



September 22, 2016

Submitted to the CAISO at InitiativeComments@CAISO.com by Rachel Gold (Policy Director) and Susan Schneider (Consultant)

RE: Comments of the Large-scale Solar Association on Draft Tariff Language for AVC Requirements

The Large-scale Solar Association (LSA) hereby submits these comments the CAISO's draft tariff language, posted September 14th, for the Reactive Power Requirements and Financial Compensation stakeholder initiative. The posted language addresses only the automatic voltage control (AVC) requirements adopted by the CAISO Board on August 31st, which would be submitted to FERC in a Section 205 filing. LSA understands that the CAISO plans to submit a separate filing to comply with Order Nos. 827 and 828.

LSA has comments on two issues: (1) Prospective applicability of the new requirements; and (2) clarifications about how the CAISO will administer them in actual operations. These comments are explained below.

Applicability going forward

The CAISO has consistently stated that the new provisions would apply only going forward, and not, e.g., to already-operating generators or those that have completed their interconnection studies. These statements include those excerpted below.

• **Reactive Power Requirements and Financial Compensation Draft Final Proposal**

(November 12th, 2015):

"...the ISO is proposing to adopt, going forward, requirements for all asynchronous resources to provide the ability to provide reactive power and automatic voltage control." (p.3)

"The ISO proposes to exempt all projects already in the ISO interconnection process and existing individual generating units of an asynchronous generating facility that are, or have been, interconnected to the ISO controlled grid at the same location from these new requirements for the remaining life of the existing generating unit..."

"...if a generating unit is undergoing a repowering or refurbishing that does not require the unit to go through the interconnection queue again, then the unit will not be subject to the new reactive power requirements. Repowering or refurbishing units that includes new turbines or any other changes that would require reentry through the interconnection queue, or that constitutes a material modification under the interconnection rules, will be subject to these new requirements." (pp.7-8)

• **CAISO Management presentation to the CAISO Board** (September 1st, 2016):

"Management proposes new reactive power requirements for non-synchronous generators that would be applied prospectively." (Slide 1)

However, the posted tariff language does not contain any provisions limiting applicability of the new AVC requirements to prospective projects only. The CAISO should revise the posted tariff language as shown in the Attachment to this document to clarify that the AVC requirements would apply not only going forward – i.e., that these generators would be exempt from the new requirements:

- (1) New generators that have not commenced any Interconnection Studies as of the effective date of the new requirements adopted by the FERC; or
- (2) Existing generators, except in limited circumstances where they apply to repower or refurbish units after the effective date of the new requirements adopted by FERC in a manner that requires re-entry through the interconnection queue, or that constitutes a material modification under the interconnection rules.

Administrative clarification

The draft tariff language already specifies that the AVC default operating mode will be voltage regulation, and LSA supports this position. In addition, CAISO Management’s memo to the CAISO Board for the September 1st meeting states as follows:

“...the generator must have the capability to operate in the voltage control mode or the power factor mode of operation, with the default being the voltage control mode...The voltage control mode would be the primary mode of operating, and ISO operators would not direct generators to operate in power factor mode other than in limited circumstances when temporary equipment malfunction occurred which limited the ability to utilize the voltage control mode.” (pp.3-4)

LSA believes that the tariff language should include more of these details about how the CAISO would instruct generators to operate via AVC if the voltage control mode (Vmode) were not available, and that this sequence should include using reactive power control (Qmode) before resorting to power factor control. These changes are also reflected in the Attachment to this document. LSA believes that this is the most efficient sequence, and it is also supported in NERC rules (see, e.g., NERC VAR-001-4.1 - Voltage and Reactive Control and NERC VAR-002-4 - Generator Operation for Maintaining Network Voltage Schedules).

Conclusion

LSA appreciates the opportunity to comment on the posted draft tariff language and looks forward to discussing these issues further on the scheduled September 28th stakeholder conference call.

LSA RECOMMENDED EDITS TO POSTED DRAFT TARIFF LANGUAGE

(Accepted CAISO-recommended language, showing only LSA changes in green highlight)

8.4 Technical Requirements For Providing Ancillary Services

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8.4.1.3 Voltage Support

A Generating Unit providing Voltage Support must be under the control of generator automatic voltage regulators throughout the time period during which Voltage Support is required to be provided. A Generating Unit may be required to operate underexcited (absorb reactive power) at periods of light system Demand to avoid potential high voltage conditions, or overexcited (produce reactive power) at periods of heavy system Demand to avoid potential low voltage conditions.

For Asynchronous Generation Facilities providing Voltage Support, reactive power capability shall be controlled by an automatic voltage regulator system having both voltage regulation and net power factor regulation operating modes. The default mode of operation will be voltage regulation, and CAISO operators would not direct generators to operate in any other mode except in limited circumstances when temporary equipment malfunction limits the ability to utilize the voltage control mode. The voltage regulation function mode shall automatically control the net reactive power of the Asynchronous Generating Facility to regulate to the scheduled voltage, compensated to the Point of Interconnection, as assigned by the Participating TO or ISO, within the constraints of the reactive power capacity of the Asynchronous Generation Facility. The Asynchronous Generation Facility shall not disable voltage regulation controls, without the permission of the CAISO, while the Asynchronous Generating Facility is in operation.

If the voltage regulation mode is not available, the CAISO will direct AVC operation through use of reactive power control mode and, if that is not available or effective, through use of power factor control.

The above requirements in this Section 8.4.1.3 shall apply to all Generating Units providing Voltage Support which, as of the effective date of this provision adopted by FERC, have not:

- Commenced Interconnection Studies; or
- Applied to repower or refurbish units in a manner that requires reentry through the interconnection queue, or that constitutes a material modification under the interconnection rules.