Stakeholder Comments

Subject: Reactive Power and Financial Compensation

Submitted by	Company	Date Submitted
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CalPeak Power LLC ("CalPeak") and Malaga Power, LLC ("Malaga") appreciate the opportunity to provide comments on the CAISO's "Reactive Power and Financial Compensation" Draft Final Proposal, dated November 12, 2015 ("Final Proposal") as part of the on-going stakeholder process. CalPeak and Malaga have no additional comments, beyond those which previously have been submitted. Our most recent comments are enclosed for everyone's convenience.

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Jeff Malone *619-209-9555* *Jeffrey Spurgeon* *704-672-2854*	*CalPeak Power LLC* *Malaga Power, LLC*	*October 27, 2015*

CalPeak Power LLC ("CalPeak") and Malaga Power, LLC ("Malaga") appreciate the opportunity to provide comments on the CAISO's "Reactive Power and Financial Compensation - Revised Straw Proposal," dated October 8, 2015 ("Revised Straw Proposal")[1] as part of the on-going stakeholder process. Additional information on CalPeak and Malaga can be found in the comments CalPeak and Malaga submitted in this stakeholder proceeding on June 11, 2015, and September 3, 2015.[2]

CalPeak and Malaga are submitting comments regarding the portions of the Revised Straw Proposal relating to financial compensation.

Overview of Comments

The CAISO has continued to propose blanket requirements in this process that are not consistent with what should be the purpose of this stakeholder process, which is ensuring adequate reactive power where needed in a manner both 1. cost effective and 2. mindful of environmental objectives. The CAISO needs to refocus on this purpose.

The CAISO should heed the pleas of several stakeholders to first focus on reactive power needs and to carefully consider how to meet those needs as cost-effectively as possible in light of

[1] California ISO, *Reactive Power Requirements and Financial Compensation - Revised Straw Proposal*, October 8, 2015, available at http://www.caiso.com/Documents/RevisedStrawProposal_ReactivePowerRequirements_FinancialCompensation.pdf

[2] Available at http://www.caiso.com/Documents/CalPeak-MalagaComments_ReactivePowerRequirements_FinancialCompensation-IssuePaper.pdf and http://www.caiso.com/Documents/CalPeak_MalagaComments_ReactivePowerRequirements_FinancialCompensation_StrawProposal.pdf

environmental objectives. In the meantime, the CAISO needs to take a "no regrets" approach to securing additional reactive power supplies by finally putting in place long overdue tariff provisions that provide financial compensation to existing resources for providing reactive power.

The CAISO should change its rules to provide financial compensation for reactive power. Even if the CAISO intends to continue to "get something for nothing" by providing no financial compensation for providing reactive power *within* the required range, it must develop new tariff rules to provide more than mere "opportunity costs" as compensation to generators that provide reactive power *not within* the required range and for resources that cannot produce real power, only reactive power, such as dedicated synchronous condensers.

The CAISO's proposal regarding creation of a "Reactive Power Exceptional Dispatch" category is very ambiguous. It would be better for the CAISO to revamp its Voltage Support ancillary service rules, creating a category for "Voltage Support and Reactive Power Services." This would require the CAISO to develop new tariff provisions to specify what resources are eligible to provide this service, how resources are to register, what performance requirements must be met, a testing process, payment rules, and penalties for failure to perform.

I. The CAISO Should Study Reactive Power Needs and Cost-Effectiveness Before Imposing New Requirements

In this stakeholder proceeding the CAISO has yet to produce a study of what reactive power resources are needed and how they can be obtained at least cost. CalPeak agrees with the Large Scale Solar Association ("LSA") recommendation that the CAISO do a study of future reactive power needs to "craft a more calibrated set of requirements that it can be reasonably sure will meet its future needs, without imposing unnecessary costs on suppliers for reactive capability that is not needed." LSA Comments, September 3, 2015, at 1-2.[3] CalPeak and Malaga made a more modest request for "historic reactive power production and consumption data to better inform the stakeholders." CalPeak and Malaga Comments, Sept. 3, 2015, at 6. The CAISO has rejected all of these requests and appears poised to impose new requirements on all asynchronous generators without evidence that reactive power is needed from these generators and regardless of whether or not there are more cost-effective ways to ensure that the CAISO has adequate reactive power resources.

As CalPeak and Malaga and others have advised, the CAISO should take the time to study reactive power needs before imposing new requirements on asynchronous generators. This

[3] *See also* the comments of the California Energy Storage Alliance ("CESA"): "CESA recommends further study on the expected needs of reactive power so that excessive amounts are not developed." CESA Comments, Sept. 3, 2015, at 1.

requires a level of effort consistent with that applied to multiple other stakeholder processes, and the CAISO already has an interconnection study process which results in generator-specific requirements in most cases. Moreover, imposition of the proposed mandatory new requirements on all asynchronous generators will not result in any more reactive power soon. The proposed requirements will not ensure that there are additional reactive power resources until, at the earliest, Cluster 9 projects are in commercial operation, which will be many years from now. In addition, even when new asynchronous generators are built, it appears unlikely that any reactive power capability they can provide will be used since most asynchronous generators in the queue are large wind and solar generators that will be built far from the load centers where reactive power is most valuable.[4]

Taking more time is also advisable since the CAISO has presented little information regarding the costs of securing reactive power and no information regarding potential environmental benefits.

- Relative Costs

There are many ways to obtain reactive power and the CAISO should attempt to figure out what is the least costly way to obtain new sources of reactive power. While the CAISO has indicated that it believes that the cost of meeting the new requirements for asynchronous generators are reasonable, it has not compared these costs to the costs of other ways of obtaining reactive power.

The limited information that CalPeak and Malaga have concerning relative costs suggests that forcing all asynchronous generators to meet its proposed new requirements would be a very expensive way to secure new sources of reactive power in the aggregate, especially when considering potentially limited marginal utility at locations of many asynchronous generators. There is some information regarding costs in a report by FERC Staff entitled "*Payment for Reactive Power*," AD 14-7 (2014) ("*Payment for Reactive Power*").[5] As the report indicates, the cost of installing the equipment needed for asynchronous generators to provide reactive power can be substantial. For wind projects, FERC cites estimates that the costs are in the range of 3-5% of the total capital cost of the typical wind turbine project. *Payment for Reactive Power*, Appendix 2, Pages 2-3. For solar PV projects, FERC cites estimates of roughly 2% of the overall project cost. *Payment for Reactive Power*, Appendix 2, Page 3. By contrast, the one-time cost for CalPeak to modify its existing peaking plants to operate as synchronous condensers is minimal since only a software change is required. It is likely that other existing generators in areas with greater reactive power needs can also provide reactive power for relatively small

[4] As FERC has said: "[R]eactive power needs are local and, unlike real power, reactive power does not travel very far." *Payment for Reactive Power*, AD 14-7 (2014) at 20. Moreover, "reactive power close to load centers would typically be more valuable, while reactive power that is distant from load may be less valuable." *Id.* at 21.
[5] Report is available at http://www.ferc.gov/legal/staff-reports/2014/04-11-14-reactive-power.pdf.

additional investments.[6] The CAISO should do what it can to compare the costs of different potential sources of reactive power before it imposes the cost of meeting new requirements on wind and solar generators (and on the customers who will ultimately pay for the power these generators produce).

Even if the CAISO believes it cannot wait to impose requirements on new wind and solar generators regardless of the costs, the CAISO needs to take a hard look at its rules for providing financial compensation for existing generators since providing such compensation may well be more cost effective then having to secure reactive power through other means. For example, the CAISO recently approved several new projects to provide reactive support through its transmission planning process at a substantial cost.[7] In the 2012-13 transmission planning cycle, the CAISO approved new synchronous condenser projects at SONGS/Santiago and at Talega. The 2012-13 Transmission Plan indicates the Talega project was estimated to cost between $58,000,000 and $72,000,000.[8] In the 2013-14 Transmission Plan, the CAISO approved synchronous condenser projects at San Luis Rey and Miguel and a static Var compensator at Suncrest which collectively were estimated to cost between $175,000,000 and $185,000,000. [9] The CAISO also had to enter into an RMR agreement at substantial cost.[10] That same RMR agreement is likely to be extended beyond the original term based on recent comments before the California Energy Commission.

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[6] In a 2005 report FERC Staff indicated the costs for converting a generating facility into a synchronous condenser to supply only reactive power are typically in the $2 million to $3 million range." FERC, "*Principles for Efficient and Reliable Reactive Power Supply and Consumption*" (2005), at 28, available at http://www.ferc.gov/EventCalendar/Files/20050310144430-02-04-05-reactive-power.pdf.

[7] As part of its public process to develop the 2015 Integrated Energy Policy Report, the California Energy Commission held a workshop on August 17, 2015, regarding transmission infrastructure developments in southern California. The workshop materials contain a great deal of useful information regarding reactive power projects in this region. *See* materials filed CEC Docket No. 15-IEPR-07 at https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=15-IEPR-07.

[8] *See* CAISO 2012-13 Transmission Plan at 371 (list of approved projects including costs), available at http://www.caiso.com/Documents/BoardApproved2012-2013TransmissionPlan.pdf.

[9] *See* CAISO 2013-14 Transmission Plan, at 289-292 (list of approved projects including costs), available at http://www.caiso.com/Documents/Board-Approved2013-2014TransmissionPlan_July162014.pdf.

[10] As FERC Staff noted in "*Payment for Reactive Power:*"

> On November 9, 2012, AES Huntington Beach, L.L.C. and the California ISO filed a Reliability Must-Run (RMR) agreement with FERC. According to the filing, Huntington Beach Unit 3 and Unit 4 are each capable of providing up to 145 MVAr (290 MVAr total) of leading or lagging capability and the total conversion cost will be approximately $14.3 million ($5.5 million per unit plus new controls, construction costs, parts and sales tax), or approximately $50,000/MVAr.

Payment for Reactive Power at 4 (footnotes omitted). *See also AES Huntington Beach, L.L.C. and California Independent System Operator Corporation*, 142 FERC ¶ 61,017 (2013) (FERC decision approving RMR agreement).

- Environmental Benefits

The CAISO should also study whether incentives should be provided to encourage the use of more reactive power for environmental reasons. At the present time the CAISO is often in a position where, in order to maintain voltage support, it must call upon generators to run to produce real power when all it really needs is reactive power. If the CAISO could instead call upon resources for only the reactive power it really needs, there would be environmental benefits for two reasons:

1. First, when fossil-fuel fired generators switch from producing real power to synchronous condenser mode they have substantially reduced air emissions since synchronous condensers do not burn fuel to provide reactive power.[11]
2. Second, when generators switch from producing real power to providing only reactive power they free up transmission capacity, which is generally in load centers, so it is possible to import more power from renewable resources. If the switch occurs when there are over-generation conditions, this can also avoid curtailment of renewable resources.

Overall, more analysis is need. It is not clear that CAISO's Revised Straw Proposal is the best way to meet system needs for reactive power at optimal locations, at the lowest possible cost, and in the most environmentally beneficial manner.

II. The CAISO Needs to Consider the Adequacy of Financial Compensation for Reactive Power

Although more work is needed to justify the CAISO's imposition of new requirements on asynchronous generators, the CAISO can make progress on ensuring that it has adequate reactive power resources by refocusing this proceeding on putting in place reasonable financial compensation rules for existing resources that can provide reactive power. A change of priorities is warranted because:

- Putting in place rules for financial compensation for reactive power resources is a fast way to procure additional reactive power. Existing facilities can be easily modified to provide additional reactive power, but imposing requirements on new asynchronous generators will have no impact until they are built many years from now.
- Financial compensation rules which secure more reactive support from existing resources could make it unnecessary to impose requirements to supply reactive power on asynchronous generators.

[11] A synchronous condenser does consume a small amount of station power so, depending on how the station power is generated, there may be a small amount of indirect emissions associated with the generation of the station power.

- Financial compensation rules which secure more reactive support from existing resources could help avoid the need for expensive new infrastructure projects funded through the transmission planning process to address voltage issues and costly RMR contracts.
- Financial compensation rules can provide incentives to encourage development of reactive power resources that have environmental benefits.

III. CAISO's Current Tariff Provisions for Providing Compensation for Reactive Power Are Inadequate and Flawed

A. The CAISO's Current Tariff Provisions Provide at Most "Opportunity Costs" for Providing Reactive Power

Under the current provisions of the CAISO tariff generators operating in the required range can be required to provide reactive power without compensation, which is particularly problematic for uncontracted resources. The CAISO can also request that generators provide voltage support outside the required range, but the only compensation available is for a generator's opportunity cost, *i.e.* what the generator would otherwise have earned for selling real power. In short, the tariff provides no assurance that a generator will receive compensation for the costs it incurs in providing reactive power or that it will receive adequate incentive for providing reactive power capability.

The CAISO tariff provides:

> The CAISO shall be entitled to instruct Participating Generators to operate their Generating Units at specified points within their power factor ranges. Participating Generators shall receive *no compensation for operating within these specified ranges*. If the CAISO requires additional Voltage Support, it shall procure this either through Reliability Must-Run Contracts or, if no other more economic sources are available**,** by instructing a Generating Unit to move its MVar output outside its mandatory range. *Only if the Generating Unit must reduce its MW output in order to comply with such an instruction will it be eligible to recover its opportunity cost* in accordance with Section 11.10.1.4.

CAISO Tariff 8. 2.3.3 (emphasis added). [12]

[12] The CAISO *pro forma* interconnection agreements contain consistent provisions. Generators are required to perform within the required ranges. CAISO Tariff, Appendix EE, Article 9.6.1. But, generators are to be compensated for performance outside the range in accordance with the tariff. *See, e.g.*, CAISO Tariff, Appendix EE, Article 9.6.3 ("CAISO is required to pay the Interconnection Customer for reactive power that Interconnection Customer provides or absorbs from an Electric Generating Unit when the CAISO requests the Interconnection Customer to operate its Electric Generating Unit outside the range.") and Article 11.6 (payment in accordance with the CAISO Tariff)

CAISO Tariff section 11.10.1.4 specifies that the total payments for voltage support shall be the sum of the opportunity costs of limiting energy output to enable reactive energy production in response to an ISO instruction. The opportunity cost is calculated based on the product of the energy amount that would have cleared the market at the price of the Resource-Specific Settlement Interval LMP minus the higher of the Energy Bid price or the Default Energy Bid price.

If necessary, the CAISO can procure voltage support as an Exceptional Dispatch as a result of a System Emergency, a Market Interruption, or to mitigate Overgeneration conditions. CAISO Tariff, Appendix EE, Article 11.5.6.1. Exceptional dispatches for incremental or decremental energy needed for voltage support will be paid the higher of: (1) resource specific settlement interval LMP, (2) energy bid price, or (3) default energy bid (if the unit was mitigated). *Id*.

RMR Units providing voltage support are compensated under the RMR Contract rather than provisions of the tariff relating to voltage support.

B. Reform of the CAISO's Tariff Relating to Financial Compensation for Reactive Power is Long Overdue

For many years generators and other stakeholders have attempted to get the CAISO to revise its tariff to provide adequate financial compensation for voltage support and FERC has supported these efforts. Shortly after the CAISO was formed, it indicated that it would be developing a competitive procurement process for voltage support, but since it had not produced a plan by 2005, FERC ordered the CAISO "to submit its proposed structure and timeline for implementing competitive procurement of Voltage Support." *California Independent System Operator*, 112 FERC ¶ 61,350 (2005), at ¶ 22. The CAISO got extensions, but in 2009, at the time the CAISO received FERC approval for procuring voltage support through Exceptional Dispatch, FERC directed the CAISO to file a report that details "its plans for a long-term solution for procuring voltage support outside of Exceptional Dispatch." *California Independent System Operator*, 126 FERC ¶ 61,150 (2009), at ¶ 45. As recently as 2013, FERC commented on the need for the CAISO to develop rules for procurement of voltage support:

> [W]e note that in CAISO's June 22, 2009 status report, 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 of voltage support. If CAISO has new information suggesting that a long term solution for procuring voltage support outside of exceptional dispatch is no longer necessary, CAISO should file an updated report with the Commission.

California System Operator, 143 FERC ¶ 61,228 (2013), at ¶ 20. It is not clear whether the CAISO has abandoned its plans for developing a market-based mechanism for procurement of voltage support, but it is clear that providing some way to provide financial compensation for reactive power support is long overdue.

IV. The CAISO's Proposal for Providing Financial Compensation for Reactive Power Needs to Address Known Flaws and Recognize Ambiguity in the Status Quo

A. The CAISO's Support for Its Current Tariff Provisions Ignores Their Inherent Flaws

1. *It Appears the CAISO is Still Unwilling to Consider Significant Changes*

Other ISOs and RTOs have for many years had in place financial compensation rules that ensure the adequacy of reactive power resources. The CAISO, however, has only in this proceeding begun to consider new tariff rules for financial compensation.

When the CAISO began to consider providing financial compensation for reactive power, it indicated that it was contemplating providing a capability and provision payment. Unfortunately, however, it now appears that the CAISO does not wish to follow what other ISOs and RTOs have done with respect to providing compensation for reactive power. The CAISO indicates that it will not provide capability payments. The CAISO indicates that it will not make changes to the portions of its tariff relating to provision payments, thus leaving in place provisions which only allow generators to be paid for opportunity costs.

Despite dismissing what other ISOs and RTOs have done with respect to providing financial compensation for reactive power, the CAISO continues to make a very vague proposal for providing financial compensation for "Reactive Power Exceptional Dispatch," which is discussed in Section III.B below.

2. *CAISO Should Provide Compensation for Reactive Power Within the Required Range*

The CAISO indicates that it believes it is unnecessary to pay for reactive power within the required range since providing it is merely "good utility practice." Revised Straw Proposal at 15. It is unfortunate that the CAISO believes that it is appropriate for it to continue to take reactive power within the required range without paying for it. What the CAISO should be worried about is not whether generators exercise "good utility practice" but whether taking reactive power without providing compensation is "good ISO practice." FERC Staff issued a report in 2005 entitled "*Principles for Efficient and Reliable Reactive Power Supply and Consumption*."

("*FERC Principles Report*").[13] In this report, FERC Staff identified problems and concerns, including:

> Many market participants that could provide additional reactive power capability to the system have little incentive to do so. Price signals that could encourage additional investment are limited.

FERC Principles Report at 5. To address the problems and concerns, FERC staff made four broad recommendations:

> 1. Reactive power reliability needs should be assessed locally, based on clear national standards.
> 2. These needs should be procured in an efficient and reliable manner.
> 3. *Those who benefit from the reactive power should be charged for it*.
> 4. *All providers of reactive power should be paid, and on a nondiscriminatory basis*.

FERC Principles Report at 6 (emphasis added). As FERC staff recommended:

> Some have a different view that independent generators should be obligated to provide a specified minimum capability to produce reactive power without compensation as a condition of interconnecting to the grid, but we think that this view will not encourage optimal investment and production of reactive power. If independent generators aren't paid for providing reactive power capability, some may elect not to enter the market, and some existing generators may elect to retire sooner than if payments were made. *Suppliers of reactive power should be compensated for providing reactive power and reactive power capability*.

FERC Principles Report at 108 (emphasis added). The CAISO's position that providing reactive power in the required range is merely "good utility practice" runs counter to the recommendations of FERC staff.

3. *The CAISO Should Pay for More Than "Opportunity Costs" for Reactive Power*

The CAISO Revised Straw Proposal does not discuss an important defect in the current tariff provisions relating to financial compensation for reactive power - for generators that are not providing reactive power within the required range, the tariff provides only for payment of opportunity costs, *i.e*. the cost of not producing real power in order to provide reactive power, which is calculated as set forth in Section 11.10.1.4:

[13] Available at http://www.ferc.gov/EventCalendar/Files/20050310144430-02-04-05-reactive-power.pdf.

11.10.1.4 Voltage Support

The total payments for each Scheduling Coordinator for Voltage Support in any Settlement Period shall be the sum of the opportunity costs of limiting Energy output to enable reactive energy production in response to a CAISO instruction. The opportunity cost shall be calculated based on the product of the Energy amount that would have cleared the market at the price of the Resource-Specific Settlement Interval LMP minus the higher of the Energy Bid price or the Default Energy Bid price.

CAISO Tariff, Section 11.10.1.4. Providing compensation only for opportunity costs means there is no assurance of compensation for providing reactive power in most situations. For example, generators that provide power outside the required range will not be paid if their bids would not clear the market and, in any case, would not be paid for actual costs incurred in providing the reactive power. In addition, reactive power resources that do not produce real power, such as dedicated synchronous condensers, are not entitled to payments unless they are compensated under an RMR agreement.

Limiting compensation for reactive power outside the required range to only opportunity costs has undoubtedly limited the number of resources that have been available to the CAISO to provide reactive support. The CalPeak power plants are a good example of resources that could be supplying reactive power outside the required range to the CAISO, but are not because getting only opportunity costs is not an adequate incentive. The CalPeak power plants could easily be modified to provide synchronous condenser capability, substantially increasing the reactive power the power plants can produce. But, CalPeak has not made the investment in modifying the power plants because of the current compensation rules. If CalPeak were to make the one-time investment needed to be able to provide more reactive power there is no way for CalPeak to recover these costs under the tariff. If for some reason CalPeak made the investment anyway, there would be no compensation for the ongoing operation and maintenance costs associated with providing reactive power. The only compensation that CalPeak could conceivably get is for opportunity costs, but that is unlikely. In order to get opportunity costs: (1) the CalPeak unit would have to be selected to run in the CAISO market, which only happens 3-5% of the time since the units are reliability resources; and (2) the CAISO would have to require the CalPeak unit to run outside the required range, which is also unlikely. Overall, even though CalPeak could easily modify its units to provide additional reactive power capability at minimal cost, it does not make sense for it do so since it will not receive financial compensation for doing so under the CAISO tariff.

In order for the CAISO to get more reactive power resources at its disposal it needs to reform its tariff. Other ISOs and RTOs have developed ways to provide cost-based compensation for providing reactive power in addition to paying opportunity costs. For example, although the Southwest Power Pool ("SPP") does not provide a capability payment for providing reactive

power within the required range, it does provide a cost-based payment for providing reactive power outside the required range. Southwest Power Pool Open Access Tariff Schedule 2 at I.2. *See also Southwest Power Pool*, 119 FERC ¶ 61,199 (2007), at ¶ 30. ("We will accept SPP's Schedule 2 proposal that compensates all generators . . . for providing reactive power, but only outside the deadband"). The New York ISO has developed reactive power compensation rules that apply not only to generators, but also synchronous condensers and non-generator resources. *See* New York ISO, Market Services Tariff, Section 15.2.2.3 ("If a synchronous condenser or Qualified Non-Generator Voltage Support Resource energizes in order to provide Voltage Support Service in response to a request from the ISO, the ISO shall compensate the facility for the cost of Energy it consumes to energize converters and other equipment necessary to provide that Voltage Support Service).[14]

CalPeak and Malaga point out, however, that in determining the appropriate level of compensation for reactive power, insuring that resources cover their costs should only be the minimum. The real question is what incentives are required to ensure the adequacy of reactive power resources since having adequate resources is essential for the reliability of the electric grid and can provide environmental benefits. FERC has indicated that ISOs and RTOs "may propose a rate for all generators that compensates them comparably for the level of reactive power actually needed and used." *Southwest Power Pool*, 119 FERC ¶ 61,199 at ¶ 32. Thus, it would be best for the CAISO to consider its specific needs and what it will need to pay to meet these needs, rather than proposing a strictly cost-based methodology with no such consideration.

In prior comments CalPeak and Malaga have advocated for using a Default Energy price or a negotiated rate to provide compensation for reactive power. This is appropriate since it is necessary to co-optimize real and reactive power and use of the Default Energy Price would come close to making a generator indifferent when asked to switch from providing real power to providing reactive power. The CAISO will need for synchronous generators to be indifferent with respect to whether they are called upon to produce real or reactive power in order for the CAISO to be able to maintain voltage support while minimizing air emissions and freeing up transmission capacity for electricity produced from renewable resources. Finally, it would be easy to use the Default Energy Price since this price is already calculated as part of the settlement process.

B. <u>The CAISO Should Clarify Its Proposal to Create a New "Reactive Power Exceptional Dispatch" Category</u>

Although it appears the CAISO is unwilling to make changes to the status quo with respect to payments for reactive power in most circumstances, the CAISO has put forward a proposal for a new "Reactive Power Exceptional Dispatch" category. In particular, the CAISO appears

[14] This rule was approved by FERC in *New York ISO*, 151 FERC ¶ 61,281 (2015).

focused on those resources that are not producing real power and hence would not receive financial compensation because they have no opportunity cost. The types of resources/instances which could be utilized under new Exceptional Dispatch category would be:

- Thermal units equipped with a clutch that can operate in synchronous condenser mode;
- Small thermal units without clutches that can operate in synchronous condenser mode;
- Solar arrays at night or under cloud cover; and,
- Wind turbines operating at below max output.

Revised Straw Proposal at 13. The ISO would only rely on an Exceptional Dispatch for reactive power support if the needed resources had not cleared the market optimization, so would not pay for opportunity costs. Such resources would, however, receive compensation for variable O& M costs including:

- Costs of any real power consumed during ED for purposes of station power, or otherwise needed to provide the voltage support/reactive power paid at the unit's nodal LMP value;
- Min Load costs including any fuel, variable O&M, or other opportunity costs (as applicable);
- Start Up costs (if resource is started up under ED instruction).

Revised Straw Proposal at 13.

The CAISO's proposal to create a new "Reactive Power Exceptional Dispatch" category is ambiguous in many important ways. Thus, CalPeak and Malaga will ask questions about the proposal rather than provide an extensive critique.

- What is the intended relationship between this new category of Exceptional Dispatch and the existing category of Exceptional Dispatch for Voltage Support?
- When the CAISO uses "Exceptional Dispatch" authority it is virtually always in the context of an emergency or other unusual circumstances that entitle the CAISO to issue orders to market participants. So, does the proposal mean that all generators that do not clear the market optimization must be prepared to respond to orders to provide reactive power?
- Why does the CAISO appear to want to limit eligibility to resources that are not selected to provide real power in the market power optimization process?
- What criteria would the CAISO use to determine what potential sources of reactive power would be subject to Reactive Power Exceptional Dispatch?
- If the CAISO has a need for reactive power and there are multiple resources which could meet the need for Reactive Power Exceptional Dispatch, how would the CAISO decide among them?

- Why does the proposed pricing scheme fail to include fixed one-time costs needed to be able to provide reactive power? Note that even for an already existing generator, there will be modifications needed to the generator to make it possible to provide reactive power.
- Does the CAISO believe it will get optimal reactive power capability if it only provides compensation for variable operation and maintenance costs?
- Why is the CAISO considering a new category of Exceptional Dispatch rather than a new kind of ancillary service - "Voltage Support and Reactive Power Services" - that generators could voluntarily choose to provide?

V. The CAISO Should Modify Its Tariff to Provide for a New Type of Ancillary Service for Resources Willing to Provide Reactive Power Services

CalPeak and Malaga believe that even if the CAISO clarifies its proposal for a new category of Exception Dispatch, using an Exceptional Dispatch mechanism will never be an optimal way to provide compensation for reactive services. The current CAISO tariff provisions relating to Exceptional Dispatch for voltage support were only approved as interim measures needed to provide some compensation to generators called upon to provide emergency services to maintain reliability, not the CAISO's promised market-based mechanism for procuring voltage support. *California Independent System Operator*, 126 FERC ¶ 61,150 (2009), at ¶ 45 (Requiring the CAISO to file a report regarding "its plans for a long-term solution for procuring voltage support outside of Exceptional Dispatch."). Thus, rather than create a new Reactive Power Exceptional Dispatch category, it would be preferable to modify the provisions of the CAISO tariff which relate to voltage support to create a new ancillary service category - "Voltage Support and Reactive Power Services." The purpose of creating this new category would be to put in place rules which ensure that the CAISO procures adequate reactive power resources. As FERC has recommended: "The market design should align financial compensation and incentives with desired outcomes to ensure that adequate reactive power is available and produced in the right locations in order to maintain reliability and meet load at the lowest reasonable cost." *FERC Principles Report* at 108 (emphasis added).

There are already a few relevant rules for providing voltage support in the CAISO tariff. *See, e.g.*, CAISO Tariff Section 8.4.2 (ancillary service control standard for providing voltage support), 8.4.1.3 (requirement that provider has automatic voltage regulators), 8.9.4.2 (testing). On the whole, however, many changes will be required to the tariff to create a new "Reactive Power Services" category. The tariff (and associated business practice manual) should make it clear what resources are eligible, how resources are to register, what performance requirements must be met, a testing process, payment rules, and penalties for failure to perform.[15]

[15] For a one example of a good business practice manual for an ancillary "Voltage Support Service," see *NYISO Ancillary Services Manual*, Section 3.6, available at

It is particularly important for the payment terms to provide adequate incentives to make it worthwhile for the owners of existing resources to make the investments needed to be ready to supply reactive power. At a minimum, the CAISO should commit to pay not only the opportunity costs for generators, but all fixed and variable costs of providing reactive power service to the CAISO.

http://www.nyiso.com/public/webdocs/markets_operations/documents/Manuals_and_Guides/Manuals/Operations/ancserv.pdf.