INDEPENDENT ENERGY PRODUCERS

To: **CAISO Initiatives**

From: **Steven Kelly**
Policy Director

Date: **March 20, 2015**
RE: **Reactive Power Requirements for Asynchronous Resources – Issue Paper and Straw Proposal**

The Independent Energy Producers Association (IEP) is pleased to provide its initial comments on the Reactive Power Requirements for Asynchronous Resources – Issue Paper and Straw Proposal (Proposal).

As a general matter, IEP does not oppose imposing a reasonable reactive power requirement on Asynchronous Resources (e.g. wind, solar). We note, however, that pursuant to FERC Orders 661 and 661-A, FERC has required the CAISO to conduct interconnection studies to assess whether wind and solar resources trigger a need to provide a reactive power capability. The CAISO reports that approximately 70-75% of the asynchronous projects in its interconnection queue have triggered a requirement to provide reactive support capability.[1] Concomitantly, 25-30% of the asynchronous projects subject to the CAISO's interconnection process have triggered no reactive support capability. Accordingly, the CAISO's proposal to impose a "standard" reactive power capability on all Asynchronous Resources needs to be considered reasonable in light of the need.

Provide below are initial comments related to the CAISO's Issue Paper and Straw Proposal.

"Grandfathering" Provisions. The CAISO proposes to apply the reactive power requirement on a going-forward basis. Specifically, the CAISO proposes to initiate a reactive power capability requirement beginning with the first interconnection "cluster" having an interconnection request window following the effective date of the tariff revisions. The CAISO indicates that this approach will exempt projects already in the interconnection process or already interconnected for the remaining life of the existing generation unit. However, new and repower units must meet these requirements to the extent they trigger a new interconnection request.

IEP appreciates and supports the CAISO's initiative to impose this new requirement on a "going-forward" basis.

[1] CAISO Issue Paper and Straw Proposal, p. 13.

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We recommend adding to the list of exempt resources those Asynchronous Resources that have an executed power purchase agreement (PPA) as of April 1, 2015 (irrespective of whether they are in an existing queue cluster). We anticipate the universe of these resources to be very small. However, once commercial transactions are finalized, it is unreasonable to assume that such deals can be re-negotiated in a timely manner, if at all. By setting an April 1, 2015 executed contract date as an exempt resource, the CAISO will be setting a date subsequent to the release of the CAISO Issue Paper and Straw Proposal at which point parties considering commercial transactions would have been put on notice of the possibility of a change in the interconnection rules.

Set maximum reactive requirements up-front as part of interconnection rules/requirements. IEP is supportive of setting *maximum* up-front standards as part of the interconnection rules/requirements. This provides a measure of certainty and stability to the requirement, and developers will design to the new standard as a pre-requisite for bidding into competitive solutions. By setting maximum standards up-front, interconnecting customers (ICs) should be fully protected from the cost and design risk of increasing the requirement as a result of interconnection studies, changes in tariff language, etc.

Utilize Industry Standard Employed in Other Organized Markets. IEP recommends employing a common industry standard when setting the specifications of the Reactive Power requirement. For example, PJM specifies a 0.95-1.05 per unit voltage range. By all reports, this range has proven sufficient in that market. Employing a common industry standard employed in other markets will help reduce costs and facilitate development.

Foster Flexibility and Least-Cost Options to Meeting Reactive Power Requirements. The CAISO seemingly concludes that the preferred methodology for achieving the reactive power capability is through AC inverters (no greater than 110% of the LIGIA injection limit). However, the CAISO's A/C inverter real power limit of 110% of the LGIA value may inhibit good, prudent engineering design practices. To this end, we suggest the CAISO increase the inverter limit to 125% to allow sufficient electrical design freedom to achieve the CAISO goal at the lowest cost.

Moreover, IEP recommends enabling resources some flexibility in the technical means by which they achieve the standard, thereby enabling resources to meet a specified standard in the least-cost manner given their specific design. For example, alternative yet economically valid ways to supply/absorb reactive power from inverter-based technologies may include a range of options that should be made available to interconnecting Asynchronous Resources:

- Rely upon a portion of the inverter's MVA capacity, given that an inverter can be configured to supply a summed combination of reactive and/or real power up to its MVA rating (but not both at maximum rated output);
- Add static reactive equipment in the form of capacitor banks and reactors; and
- Add dynamic reactive capability in the form of a synchronous condenser or an SVC/StatCom.

Similarly, regarding the measurement of the reactive power capability, the CAISO indicates that the reactive power capability will be measured only at the Point of Interconnection. Here again, IEP recommends consideration of alternatives to this standardized approach, i.e. query the

marketplace to determine the best option(s) to meet the technical requirements, and then provide resources the flexibility to achieve the standard in the least-cost manner.

How will distributed generation from Asynchronous Resources be treated? IEP recognizes that the CAISO's proposes to utilize the tools it has available to it, i.e. the interconnection process that it manages. However, our observation is that the Reactive Power Capability needs may be driven by resources not subject to the CAISO's interconnection process. For example, asynchronous resources interconnecting at the distribution level may avoid the CAISO interconnection process, but they may well be contributing significantly to the need for additional reactive power capability. In order to avoid the risk of discriminatory treatment on grid connected entities (both at the distribution and transmission level), IEP requests that the CAISO address in its next paper the extent to which asynchronous resources interconnected at the distribution level may be impacting the need for reactive power, as well as the extent to which these resources will be subject to the proposed requirements.

Reasonable Compensation. The provision of reactive power essentially is a service, i.e. a "product." provided by electric generators to the grid operator to help maintain overall grid reliability. Yet, it is a service/product that is not be provided by all generators at all times. As noted by the CAISO in its Issue Paper and Straw Proposal, "Absent the individual resource providing the necessary reactive power to support stable operation of the grid to which it connects, some other source must provide this reactive power."[2] Moreover, the provision of reactive power not only imposes real costs on electric generators, but also risks an opportunity cost to the electric generator altering its power output to meet the CAISO's reactive power real-time needs.

Accordingly, the CAISO in its stakeholder process should consider what reasonable compensation should be afforded electric generators providing this service/product. This consideration could occur in the context of the current stakeholder initiative regarding establishing a reactive power requirement on Asynchronous Resources or, alternatively, it should be specifically identified as part of the CAISO's Stakeholder Initiative in 2016.

IEP looks forward to working with the CAISO on these matters.

[2] Ibid, p. 5