

Comments of the Staff of the California Public Utilities

Commission on the CAISO's revised Issue Paper on Reactive Power Requirements and Financial Compensation (May, 2015)

Submitted by	Company	Date Submitted
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The Staff of the California Public Utilities Commission (CPUC Staff) appreciates this opportunity to comment on the California Independent System Operator (CAISO)'s issue paper on reactive power requirements and financial compensation.

Background

The scope of this initiative includes the creation of uniform voltage regulation and reactive power requirements for asynchronous resources and financial compensation for voltage support. Although CAISO's previous requests for tariff amendments to FERC were denied, CAISO finds that the grid has changed significantly, given the penetration of renewable resources and potential reliability issues related to over-generation and the variability of wind and solar resources. CAISO is now considering new compensation options for all resources that are able to provide reactive power support.

The issue paper is broken into two parts: the first part addresses the need for uniform voltage regulation and reactive power requirements, and the second considers a two part mechanism for reactive power compensation including separate capability and provision payments. In the paper, the CAISO discusses potential options used by other ISOs/RTOs. CAISO will make formal proposals in a revised straw proposal.

Feedback on reactive power technical requirements

CPUC Staff understands that the CAISO proposes to require "new" asynchronous generators to have the capability of producing reactive power from 0.95 lagging to 0.95 leading, and that the response capability between 0.985 lagging to 0.985 leading must be dynamic. "New" generators would be defined as those entering the interconnection process subsequent to FERC approval of reactive power-related tariff changes. CPUC Staff understands that the reason for this proposed universal requirement is that future high penetration of asynchronous resources will mean that under some conditions, or contingencies, asynchronous resources may account for a high percentage of online capacity so that it may be necessary for the system to rely on reactive power from such resources. Currently, reactive power is provided by synchronous resources plus grid assets such as synchronous condensers or static VAR compensators.

CPUC Staff requests confirmation that all *synchronous* generators are *already* required to have similar (or greater) reactive power producing capability. CPUC Staff also requests that the CAISO either confirm or clarify that it will not be necessary for existing asynchronous generators, or those currently in the interconnection queue, to have such capability.

Feedback on Financial Compensation for Reactive Power

In addition to the technical requirements, CAISO is considering financial compensation, and is considering two different types of compensation for generators (including asynchronous generators) that have reactive power capability. First, the CAISO is considering a capability payment for generators that have reactive power producing capability, which is intended to cover fixed costs for installing and maintaining this capability. Second, CAISO is considering a revised market design for providing reactive power. CPUC Staff seeks clarification on what the CAISO sees as the intended purpose of both the fixed and variable payments for reactive power, and requests that CAISO provide more in-depth analysis on the overall rationale and necessity for developing two potentially new forms of compensation.

Capability Payment

CAISO is considering two potential options for capability compensation, which we understand would be a form of fixed payment to generators. Primarily the capability payment would be based on either generator-demonstrated costs, or administratively determined safe harbor costs, which the CAISO's issue paper indicates to be small (*see* footnote 28 in the issue paper). Under the second option, administratively determined costs would not require demonstration.

CPUC Staff observe that further explanation of the reasoning behind developing either type of capability payment is a pre-requisite for pursuing the design of such a mechanism. It is unclear whether the purpose of such a payment is to incentivize more generators to provide reactive power. If this is the intent, we are concerned that the capability payment, as proposed, might be unnecessary and inefficient. We observe that many generators already have such capability, and therefore it is part of the overall cost of doing business. If the CAISO intends to require all *new* generators to have this capability, then the payment would not serve as an incentive for installing something that is mandatory. It is also not clear that the new payment structure would be necessary to ensure fair and non-discriminatory compensation for generators.

CPUC Staff are interested in learning more about what the realistic numerical range of fixed capability payments would be, including what amortization period would be assumed for investment costs. CPUC Staff awaits additional information from the CAISO and is interested in hearing further perspective from other stakeholders. We are specifically interested in learning of any persuasive arguments from stakeholders regarding why lack of such capability payments would unfairly disadvantage some generators versus others. We observe that if universal reactive capability among resources is in fact necessary, then if some future (not yet developed, interconnected, or financed) resources incur greater costs related to providing this capability relative to other resources, this difference should be reflected in their total cost of doing business.

Market Design for compensation for Reactive Power

CAISO also is considering how resources should be compensated for providing reactive power. CAISO calls this a “provision payment” in the issue paper and discusses this as compensating a resource for its opportunity costs. CPUC Staff notes that the issue paper does not include any analysis of how reactive power is provided at present, or a high level analysis of why the status quo for compensating resources for the provision of reactive power is insufficient. Therefore, we request that a clear and comprehensive analysis of the current compensation scheme be conducted before CAISO proceeds any further.

CPUC Staff understands that under present market design a resource is compensated for providing reactive power if CAISO dispatches the unit downward, thus resulting in lost energy market revenues. CPUC Staff also understands that if provision of reactive power requires exceptional dispatch, then this is settled under current tariff provisions. Also, any reactive power provided by Reliability Must Run (RMR) units is currently compensated under RMR provisions. Finally, CAISO describes the potential desirability of compensating resources that “are able to switch between providing real power and reactive power very quickly,” which “would only provide reactive power if were not picked up in market optimization, but were still needed for reactive power.”

CPUC Staff request clarification of how the latter situation (where the reactive power provision is apparently not currently compensated) would differ from exceptional dispatches in which reactive power provision apparently *is* presently compensated. More generally, we request that CAISO specifically enumerate and describe the different unique circumstances under which reactive power provision is currently compensated and the form that this compensation takes. Also, we request information on the specific additional individual circumstances under which it might be desirable to have a type of compensation other than what the current market design provides. Specifically, information on the magnitudes of the above kinds of compensation would be helpful. We also await comments from other stakeholders on these matters.

It appears that, compared with the compensation for capability (fixed costs) to provide reactive power, compensation for provision of reactive power may be more desirable as being economically efficient and equitable. It would compensate generators for real economic costs, *ie*, those costs that are neither fully foreseeable nor likely to be evenly applied across all resources. However, CPUC Staff await additional information from both CAISO and stakeholders, as noted above. We also request clarification of whether compensation would be for all provision of reactive power, or only for provision outside of the 0.95 leading/lagging range.

In conclusion, CPUC Staff observes that without additional background information on the current mechanisms for compensating resources that provide reactive power under specified conditions, it is premature for the CAISO to pursue additional financial compensation mechanisms for the provision of reactive power, or for stakeholders, such as the CPUC Staff, to provide substantive feedback on the proposal.