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November 22, 2013

California Independent System Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Attn: SHCatalog@caiso.com

Subject: **Comments regarding the updated draft 2013 Stakeholder Initiatives Catalog**

Dear California Independent System Operator Corporation:

CalPeak Power LLC, CalPeak Power – Border LLC, CalPeak Power – Enterprise LLC, CalPeak Power – Panoche LLC, CalPeak Power – Vaca Dixon LLC (collectively "CalPeak") 2013 Stakeholder Initiatives Catalog dated as of November 5, 2013, in addition to its completed Ranking Template. CalPeak owns and operates four generating facilities of about 50 MW each with Pratt & Whitney, Model FT8 (DLN), Twin-Pac industrial gas turbine packages which enable them to be used not only as generators, but also as synchronous condensers to provide voltage support.[1] Currently the ability of these units to provide voltage support is not being utilized.

6.7 Voltage Support Procurement (D)

CalPeak strongly objects to the "CAISO's" stated intention to delete Voltage Support Procurement from the 2013 Stakeholder Initiatives Catalog. Furthermore, CalPeak requests CAISO reprioritize Voltage Support Procurement in light of the unprecedented reliability requirements that have recently been identified in the Los Angeles Basin and San Diego areas following the retirement of the San Onofre Nuclear Generating Station ("SONGS") and the new North American Electric Reliability Corporation ("NERC") requirement for 2.5% and 5% reactive margin requirements by 2020.

In June 2013, the Federal Energy Regulatory Commission ("FERC") issued an order stating, "CAISO stated that it would initiate a stakeholder process on the market-based procurement of voltage support outside of exceptional dispatch once it had obtained several additional months of data. After nearly three additional years of market operation, we expect that CAISO has sufficient information to reinitiate the stakeholder process on the market-based procurement

[1] The four Pratt & Whitney, Model FT8 (DLN), Twin-Pac industrial gas turbine packages each drive a single Brush Synchronous Machine, Model BDAX7-290ER, rated at 71,176 kVA, 3,600 RPM, 13.8-kV, and 2,977.8 Amps.

of voltage support." *California Independent System Operator*, Docket No. ER13-1274-000, 143 FERC ¶ 61,228 (June 11, 2013). In a filing which led to this order CAISO indicated that stakeholders interested in the development of a market product for voltage support should present their views in the stakeholder initiative catalog process. *See* Answer of CAISO, Docket No. ER13-1274-000, filed May 14, 2013.

CalPeak fully supports development of market-based procurement of voltage support to meet grid reliability needs, as outlined in the Ranking Template.

CalPeak has submitted proposals to enhance the capability and flexibility of its existing interconnected generation resources to deliver both real and reactive power services to CAISO in the transmission planning process special request window. CalPeak also intends to file comments in the California Public Utilities Commission ("CPUC") long-term procurement proceeding suggesting that the CPUC direct the utilities to consider procurement of voltage support services.

CalPeak proposes to provide voltage support by adding the capability to its existing generators to operate in synchronous condensing mode while retaining its current capability to operate in generation mode. The capability of the existing generators to deliver real power (i.e. megawatt-hours, or MWh) will not be compromised in any way by the modifications. Modifications to the existing unit include field wiring changes for instrumentation, controls for remote operation and automation, logic and graphical operator interface enhancements, protective relaying adjustments, and mechanical piping and systems for additional lubrication. Micronet Control System (the gas turbine generator controller) and Automatic Voltage Regulator updates will also be performed to enable synchronous condensing. Field commissioning will include verification of all installed hardware, testing of all control system inputs/outputs related to synchronous condensing as well as operations testing. CalPeak believes that the cost impact to market participants will be negligible because synchronous condenser operation can be inexpensively incorporated into its existing interconnected resources.

Once the upgrades to the existing generator are completed, the existing resources will effectively become a highly flexible hybrid generation and transmission resource. For any given grid condition, the CAISO will be able to dispatch the Facility in whichever mode of operation it deems most appropriate for the situation; power generation or synchronous condensing. Adding the synchronous condenser capability to the existing generator resource will give the CAISO significant added flexibility to adjust the conditions on the electric power transmission grid. The CAISO will be able to call on CalPeak's flexible hybrid resource to either generate or absorb reactive power (megavars, or MVARs) as needed to adjust the grid's voltage, improve power factor, or generate real power (MW). If the situation calls for flexible ramping to meet the morning and evening peak load conditions, the Facility can be dispatched to deliver in excess of 50 MW of real power. Under different conditions, for example a sudden loss of a major transmission line, such as the Imperial Valley-ECO 500-kV line, the Facility can be

dispatched to deliver upwards of 60 MVAR of reactive power. Additionally, synchronous condenser capability is a far superior solution to other voltage support options available to the CAISO. For example, synchronous condensers can continuously adjust the amount of reactive power they produce while also being capable of increasing reactive current as voltage decreases. By comparison, capacitor banks cannot continuously adjust the amount of reactive power they produce and when grid voltage decreases so does their reactive power delivery.

In short, CalPeak's FT8 TwinPac units can operate its electric generator as a synchronous condenser, to provide reactive power (VAR support) to stabilize the grid and help integrate renewable resources, as further explained in the Ranking Template.

6.4 Frequency/Inertia Procurement (F)

CalPeak suggests that CAISO combine its proposed Frequency/Inertia Procurement stakeholder initiative with that of Voltage Support Procurement discussed above because projects or proposals that can meet the stated objectives of one of these initiatives can also meet the stated objectives of the other. For example, CalPeak's hybrid synchronous generator/condenser proposals submitted to CAISO in the current 2013/2014 Transmission Planning Process can provide real power (megawatts) reactive power (megavars), as well as Power Factor adjustment.

Power factor correction of linear loads. A high power factor is generally desirable in a transmission system to reduce transmission losses and improve voltage regulation at the load. It is often desirable to adjust the power factor of a system to near 1.0. When reactive elements supply or absorb reactive power near the load, the apparent power is reduced. Power factor correction may be applied by an electric power transmission utility to improve the stability and efficiency of the transmission network. Individual electrical customers who are charged by their utility for low power factor may install correction equipment to reduce those costs.

Power factor correction brings the power factor of an alternating current ("AC") power circuit closer to 1 by supplying reactive power of opposite sign, adding capacitors or inductors that act to cancel the inductive or capacitive effects of the load, respectively. For example, the inductive effect of motor loads may be offset by locally connected capacitors. If a load had a capacitive value, inductors (also known as reactors in this context) are connected to correct the power factor. In the electricity industry, inductors are said to consume reactive power and capacitors are said to supply it, even though the energy is just moving back and forth on each AC cycle.

The reactive elements can create voltage fluctuations and harmonic noise when switched on or off. They will supply or sink reactive power regardless of whether there is a corresponding load operating nearby, increasing the system's no-load losses. In the worst case, reactive elements can interact with the system and with each other to create resonant conditions, resulting in

system instability and severe overvoltage fluctuations. As such, reactive elements cannot simply be applied without engineering analysis.

An automatic power factor correction unit consists of a number of capacitors that are switched by means of contactors. These contactors are controlled by a regulator that measures power factor in an electrical network. Depending on the load and power factor of the network, the power factor controller will switch the necessary blocks of capacitors in steps to make sure the power factor stays above a selected value.

Instead of using a set of switched capacitors, an unloaded synchronous motor can supply reactive power. The reactive power installation and operation are identical to large electric motors. Its principal advantage is the ease with which the amount of correction can be adjusted; it behaves like an electrically variable capacitor. Unlike capacitors, the amount of reactive power supplied is proportional to voltage, not the square of voltage; this improves voltage stability on large networks. Synchronous condensers are often used in connection with high-voltage direct-current transmission projects or in large industrial plants.

9 Resource/Supply Adequacy Initiatives

CalPeak suggests that CAISO further coordinate its proposed Voltage Support Procurement and Frequency/Inertia Procurement stakeholder initiatives with that of Resource/Supply Adequacy Initiatives in order to be more inclusive of the current and potential diverse capabilities of the various stakeholder resources such as CalPeak's hybrid synchronous generator/condenser proposals discussed above. Without such integration among these proposals, CAISO may very well miss the window of opportunity to take advantage of some highly flexible, low-cost alternatives to new generation that are able to meet the reliability needs of the current and future grid.

Thank you for allowing us the opportunity to voice our comments and participate in this collaborative stakeholder process.

Clifford D. Evans, Jr.
Vice President
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