

**BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Integrate)
and Refine Procurement Policies and) R.10-05-006
Consider Long-Term Procurement Plans)

)

**COMMENTS OF THE
CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION
ON RENEWABLE INTEGRATION MODEL METHODOLOGIES**

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Pursuant to the Administrative Law Judge's Ruling Requesting Comments on Renewables Integration Models, dated September 8, 2010, the California Independent System Operator Corporation ("ISO") respectfully submits the following comments.

I. Reservation of Rights to Submit Reply Comments

Developing sufficient transmission and generation infrastructure is critical to maintaining future reliable grid operations and efficient market performance. This is especially true as the State pursues multiple, interdependent environmentally-driven policies, including an aggressive renewables portfolio standard and limits on once-through cooling technologies, that will fundamentally alter the character of the resources relied upon to deliver electric power. As a consequence, the ISO appreciates the opportunity to participate in, and potentially help guide, the Commission's Long-Term Procurement Process ("LTPP") that will be critical to the success of those environmental objectives.

On August 24-25, 2010, the ISO presented its “Step 1” methodology at the Commission’s workshops. The ISO’s Step 1 methodology sets forth a means to calculate the operating requirements attributable to the increased system variability resulting from additional reliance on variable renewable resources, such as wind and solar generation. As noted in the ALJ Ruling, Step 2 of the ISO methodology, which will provide more detail on the resources required to successfully integrate the new renewable resources will be presented in a future workshop. At this time, the ISO is not providing additional information on its Step 1 submission. However, the ISO anticipates reviewing and providing comments in response stakeholder comments on the Step 1 methodology and related topics and expressly reserves its rights to do so. However, the ISO also offers the following general comments on the LTPP.

II. General Comments

The understanding of the operational challenges and system flexibility requirements necessary to successfully integrate different renewable technologies is evolving significantly. Furthermore, the supporting technologies that promise to provide additional control and balancing capability to offset the variability associated with higher penetration of renewable resources are also evolving. The ISO is actively trying to understand and consider the impacts this evolution will have on operating the future grid. To that end, the ISO’s Step 1 methodology represents a statistical means to evaluate and quantify the amount and ramping characteristics that will be needed to maintain system given the expected level of uncertainty and variability due to forecast errors and the inherent fluctuation in the output of many renewable technologies. Step 2 reflects the next step – a means to evaluate the extent to which various supplemental resources,

forecasting tools, market constraints and products, and other controls over renewable resource variability will provide the ability to efficiently operate the system within the reliability criteria. It is important to proceed to this next step. The ISO has completed and published its study of operational impacts of 20% RPS integration in 2012 and this study can provide some basis to begin the evaluation of the Step 2 analysis.¹

While the ISO's 20% RPS study results indicate that the flexibility of existing resources is sufficient to meet the operational challenges under a 20% RPS objective, the study also reaches the following conclusions: 1) there will be increased reliance on the flexibility of the existing fleet of conventional resources, 2) better forecasting and management of the operational flexibility of the fleet will be necessary, 3) there will be increased potential for over-generation conditions, 4) there will be a need for market rule changes to optimize the availability of potentially untapped dispatch capability from both conventional and renewable generation. These conclusions compel the ISO to presently focus on the operational readiness of 20%. At the same time, the ISO recognizes the need to study operational bookend type scenarios that may arise under 33% RPS as a means to begin identifying the higher level of operational requirements and challenges that will arise over the next 10 years.

The methodologies for the analysis of 20% and 33% RPS are likely to be similar, especially in their initial iterations. However, the level of unknowns and the likelihood that our understanding and technologies will change significantly over the next few years is great. For example, the experience with modeling the level of variability associated with large scale solar PV geographical diversity is very much in the early stages. In two

¹ "Integration of Renewable Resources – Operational Requirements and Generation Fleet Capability at 20% RPS," August 31, 2010 at <http://www.caiso.com/green/greenhome.html>.

years, it can be expected that the body of knowledge on this topic will increase greatly as it is informed by actual data of larger scale PV projects. For this reason, the ISO recommends the Commission and stakeholders seize the opportunity presented by the LTPP to seek to understand the variables of the renewable integration, potential methodologies, and use the body of data available and information at this point to identify the minimum measures that must be taken now to allow for the process to mature and evolve between now and the anticipated 33% RPS objective in 2020.

III. Conclusion

The ISO reserves the right to provide reply comments in response to stakeholder comments on the ISO's Step 1 methodology and related topics.

Respectfully submitted,

By: /s/ **Grant Rosenblum**

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CERTIFICATE OF SERVICE

I hereby certify that on September 22nd, 2010, I served, on the Service List for Proceeding R.10-05-006, by electronic mail and United States mail, a copy of the foregoing

COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION ON RENEWABLE INTEGRATION MODEL METHODOLOGIES

Executed on September 22, 2010 at
Folsom, California

Jane Ostapovich

Jane Ostapovich,
An employee of the California
Independent System Operator