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California Energy Commission
1516 Ninth Street
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Docket No. 12-IEP-1D

Subject: Workshop on Strategies to Minimize Renewable Integration Costs and Requirements and Improve Integration Technologies

The Center for Energy Efficiency and Renewable Technologies (CEERT) appreciates the opportunity to provide comments to the CEC on their workshop on minimizing renewable integration costs and requirements to improve integration technologies.

Regulatory Considerations: The solutions for many of the issues that the CEC is attempting to address regarding the minimization of integration costs lie outside the jurisdictional realm of any single state agency and in fact may only be achievable through cooperation across state agencies as well as through broad regional cooperation. And while we recognize the complexities of working outside the traditional and historical purview of state agencies, and we acknowledge and appreciate all the ongoing work at the CEC, CPUC and CAISO to engage on these issues at the intrastate as well as regional levels, we would like to take the opportunity here to emphasize the opportunities for doing better and getting more successful as we learn through experience. It is our belief that the CEC may be able to leverage these highly productive workshops by creating and endorsing a high level set of principles that can be used to support a true least cost – best fit renewable portfolio standard. Such a set of principles could then be used to identify the path towards more effective cross-agency and regional cooperation. With such a map of principles and the appetite to address these issues, progress towards finding least cost – best fit solutions may be achieved.

Cost Containment: Many of the principles needed to minimize renewable integration costs and to improve integration technologies are enumerated in the presentation of Dr. Lori Bird of NREL. On page 6 of Dr Bird’s presentation she outlines “Options for Cost-Effectively Integrating Wind/Solar” as:

1. Expand sub-hourly dispatch & scheduling
2. Facilitate dynamic transfers between balancing authorities
3. Implement an energy imbalance market
4. Improve weather, wind and solar forecasting
5. Encourage geographic diversity of resources
6. Improve reserves management
7. Retool demand response to complement variable generation
8. Access greater flexibility in the dispatch of existing generating plants
9. Focus on flexibility for new generating plants

We endorse these recommendations, and offer the following additional observations:

- We should not forget the importance of energy efficiency. Energy efficiency offsets and in some cases may reduce load growth, and may be a significant, low cost option for minimizing integration costs.
- It may be important to explicitly consider both the relative value of different renewable technologies as well as the relative value of geographical diversity to the resource procurement and transmission planning process. And while we recognize the complexity of developing such a mechanism for valuing these renewable resources attributes, we are concerned that without some explicit accounting of these operational characteristics within the procurement and transmission planning process, we may end up with a system based on least cost resources and sub optimal transmission, resulting in higher integration costs to the system.
- We should not design the system to manage extreme events if simple occasional curtailment of Variable Energy Resources can create a more cost effective transmission build out. However, curtailment should be used sparingly as excess use may ruin the bankability of Variable Energy Resource projects.

Optimizing Use of Existing Fleet: We should not forget that the existing electrical grid was designed to manage large amounts of variability in load as well as large amounts of uncertainty in generation and transmission resulting from contingency events. Nevertheless, the addition of significant amounts of Variable Energy Resources will introduce additional amounts of variability and uncertainty to net load (load minus variable generation). For this reason we recognize the importance of optimizing the flexibility of the existing fleet as well as of new resources. We agree with many of the speakers at the workshop that incentives need to be developed that will aid in the optimization of existing and planned resource flexibility. However, we should point out that the current practice of self-scheduling in the CAISO market does not make full use of existing fleet flexibility. And while the Flexible Ramping Product being proposed by the CAISO may incentivize a reduction in the practice of self-scheduling, it will do so at a high cost and with the potential for gaming the system at the expense of utility customers.

We are extremely grateful for the efforts by the CEC to develop a framework for discussion of these complex issues that will lead to the least cost – best fit optimization of California’s Renewable Portfolio standard, and look forward to continuing dialogue on these issues.

Respectfully submitted,

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