

COMMENTS OF EDF-RE ON CAISO WORKING GROUP MEETING ON REACTIVE POWER REQUIREMENTS AND FINANCIAL COMPENSATION

EDF-Renewable Energy (EDF-RE) appreciates the opportunity to comment on several elements of the discussion at the DATE working-group meeting on the CAISO's new initiative, Reactive Power Requirements and Financial Compensation. Specifically, EDF-RE offers its comments on the issue of financial compensation for reactive power and voltage support.

The CAISO said at the meeting that it was considering a limited form of compensation, likely based on opportunity costs and perhaps including a capacity payment. The recent PJM proposal for similar services does provide for compensation. EDF-RE fully supports financial compensation for these services, both for new resources required to provide these services and for existing resources that are willing to provide them voluntarily, for the reasons described below.

Rationale for financial compensation

The CAISO's conclusions in its March 5th document, Reactive Power Requirements for Asynchronous Resources – Issue Paper & Straw Proposal (Proposal) that the proposed requirements for asynchronous resources could be met at little or no cost is not correct. There are actually two kinds of costs that could be incurred to meet the proposed standards:

- **Equipment costs:** While – as the Proposal states –inverters on the market today may allow generators to meet the proposed standards at the inverter terminals, additional equipment may be necessary to meet the proposed standards at the POI. The Proposal does not address these additional equipment costs. (This is one important reason to consider application of the standards at the terminals instead of the POI, as PJM has proposed.)

While many generators seek to oversize their inverter capability, they take that action in order to better meet production targets to for real power to meet Power Purchase Agreement (PPA) requirements. Without further equipment installation, generation projects would likely have to impair their real power production in order to provide reactive power and voltage support. To avoid this problem, for example, a 200 MW project would require about 60MVARs of reactive power at maximum output level, which would add significant costs.

Generators that intend to meet the standards by oversizing their inverters or installing other equipment (e.g., capacitors) should receive a capacity payment that covers the additional costs.

- **Opportunity costs:** As noted in the Proposal, generators could also meet the standard by reducing their real power output. However, given the current PPA per-MWh payment structures, this could significantly reduce their revenues and jeopardize their ability to meet their PPA production guarantees. (This is a significant difference from PPAs for synchronous generators, many or most of which contain capacity payments.)

Generators that must reduce real-power output to meet the new standards should receive compensation for the reduced production. This would require modification of the current pro forma PPAs to either: (1) include reduced output to provide these services in the current curtailment provisions, with compensation under the PPA and reflection in production-guarantee compliance; or (2) provide for a pass-through of opportunity-cost payments to the generator that would cover both lower PPA compensation and production-guarantee impacts.

Participation of existing resources

A financial compensation structure for these services should cover:

- **New resources subject to the standards**, as discussed above.
- **Existing resources already providing the services** – especially asynchronous resources. If they were required to meet the 0.95 lead/lag power-factor requirement as a result of their interconnection studies, they are similarly situated to the new asynchronous resources covered by the new standards. For example, they are also largely subject to PPAs with only per-MWh compensation structures, and they either had to install additional equipment or are subject to impairment of their real-power output when providing the required services.
- **Existing resources not subject to the new requirements that are willing to enhance their facilities to provide these services**. The compensation structure should encourage existing resources to voluntarily exceed the applicable requirements, e.g., to incent:
 - Existing resources not required to meet the 0.95 lead/lag requirements as a result of their interconnection studies to voluntarily meet those requirements; and
 - Existing resources required to meet the 0.95 lead/lag requirements as a result of their interconnection studies to also meet the dynamic voltage-support elements in the new standards.

As discussed at the working-group meeting, there will not be a great deal of new generation entering the CAISO queue in the next few years. The large Load-Serving Entities (LSEs) have contracted for most of the generation needed to meet the 33% Renewables Portfolio Standard (RPS), and some portion of the remainder will be met through distributed generation not subject to CAISO jurisdiction.

The CAISO has not provided in this initiative the amount of new reactive-power/voltage support capability that it will need to meet the challenges of the 33% RPS standard (or, in the future, a possible higher RPS requirement). However, it seems at least somewhat likely that the CAISO might need additional capability from “existing” resources, i.e., those that are not covered by the new standards. Thus, a new compensation structure should include incentives for existing generation to meet or exceed the new standards, so the CAISO will have the services it needs to reliably operate the system in the future.