

130 FERC ¶ 61,147
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Chairman;
Marc Spitzer, Philip D. Moeller,
and John R. Norris.

Nevada Power Company

Docket No. ER10-508-000

ORDER CONDITIONALLY ACCEPTING INTERCONNECTION AGREEMENT

(Issued February 26, 2010)

1. On December 28, 2009, Nevada Power Company (Nevada Power) filed an unexecuted, Large Generator Interconnection Agreement (LGIA) between itself and El Dorado Energy, LLC (El Dorado) for the interconnection of the Copper Mountain Solar I Project. In this order, we accept Nevada Power's non-conforming LGIA effective January 28, 2010 on the condition that before we make the determination on Paragraphs 2 and 4 of Appendix C of the LGIA, Nevada Power must submit a compliance filing, as described below.

I. Background

2. On October 28, 1998, Nevada Power filed an interconnection agreement between El Dorado and itself to design and construct a 230 kilovolt (kV) substation (Merchant Substation), an interconnecting transmission line to the El Dorado Substation, and associated metering and communications facilities.¹ The agreement delineated ownership of the substation between El Dorado and Nevada Power. Although portions of the Merchant Substation would be owned by El Dorado, the substation was deemed to be in Nevada Power's control area, and as such Nevada Power had full operational control.

3. Subsequently, El Dorado submitted an interconnection request to Nevada Power to interconnect its Copper Mountain Solar I Project, a 48 megawatt photovoltaic solar generating facility, to the portion of the Merchant Substation owned by El Dorado. As a result of the request, Nevada Power conducted a system impact study and facilities study to determine how the interconnection would affect its system. After the completion of the studies, the two parties entered into negotiations on how to mitigate the impacts of the

¹ Nevada Power December 28, 2009 Transmittal Letter at 1.

interconnection on Nevada Power's system. As a result of these negotiations, Nevada Power filed an unexecuted interconnection agreement, which reflects mutual agreement between the parties except on one issue: (1) whether El Dorado's solar generating facility should be subject to reactive power and voltage regulation requirements contained in Nevada Power's LGIA; or (2) whether Nevada Power first needs to demonstrate that the reactive power requirements are necessary in order to maintain grid reliability, a requirement that currently applies only to wind facilities in interconnection procedures adopted in Order No. 661.²

II. The Filing

4. On December 28, 2009, Nevada Power filed an unexecuted Interconnection Agreement, which contains several upgrades that both Nevada Power and El Dorado have found necessary to interconnect El Dorado's solar generating facility to the Merchant Substation and to mitigate any possible reliability impacts on Nevada Power's system. El Dorado has agreed to construct these upgrades at cost.³ Specifically, the upgrades identified by the parties are: (1) a north bus extension westbound to enable the Merchant-Eldorado 230 kV line to be transferred from the south bus to the north bus, along with bus extension associated structures and hardware; (2) a 230 kV disconnect switch and associated support structures at the Merchant-Eldorado 230 kV line position; (3) a 230 kV power circuit breaker at the Merchant-McCullough 230 kV line position; (4) two 230 kV disconnect switches and associated support structures at the Merchant-McCullough 230 kV line position; (5) three coupling capacitor voltage transformers for protective relaying at the new generating facility line tie down; and (6) other protective relaying.⁴ Additionally, both parties will form a joint operating committee to coordinate operating and technical considerations of the service provided under the agreement. Both parties began testing of their respective facilities on February 1, 2010 so that El Dorado may meet its trial operation date of March 1, 2010 and its commercial operation date of July 31, 2010.⁵

² *Interconnection for Wind Energy*, Order No. 661, FERC Stats. & Regs. ¶ 31,186, *order on reh'g*, Order No. 661-A, FERC Stats. & Regs. ¶ 31,198 (2005)

³ Nevada Power December 28, 2009 Transmittal Letter at 2.

⁴ *Id.*

⁵ *Id.* at 3.

5. The parties disagree on whether paragraphs 2 and 4 of Appendix C should apply to El Dorado.⁶ Paragraph 2 details the reactive power requirements necessary for a generator to interconnect with Nevada Power's system. Nevada Power explains that Paragraph 2 reflects Nevada Power's standard requirements for all generators

⁶ Paragraphs 2 and 4 of Appendix C read as follows: 2. Power Factor (PF) – The Generating Facility shall be capable of absorbing or producing reactive power in a range corresponding to a power factor of 0.95 leading to 0.95 lagging unless the Generating Facility is exempt under Transmission Provider's criteria established in accordance with Requirement 3 of NERC Standard VAR-001-1, as such standard may be amended from time to time. If the Generating Facility is exempt, Articles 9.6.1 and 9.6.2 of the Agreement do not apply. If the Generating Facility is not exempt, the Generating Facility shall have the required capability on and after the Commercial Operation Date, and this provision shall supersede the first sentence of Article 9.6.2 of the Agreement; provided, that during Trial Operation the required capability shall instead be provided by Interconnection Customer's combined cycle combustion turbine facility which is connected to the Merchant Substation. Any combination of the following may be installed by Interconnection Customer in order for the Generating Facility to provide the required capability.

- a. Inverter with reactive capability.
- b. Inverters with reactive capability and switched capacitors (if inverter has a smaller adjustment range, switched capacitors must be added to supplement).
- c. D-VAR (trade name) – dynamic reactive power compensation with mechanically switched capacitors or equivalent.
- d. SVC – Static var compensator.
- e. STATCOM.
- f. Synchronous condenser.
- g. Any other equipment capable of providing the required capability, subject to approval by Transmission Provider, which approval shall not be unreasonably withheld.

4. Regulators – The Generating Facility is a PV generator and as such does not have the physical characteristic to which regulators would apply. Equipment serving the function of regulators shall be installed in the Generating Facility unless the Generating Facility is exempt under Transmission Provider's criteria established in accordance with Requirement 3 of NERC Standard VAR-001-1, as such standard may be amended from time to time. If the Generating Facility is exempt, the provisions regarding regulators contained in Article 9.6.3 of the Agreement do not apply. In any case, all equipment in the Generating Facility including the generators must withstand +/- 10% of the transmission nominal operational voltage.

interconnecting to Nevada Power's transmission system, as well as all generating facilities where Nevada Power is an affected system. Nevada Power states that pursuant to standards set by the North American Electric Reliability Corporation (NERC), Nevada Power requires all generators to be capable of providing reactive power support as provided by section 9.6.1 its *pro forma* LGIA.⁷ Nevada Power contends that Order No. 661 created an exemption from these requirements for wind generators if the system impact study does not demonstrate that such support is necessary to maintain system reliability.⁸ However, Nevada Power states that no such exemption has been approved for any other type of generator.

6. Nevada Power expresses concern that granting such an exemption to solar generating facilities seeking to interconnect to its transmission system will ultimately degrade reliability. Nevada Power states that while the specific facility proposed by El Dorado may not cause a substantial impact on Nevada Power's transmission system with respect to providing reactive power support, the cumulative effect of additional exemptions that may follow El Dorado's will be to degrade reliability. This is because solar generating facilities could comprise up to 30 percent of Nevada Power's load within the next five years.⁹ Nevada Power also notes that, with respect to integrating variable generation such as solar generating facilities, NERC has recommended that all reactive support requirements be applied consistently for all generating technologies.¹⁰

7. Nevada Power states that the parties also disagree on the language of Paragraph 4, which requires El Dorado's generating facility to install voltage regulators to regulate and use the reactive power from equipment required by Paragraph 2. Nevada Power argues that in order to maintain the current level of reliability, renewable resources must be capable of supplying the reactive power previously supplied by the resources they are

⁷ *Id.* at 4.

⁸ *Interconnection for Wind Energy*, Order No. 661, FERC Stats. & Regs. ¶ 31,186, at P 50, *order on reh'g*, Order No. 661-A, FERC Stats. & Regs. ¶ 31,198 (2005).

⁹ Nevada Power December 28, 2009 Transmittal Letter at 4. Nevada Power also asks that if the Commission finds that El Dorado should not be required to be capable of providing reactive support, the exemption should be limited to El Dorado's particular circumstances; i.e., the Commission should not require that Nevada Power conduct a study in order to require solar generation facilities interconnecting to its transmission system to provide reactive support. *Id.* at 4, n.6.

¹⁰ *Id.* at 5, n.7 (citing http://www.nerc.com/docs/pc/ivgtf/IVGTF_Report_041609.pdf at P. 63).

replacing.¹¹ As such, Nevada Power states that the voltage regulator is required to ensure reliability. Nevada Power notes that El Dorado also disputes the requirement to install a voltage regulator. Accordingly, Nevada Power requests that the Commission resolve the dispute between the parties as to the requirements of Paragraph 2 and Paragraph 4.

8. Nevada Power requests waiver of the 60-day prior notice requirement to permit an effective date of January 28, 2010, subject to modification by the Commission upon the resolution of issues in Appendix C of the LGIA.¹² It explains that this effective date should be granted because El Dorado has already commenced construction on the facility and it needs to begin testing by February 1, 2010, in order to begin commercial operations by July 31, 2010. The agreement was filed within 30 days of the commencement of service over the interconnection facilities.

III. Notices of Filings and Responsive Pleadings

9. Notice of Nevada Power's filing was published in the *Federal Register*, 75 Fed. Reg. 1766 (2010), with interventions and protests due on or before January 19, 2010. Timely motions to intervene and comments were filed by El Dorado and NextLight Renewable Power, LLC (NextLight). BrightSource Energy, Inc. and the Solar Energy Industries Association also filed motions to intervene. On February 3, 2010, Nevada Power filed an answer to El Dorado's protest. On February 12, 2010, El Dorado filed a reply to El Dorado's answer.

10. In its protest, El Dorado argues that Nevada Power should be required to demonstrate that the capability for El Dorado's solar generating facility to provide and absorb reactive power is necessary for system reliability. El Dorado explains that photovoltaic solar generators differ from conventional generators in that they are not inherently capable of providing reactive power.¹³ El Dorado states that, in order for its solar generator to provide reactive power, it must install expensive equipment, while conventional generators are capable of providing reactive power at little or no cost.

11. El Dorado notes that its solar generating facility would only be operating during the daylight hours, and that it will not be operating at night, when Nevada Power may need generators to absorb reactive power. Therefore, El Dorado states that it makes little sense to require the installation of expensive equipment at the facility when it is unlikely that the facility would ever be called upon to provide reactive power support to Nevada

¹¹ *Id.* at 5.

¹² *Id.* at 6.

¹³ El Dorado January 19, 2010 Motion to Intervene and Protest at 3.

Power.¹⁴ El Dorado contends that it has a similar objection to the requirement to install regulators in Paragraph 4, because the same expensive equipment required to provide reactive power support in Paragraph 2 is also required by Paragraph 4.¹⁵

12. El Dorado argues that Nevada Power should be required to undertake a study to establish whether the disputed requirements and associated upgrades are necessary to maintain grid reliability. El Dorado states that such a course is consistent with Order No. 661. El Dorado explains that it recognizes that the Commission's actions in Order No. 661 were wind-specific, but it notes that the Commission made clear that it may take a case-specific action if another technology emerges for which a different set of interconnection procedures is necessary. El Dorado notes that, like wind generators, its solar generating facility requires expensive upgrades to provide reactive power. El Dorado argues that its generating facility should therefore be granted case-specific consideration here.¹⁶

13. El Dorado acknowledges Nevada Power's reliability concerns over granting case-specific consideration to its solar facilities. However, El Dorado states that, with a case-specific approach, the Commission need not promulgate a generic ruling on the treatment of all solar generation at this time. El Dorado also contends that, to the extent the study demonstrates that the disputed requirements and associated upgrades to its solar generating facility are necessary to maintain system reliability, it will then make the upgrades and meet the requirements of Paragraph 2 and Paragraph 4.¹⁷ As such, El Dorado argues that nothing requested by El Dorado is inconsistent with NERC's recommendations regarding the interconnection of variable generation.

14. El Dorado states that requiring Nevada Power to undertake a study to ascertain whether the upgrades are necessary will provide assurance that its interconnection is not frustrated by requirements that would not be needed for safety and reliability. El Dorado further requests that the study be conducted in a timely manner so that additional necessary equipment may be purchased and installed. To that end, El Dorado requests that Nevada Power be required to provide study results within 60 days of the date of this order.¹⁸

¹⁴ *Id.* at 5.

¹⁵ *Id.* at 5-6.

¹⁶ *Id.* at 6-10.

¹⁷ *Id.*

¹⁸ *Id.* at 10.

15. In its comments, NextLight supports the right of El Dorado to request that the interconnection agreement be filed unexecuted. However, NextLight urges the Commission to address only the issues posed by the filing and not to use this proceeding as a forum for the development of a generic intermittent resource policy.¹⁹

16. In its answer, Nevada Power notes that on January 21, 2010, the Commission issued a Notice of Inquiry on the Integration of Variable Energy Resources, which addresses the issue in dispute in this proceeding.²⁰ Nevada Power urges the Commission to deny El Dorado's protest and to consider the issue of whether to expand Order No. 661 to solar facilities on a generic basis in the ongoing rulemaking proceeding. Nevada Power asserts that before establishing a generic exemption, the Commission should examine the reliability implications of such a policy in detail.

17. Nevada Power challenges El Dorado's assertion that installing the reactive power equipment would be expensive. Nevada Power asserts that the cost would be reasonable and even if it were costly, "cost alone should not be the sole determinative factor" in whether to grant an exemption from generator voltage support requirements.²¹ Nevada Power also reiterates granting all variable solar generation an exemption from reactive support requirements raises substantial reliability concerns and could have a significant impact on its system.²² Therefore, Nevada Power argues that reliability concerns should be reviewed on a system-wide basis, as opposed to focusing on one specific solar facility. Nevada Power also raises concerns with the difficulties in conducting a system impact study due to the increasing amount of renewable resources seeking to interconnect with the transmission system.

18. In its reply, El Dorado argues that the Commission should not defer a decision in this proceeding until the Commission concludes its Variable Energy Resources proceeding due to time constraints concerning this interconnection.²³ El Dorado reiterates that the Commission should act in a case-specific manner in this instance as they assert that "it would serve no purpose for the Commission to tie the limited and

¹⁹ NextLight January 19, 2010 Motion to Intervene and Comments at 2.

²⁰ *Integration of Variable Energy Resources, Notice of Inquiry*, 75 Fed. Reg. 4,316 (Jan. 21, 2010), FERC Stats. & Regs. ¶ 35,563 (2010) (NOI).

²¹ Nevada Power February 3, 2010 Answer at 3.

²² *Id.*

²³ El Dorado states that first block of power from the facility could be delivering energy to the grid as early as March 2010, with the project achieving full commercial operation as soon as July 2010. El Dorado February 12, 2010 Reply at 3.

discrete question in this proceeding to the much larger and complex set of issues that the industry will only begin to address in the NOI proceeding.”²⁴

IV. Discussion

A. Procedural Matters

19. Pursuant to Rule 214 of the Commission’s Rules of Practice and Procedure,²⁵ the timely, unopposed motions to intervene serve to make the entities that filed them parties to the proceeding.

20. Rule 213(a)(2) of the Commission’s Rules of Practice and Procedure²⁶ prohibits an answer to a protest or an answer to an answer, unless otherwise ordered by the decisional authority. We will accept Nevada Power and El Dorado’s answers because they have provided information that assisted us in our decision-making process.

B. Substantive Matters

21. As discussed below, we grant waiver of the notice requirement for good cause shown and conditionally accept the unexecuted LGIA between Nevada Power and El Dorado for filing to become effective on January 28, 2010, as requested.²⁷

22. In Order No. 661, the Commission adopted final standard procedures and technical requirements for the interconnection of large wind plants in Appendix G, and these procedures require all public utilities that own, control, or operate facilities for transmitting electric energy in interstate commerce to append Appendix G to the Large Generator Interconnection Procedures and LGIAs in their open access transmission tariffs.²⁸ In Order No. 661, the Commission required a wind plant to maintain the

²⁴ *Id.* at 5.

²⁵ 18 C.F.R. § 385.214 (2009).

²⁶ 18 C.F.R. § 385.213(a)(2) (2009).

²⁷ *See Central Hudson Gas & Electric Corp.*, 60 FERC ¶ 61,106 at 61,338-39, *order on reh’g*, 61 FERC ¶ 61,089 (1992); *see also Prior Notice and Filing Requirements under Part II of the Federal Power Act*, 64 FERC ¶ 61,139, at 61,984, *order on reh’g*, 65 FERC ¶ 61,081 (1993) (waiver of prior notice will be granted if service agreements are filed within 30 days after service commences).

²⁸ *Interconnection for Wind Energy*, Order No. 661, FERC Stats. & Regs. ¶ 31,186 (2005).

required power factor range only if the Transmission Provider shows, through the system impact study, that such capability is required of that plant to ensure safety or reliability.²⁹

23. In the rulemaking proceeding that culminated in Order No. 661, the Commission considered³⁰ whether these procedures should be applicable to all alternative technologies, but in promulgating Order No. 661, the Commission decided that these procedures would not be applicable to non-wind technologies.³¹ The Commission did indicate that the procedures could be expanded to non-wind technologies in the future, either by generic or case-specific actions, “if another technology emerges for which a different set of interconnection requirements is necessary.”³²

24. We agree with Nevada Power and NextLight that this is not the appropriate proceeding in which to make a generic determination on whether to extend to solar generators wind power’s exemption from the requirement to provide reactive power support. First, the Commission is already considering this issue on a generic basis in another proceeding. As Nevada Power notes, on January 21, 2010, the Commission issued the Variable Energy Resources NOI³³ seeking comment on whether the Commission should “revisit the reactive power requirements set forth in Order No. 661.” The Commission also sought comment on what other requirements, if any, should apply to variable energy resources³⁴ to ensure that all resources contribute to grid reliability in a

²⁹ *Id.* P 50-52.

³⁰ Several of the commenters focused on the issue of expanding the rule to cover solar and non-synchronous facilities. *See* Southern California Edison Co. at 3-4; Comments of Tucson Electric Power at 1; Comments of Northeast Utilities Service Co. at 6-7; Comments of the California Public Utilities Commission at 3; and Comments of PJM Interconnection, L.L.C. at 12.

³¹ *Interconnection for Wind Energy*, Order No. 661, FERC Stats. & Regs. ¶ 31,186, at P 106.

³² *Id.*

³³ *Integration of Variable Energy Resources*, 75 Fed. Reg. 4,316 (Jan. 21, 2010) FERC Stats. & Regs. ¶ 35,563 (2010).

³⁴ The term variable energy resource refers to renewable energy resources that are characterized by variability in the fuel source that is beyond the control of the resource operator. This includes wind and solar generation facilities and certain hydroelectric resources.

manner that is not unduly discriminatory.³⁵ The Commission urges all interested parties to consider filing comments in the NOI proceeding.³⁶

25. Second, given the unique facts and circumstances of this case, the Commission need not decide the generic questions raised in the NOI proceeding. Nevada Power encourages the Commission to defer deciding the issues in dispute pending the outcome of the Variable Energy Resources NOI proceeding. El Dorado, however, counters that there is not sufficient time for the Commission to resolve the issue in the NOI proceeding prior to the in-service date for this facility. We are convinced that waiting for the conclusion of the NOI proceeding is not an appropriate alternative and therefore will make a case-specific determination on the issue raised in the instant filing. Specifically, we must consider the burden on this specific generator to provide reactive power support and the probability that the reactive power support provided by the generator will be critical to maintaining the safety or reliability of Nevada Power's system.

26. This is the approach we used in Order No. 661, where the Commission balanced the burden on the wind generating units with the reliability needs of the system. In that rule, the Commission raised concerns that interconnections should not be "frustrated by unnecessary requirements that are not necessary to maintain safety or reliability" and therefore placed the burden on the transmission provider to demonstrate that the installation of the equipment was necessary for the reliability of the system.³⁷

27. Therefore, we will require Nevada Power to demonstrate that the capability of El Dorado to provide reactive power is necessary to ensure the safety or reliability of the system. Because we are for the first time in this order applying this Order No. 661 standard to these solar facilities, we will give Nevada Power an opportunity to make its case.³⁸ Thus far, given that the record shows that (1) El Dorado's solar generating facility is not inherently capable of providing reactive power and instead must purchase additional equipment to do so,³⁹ (2) the facility's co-location with a combined cycle

³⁵ *Integration of Variable Energy Resources*, 75 Fed. Reg. 4,316 (Jan. 21, 2010) FERC Stats. & Regs. ¶ 35,563 (2010) at P 36.

³⁶ Comments are due on or before March 29, 2010. *See* 75 Fed. Reg. 4316 (2010).

³⁷ *Interconnection for Wind Energy*, Order No. 661, FERC Stats. & Regs. ¶ 31,186, at P 51.

³⁸ El Dorado recognizes that Nevada Power should first undertake a study. *See supra* P 12.

³⁹ El Dorado January 19, 2010 Motion to Intervene and Protest at 3. Nevada Power does not challenge El Dorado's assertion that it must purchase additional

generating facility makes it less important that it be capable of providing reactive power support,⁴⁰ and (3) Nevada Power states that it is not concerned with the specific reliability impact of this facility but rather with the cumulative effect of large quantities of future solar generation not providing reactive power⁴¹, the record does not show that the language in Paragraphs 2 and 4 is justified. Accordingly, consistent with our requirements for all wind facilities in Order No. 661, the Commission will require based on the facts of this case, that, before Nevada Power may require El Dorado's facility to be capable of providing reactive power, Nevada Power must show, through a system impact study, that such a requirement is necessary to ensure the safety or reliability of the grid. Nevada Power has not done so. Therefore, the Commission directs Nevada Power to submit a compliance filing within 15 days of the date of this order either revising the LGIA to remove the language in Paragraphs 2 and 4 of Appendix C or notifying the Commission that it plans on submitting a system impact study. If Nevada Power decides to submit a system impact study demonstrating that El Dorado must provide reactive power to ensure the safety or reliability of the system, they are directed to do so within 60 days of the date of this order. We will rule on the language in Paragraphs 2 and 4 after the compliance filings are submitted.

28. Nevada Power is concerned that exempting all large solar generating facilities from being capable of providing reactive power could adversely affect the safety and reliability of the grid.⁴² However, we believe that such a system-wide review is beyond the scope of this proceeding. The Commission's action in this proceeding is case-specific and should not be relied upon by future solar projects that seek to interconnect to Nevada Power's system. Any such requests will be evaluated on their specific facts.

The Commission orders:

(A) Nevada Power's non-conforming LGIA is conditionally accepted, effective January 28, 2010, as discussed in the body of this order.

(B) Nevada Power is hereby directed to submit a compliance filing within 15 days of the date of this order either revising the LGIA to remove the language in Paragraphs 2 and 4 of Appendix C or notifying the Commission that it plans on submitting a system impact study. If Nevada Power decides to submit a system impact study demonstrating

equipment.

⁴⁰ Nevada Power December 28, 2009 Transmittal Letter at 4, n.6.

⁴¹ *Id.*

⁴² Nevada Power February 3, 2010 Answer at 3.

that El Dorado must provide reactive power to ensure the safety or reliability of the system, they are directed to do so within 60 days of the date of this order.

By the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.