real-reactive power plane. Essentially this requirement means that the generator need only ensure that it does not provide or absorb reactive power at a rate more than ± 6.6 percent of the facility's maximum generating capacity.



Lompoc argues that the ISO's proposal creates a risk of assigning the cost of mitigating voltage issues to generators.⁷¹ The ISO's proposal presents no such risk. *All* asynchronous generating facilities must be required to take on their fair share of responsibility to maintain grid reliability. For example, if a 100 MW conventional generator is supplying 33 MVARs of reactive power to support grid voltages, and this unit is switched off-line to benefit from a 100 MW wind

⁷¹ Lompoc at 15.

generator which is now switched on-line, the ISO would expect this wind generator to supply an equitable level of reactive power to maintain the same level of grid voltages. This reactive power capability becomes even more important when contingencies occur, and all generating units must be counted on to support the grid and prevent a possible voltage collapse.

The ISO conducts transmission planning studies on an annual basis that identify low-voltage conditions which participating transmission owners must address.⁷² Indeed, by establishing a specific reactive power requirement for asynchronous generating facilities, the ISO will prevent the outcome about which Lompoc complains. Asynchronous generating facilities will have a defined requirement and participating transmission owners will need to shoulder any additional reactive support necessary to support reliable operation of the grid.

Lompoc asserts that an asynchronous generating facility should be permitted to determine and report the electrical point for which its unique generating facility will regulate voltage consistent with its overall design.⁷³ The ISO has proposed to measure the power factor for asynchronous generating facilities at the point of interconnection in order to establish a common and definite reference point. The ISO recognizes that there may be rare circumstances where it may not be feasible to physically measure power factor at the point of interconnection. For this reason, the ISO proposed to permit voltage regulation to a point other than the point of interconnection, provided that the

⁷² See *generally* Section 24 of the ISO tariff.

⁷³ Lompoc at 16.

participating transmission owner concurs. Asynchronous generating facilities are not precluded from proposing an alternative voltage regulating scheme under the requirements set forth in the ISO's tariff amendment.⁷⁴

Lompoc also argues that the ISO's proposed requirement that a change in reactive power should not cause a change in voltage of more than .02 per unit of nominal voltage is overly restrictive, and unduly discriminatory because it is inconsistent with WECC requirements.⁷⁵ Lompoc misreads the application of the 0.02 per unit change in voltage as a voltage bandwidth limit, and further states that this is in conflict with the WECC's pre-contingency voltage bandwidth of +/- 0.05 per unit. The ISO's 0.02 maximum voltage change is a voltage step limit. A facility may adjust its power factor to change voltage by a factor greater than 0.02 per unit, but each incremental step must not cause an immediate change in voltage of more than 0.02 per unit. For example, a change in voltage of 0.03 per unit is desired. This can be accomplished in two steps – one step resulting in a 0.015 per unit change, and the next step resulting in a 0.015 per unit change. One reason for this requirement is to protect voltage-sensitive electrical equipment, such as induction motors handling specialized loads, from damage due to sudden voltage excursions. The WECC requirements referred to

⁷⁴ The ISO's proposed changes to Appendix H of the large generator interconnection agreement provide in part: "The CAISO, in coordination with the Participating TO, may permit the Interconnection Customer to regulate the voltage at a point on the Asynchronous Generating Facility's side of the Point of Interconnection. Regulating voltage to a point other than the [POI] shall not change the Asynchronous Generating Facility's net power factor requirements set forth in Section A, iii of this Appendix H." See ISO July 2, 2010 filing, Attachment A at 91, proposed Appendix H to large generator interconnection agreement, Section A(iv)(5).

⁷⁵ Lompoc at 22.

by Lompoc and referenced in the prepared testimony of ISO witness Nisar Shah apply under contingency conditions only.⁷⁶

Finally, Lompoc argues that generators should receive compensation for any curtailment to achieve a net power factor range to maintain consistent voltage schedules at the point of interconnection.⁷⁷ Lompoc's request is unreasonable. Conventional generators do not receive compensation for reactive power within their normal operating range. The ISO's proposed requirements provide in part that an "Asynchronous Generating Facility shall be designed to have sufficient reactive power sourcing capability to achieve a net power factor of 0.95 lagging or less at the Point of Interconnection, *at the Generating Facility's maximum Generating Facility Capacity.*"⁷⁸ Under this requirement, facilities should face no decrement of real power output in order to maintain necessary power factor under normal conditions. The only time the ISO may reduce the output of a generator is if there is a forced outage to reactive power equipment at the facility (*e.g.*, a capacitor fails and switches out of service). The ISO's proposed requirements recognize this possible contingency and provide that "[p]ower output may be curtailed at the direction of CAISO to a value where the net power factor range is met, if the reactive power capability of an Asynchronous Generating Facility is partially or totally unavailable."⁷⁹

⁷⁶ Shah Testimony at 4.

⁷⁷ Lompoc at 11.

⁷⁸ ISO July 2, 2010 filing, Attachment A at 89, Appendix H of large generator interconnection agreement, Section A(iii)(1)(a) (emphasis added).

⁷⁹ ISO July 2, 2010 filing, Attachment A at 91, Appendix H of large generator interconnection agreement, Appendix H, Section A (iii)(2)(b).

3. The Commission Should Accept the ISO's Revisions Regarding Power Plant Management.

The ISO's proposed requirements for power plant management establish reasonable parameters for asynchronous generating facilities to limit their output as well as limit changes in the ramp rates except for downward ramps resulting from lack of fuel, capabilities which are largely inherent in conventional generators. The ISO also proposes to require asynchronous generating facilities to have the capability to respond to over-frequency conditions.

No party raises any significant protest to these proposed technical requirements. Instead, commenting parties seek procedural off-ramps from complying with these requirements. For example, LSA argues that the Commission should prohibit the use of the proposed power management and ramp control features until the Commission approves tariff rules describing when and how ISO will use these capabilities, and should exempt projects from power management and ramp control requirements if the required equipment is not available from at least three suppliers at least 18 months before a project's commercial operation date.⁸⁰ Also, Sempra suggests it is premature to adopt power plant management requirements without market rules.⁸¹ CalWEA/AWEA argue that the ISO's proposal raises uncertainties concerning the use of power management capabilities and asks the Commission to clarify that the ISO should use this capability judiciously and only as a last resort to maintain reliability.⁸²

⁸⁰ LSA at 8-9.

⁸¹ Sempra at 8-9.

⁸² CalWEA/AWEA at 8-9.

The ISO wants to emphasize that the proposed power management requirements at issue are minimum design features for asynchronous generating facilities. The ISO explicitly provided that facilities will have until January 1, 2012 to develop these requirements. The reason for specifying this date is to allow the ISO sufficient time to develop market and dispatch rules. Until those rules are in place, the ISO has no intention to rely on these power management capabilities. With respect to LSA's comments, the Commission should not grant an exemption for facilities based on whether required equipment is readily available. The ISO emphasizes that the required equipment is commercially available. Asynchronous generating facilities can implement these requirements through their own internal communication and control systems.⁸³ The ISO has provided testimony supporting this fact and no party has disputed the ISO's evidence.

Lompoc raised the only technical concern with these design features, asserting that the ISO's proposed limitation on changes in voltage at the point of interconnection as a result of changes to the power management set point is overly restrictive and that, instead, allowable voltage excursions at the point of interconnection should reflect contingency conditions on the transmission grid.⁸⁴ The ISO strongly disagrees. A change in power management set point should not cause abnormal voltage excursions. The ISO's proposal to allow voltage

⁸³ Walling Testimony at 35-39.

⁸⁴ Lompoc at 18-19.

change of .02 per unit of the nominal voltage at the point of interconnection is based on a reasonable allowance during normal operating conditions.⁸⁵

4. The Commission Should Accept the ISO's Revisions Regarding SCADA and ADS Requirements.

LSA recommends that the Commission eliminate the ISO's proposed requirements that asynchronous generating facilities provide capabilities for Supervisory Control and Data Acquisition ("SCADA") and Automated Dispatch System ("ADS"). LSA does not oppose the requirements but instead recommends that they appear elsewhere in the tariff and apply to all generators.⁸⁶ The Commission should disregard LSA's comments. The ISO's proposed requirements are critical for asynchronous generating facilities to operate on the ISO grid. SCADA capability will allow plant operators to remotely monitor and control the elements of their asynchronous generating facilities.⁸⁷ This functionality is important for wind and photovoltaic facilities to comply with power management requirements. The ISO's proposal merely extends to all asynchronous generating facilities the current language concerning SCADA capabilities that is applicable to wind plants.

Further, ADS capability is necessary for scheduling coordinators to receive dispatch instructions from the ISO.⁸⁸ The ISO's proposed requirement only specifies that an asynchronous generating facility must be able to receive

⁸⁵ Walling Testimony at 23.

⁸⁶ LSA at 10.

⁸⁷ ISO tariff, Appendix A, definition of SCADA.

⁸⁸ ISO tariff, Appendix A, definition of ADS.

and respond to ADS instructions and any other form of communication authorized by the ISO tariff and consistent with the timelines prescribed in the ISO tariff. This is a reasonable design expectation that applies to all participating generators.⁸⁹

H. The Commission Should Find that the ISO's Stakeholder Process for the Tariff Amendment Was Appropriate.

CalWEA/AWEA argue that the ISO's stakeholder process was insufficient. They assert the "process lasted less than three months, with just a few telephonic meetings and limited opportunity to submit written comments under tight timelines."⁹⁰ These parties argue that the ISO's efforts to apply the proposed interconnection requirements to projects seeking ARRA funding do not justify the ISO's request for waiver of the Commission's prior notice requirements. The ISO strongly disagrees. As explained above in Section I.D of this answer, the rush of asynchronous generating facilities to interconnect in order to secure ARRA funding required the ISO to develop its proposed requirements in a deliberate albeit expedited manner to support the integration of these resources. These facts provide good cause to waive the prior notice requirements to make the ISO's tariff amendment effective as of July 3, 2010.⁹¹

The ISO's July 2, 2010 filing documents its stakeholder process, which commenced in February and included a face-to-face meeting with the ISO's technical staff as well as conference calls and the opportunity to submit written

⁸⁹ See generally ISO tariff, Section 4.6.1.

⁹⁰ CalWEA/AWEA at 11.

⁹¹ See, e.g., *Southwest Power Pool, Inc.*, 127 FERC ¶ 61,283, at P 35.

comments on the ISO's proposed policy and draft tariff language.⁹² Importantly, several prominent renewable developers participated in the ISO's stakeholder process but did not file protests of the ISO's proposed requirements.⁹³ On the other hand, AWEA did not submit any written comments to the ISO during the stakeholder process. LSA raises similar concerns with the ISO's stakeholder process and asks that the Commission rejects the ISO's tariff amendment in its entirety. LSA asserts the ISO's process began in April of 2010.⁹⁴ This is factually incorrect. The ISO commenced its stakeholder process in February 2010.⁹⁵

The ISO appreciates the desire of stakeholders for a robust process to debate policy and technical issues. In this case, the process was sufficient and resulted in multiple refinements to the ISO's proposed requirements. For example, the ISO incorporated stakeholder recommendations regarding the ramp rate requirements for power management.⁹⁶ The ISO also clarified its proposed exemptions for these requirements in response to stakeholder concerns and incorporated multiple stakeholder suggestions in the development of its proposed tariff language. The ISO's stakeholder process culminated with the approval of the ISO Governing Board during an open meeting that included an opportunity to

⁹² ISO July 2, 2010 filing, Attachment G.

⁹³ Comments submitted by stakeholders in the ISO's stakeholder process are available at the ISO website at <http://www.caiso.com/27db/27dbde921bb60.html#278ca78f26410>.

⁹⁴ LSA at 3.

⁹⁵ ISO July 2, 2010 filing, Attachment G.

⁹⁶ ISO July 2, 2010 filing, Attachment F, Memorandum to ISO Board of Governors dated May 10, 2010 at 9-11.

provide comments to the ISO Governing Board. Several parties, moreover, endorse the ISO's proposed requirements.⁹⁷

Sempra argues that the ISO's proposed generator power management requirements require additional stakeholder proceedings to address unresolved market and dispatch issues.⁹⁸ LSA makes a similar argument that an absence of compliance or dispatch provisions related to generator power management and ramp rate controls prevents the Commission from assessing the reasonableness of the proposed requirements.⁹⁹ While these comments correctly state that additional stakeholder discussions are necessary to develop market rules, they fail to acknowledge the need for asynchronous generating facilities to have *the capability* to control their output subject to available fuel. The ISO believes any market or dispatch rules pertaining to generator power management for asynchronous generating facilities should advance reliable operation of the grid. But the ISO believes that the ISO and stakeholders should develop such rules to advance California's renewable portfolio standard. It is important that the large volume of wind and solar photovoltaic generating facilities seeking to interconnect to the ISO grid have the capability to participate in the ISO's markets and respond to dispatch instructions. Without this capability and as asynchronous generating facilities displace conventional generation, the ISO will need to curtail the entire output of these resources when the transmission grid is

⁹⁷ See *generally* comments of Calpine, Bonneville, and SWP.

⁹⁸ Sempra at 8-9.

⁹⁹ LSA at 4-5.

stressed. Such an approach is not reasonable in light of available technology¹⁰⁰ and important policy goals, including California's renewable portfolio standard and federal policies promoting variable energy resources. To mitigate any uncertainty created by this requirement, the ISO has deferred its use until January 1, 2012 so that the ISO may complete a stakeholder process to develop market and dispatch rules.¹⁰¹ However, in order to implement market and dispatch rules in a comprehensive and efficient manner, the requirements that the ISO has proposed relating to power management need to be in place already when these rules are adopted. Otherwise, a large number of the resources to be covered by these rules may lack the technical capability to comply with them. For these reasons, the ISO urges the Commission to approve its proposed generator power management requirements set forth in Section A (v) of Appendix H to the large generator interconnection agreement.

Sempra asserts that the Commission should defer ruling on the ISO's proposed generator power management requirements so as not to risk inconsistency with the outcome of the Commission's Notice of Inquiry relating to the integration of variable generation.¹⁰² There is no risk of inconsistency and thus no need for the Commission to defer ruling on the ISO's tariff amendment in its entirety. As explained in the tariff amendment and in this answer, the tariff

¹⁰⁰ The ISO presented evidence that developers of either wind or solar photovoltaic projects can meet the proposed generator power management requirements through available control systems. Walling Testimony at 34-38.

¹⁰¹ ISO July 2, 2010 filing, Attachment F, Memorandum to ISO Board of Governors dated May 10, 2010 at 9-11.

¹⁰² Sempra at 9 & n.6 (citing *Integration of Variable Energy Resources*, FERC Stats. & Regs. ¶ 35,563 (2010) ("Notice of Inquiry").

amendment is, to a large degree, simply a natural extension of the directives set forth in Order Nos. 661 and 661-A to all asynchronous generating facilities. In any event, Commission approval of the tariff amendment will not interfere with the evolving policy for variable energy resources that is under consideration in the Notice of Inquiry. The Notice of Inquiry is just that – a request for comments from market participants to allow the Commission to “explore whether reforms of existing policies are necessary.”¹⁰³ The Notice of Inquiry is not a new Commission rule or even a notice of proposed rulemaking, nor did it state or imply that transmission operators should suspend their own efforts to facilitate the integration of variable energy resources while the Notice of Inquiry is ongoing. Indeed, the ISO believes its tariff amendment is consistent with the goals of the Notice of Inquiry because the tariff amendment will result in more efficient integration of variable energy resources while preserving grid reliability. If the Notice of Inquiry leads to the development of new Commission requirements applicable to variable energy resources, the ISO will of course comply with those requirements after they are issued.

Lompoc asks the Commission to direct the ISO to return to its stakeholder processes to assess transmission system planning requirements as an alternative to applying reactive power requirements on asynchronous generating facilities.¹⁰⁴ Lompoc did not participate in the ISO’s stakeholder process and essentially seeks another opportunity to debate whether asynchronous

¹⁰³ Notice of Inquiry at P 1.

¹⁰⁴ Lompoc at 14.

generating facilities or transmission users should shoulder the burden of providing reactive power support to the transmission grid. The ISO considered this issue during the development of these requirements and expressly determined that the optimal approach is to require generating facilities to continue to provide this baseline functionality. By doing so, the ISO and all participating generators can mitigate the risk of insufficient voltage support as opposed to waiting for a voltage problem to occur that may require a higher-cost solution.

Although the stakeholder process was highly productive for discussing and working to resolve certain issues – in particular, technical issues such as those discussed above), it would be unrealistic to expect that fundamental disagreements as to theory – such as Lompoc’s contention that transmission users should bear the burden of providing reactive power support – could be resolved even if the stakeholder process were resumed as Lompoc requests. Ultimately, however, the critical issue is whether the ISO’s proposal is just and reasonable, and speculation as to what a longer stakeholder process might have produced is not relevant to that question. For the reasons the ISO has explained, its proposal is just and reasonable. Further, while there is no requirement to participate in the ISO’s stakeholder processes, the Commission should weigh Lompoc’s arguments that the process was insufficient against the fact that Lompoc did not even participate in the process.

II. Conclusion

The Commission should accept the ISO's July 2, 2010 tariff amendment to establish interconnection requirements for asynchronous generating facilities and waive the prior notice requirements in order to make the tariff changes effective July 3, 2010, other than the tariff changes regarding generator power management, which should be made effective January 1, 2012. The ISO's proposed requirements will advance grid reliability at time when a large volume of wind and solar photovoltaic facilities are seeking to interconnect to the ISO grid. The ISO's proposed interconnection requirements will allow these facilities to contribute to reliable operation of the grid in a manner that is comparable to the conventional generating facilities they will displace.

Respectfully submitted,

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Dated: August 9, 2010

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon all of the parties listed on the official service list for the above-referenced proceeding, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Washington, DC this 9th day of August, 2010.

/s/ Daniel Klein
Daniel Klein