

# Stakeholder Comments Template

## Subject: Integration of Renewables Report

| Submitted by<br>(Name and phone<br>number) | Company or Entity          | Date Submitted   |
|--------------------------------------------|----------------------------|------------------|
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CAISO seeks written stakeholder comments on its Draft Integration of Renewable Resources Report, which was posted on September 20, 2007 at <http://www.caiso.com/1c51/1c51c7946a480.html>.

Stakeholders should use this Template to submit written comments and or suggestions. In order to be considered, written comments must be submitted no later than Close of Business on Friday, October 5, 2007 to: [vietmalani@caiso.com](mailto:vietmalani@caiso.com).

The subject areas upon which CAISO seeks stakeholder input are:

### General Comments

SDG&E appreciates the work the CAISO has performed to date, as this report is a first step to analyzing the integration of renewable resources on the CAISO grid. As this report is the first step, more work remains to analyze how the integration of a large number of intermittent resource in various areas throughout the CAISO grid. Since this report does not cover additional areas the specific requirements are still unknown to reliably integrate 20% wind resources.

The ISO Study concludes that integration of 20% Renewable energy on the ISO grid, including high amounts of intermittent resources such as wind, is possible. Underlying this conclusion are assumptions about increased regulation, ramping, quickstart and increased reliance on thermal generation for provision of many on these services. Missing from this ISO document is a quantification of the cost of these changes in grid operations. While the ISO is not charged with making policy decisions surrounding the integration of renewables, its report should provide the important quantitative measures that will allow policy makers to better understand the rate impacts of the technical ability to meet integrate high levels of intermittent renewable resources. SDG&E highlights some of the areas where the technical ability to integrate may come at a particularly high cost.

### 1. Transmission Planning Issues associated with the integration of Renewables

- Based on the report, only wind generation was added in the Tehachapi region and subsequently analyzed for integration issues. The report did not analyze other renewable resources and how they interact and perform with this wind generation. Thus any integration issues associated with solar or geothermal were not studied.

As such the title of the report is misleading and a more appropriate title would be "Integration of Wind Resources in the Tehachapi region".

- As the CAISO is currently studying the retirement of power plants with once through cooling as a separate study. Each report should document how the results of one study are or are not applicable to the other study. This should include how the various input assumption differ. Thus the report needs to clearly identify how these two studies are to be coordinated.
- Since the CAISO only performed transmission studies for the Tehachapi wind generation, does the CAISO believe that these result are applicable to other areas, such as the Imperial Valley area as there are a number of renewable generators in the CAISO generator interconnection queue in this area?
- If the CAISO is unsure how these results would translate to other areas of the CAISO Grid, the report should clearly state that additional studies are needed to determine the specific requirements of that area, such as the SVC and dynamic reserve requirements, as well as any impacts to the necessary ramp up and ramp down requirements.
- The CAISO should include in the report, the process and timeline for completion of any additional studies that are needed.
- The base case assumptions and any associated workpapers should be available on the CAISO website, so that stakeholders can review these inputs and provide comments.
- The report states the CAISO studied the 2010 Heavy Summer Peak load and the 2012 Light Spring load system conditions. Is the CAISO confident that these studies are comprehensive such that it will cover the wide range of operational conditions? Additionally, the report could go further in documenting during the light load conditions how reliability can be maintained with high wind generation. How much wind can be integrated while maintaining reliability?
- Given that the report talks about meeting the 20% renewable goal in 2010 and the two study assumptions are a 2012 Light Spring case and that the build out at Tehachapi is expected to be in service around the year 2013, the report could be misconstrued as indicating that the Tehachapi generation will be available by 2010 and that only this generation is required to meet the 20% goal by 2010. The CAISO should revise the language to clarify these issues and assumptions.
- The report does not state what, if any, impact on the Southern California Import Transmission (SCIT) nomogram there is from the addition of significant amounts of wind generation.
- The CAISO states on page 19 "Major new transmission facilities and upgrades of the existing transmission will be required, for the 20% RPS target and especially to accommodate the 33% RPS target." Does the CAISO have a list of these major new transmission facilities that will be required for the 20% goal and which are required for the 33% goal? Is the Sunrise Powerlink assumed as one of these facilities?

- The CAISO states on page 20 “Regulatory policies that present barriers to the successful development of renewable resources must be identified and eliminated wherever possible.” Has the CAISO identified any of these regulatory barriers? If so, what actions does the CAISO plan on taking to eliminate these barriers?
- On page 34 the CAISO lists the contingencies performed for the post transient voltage deviation analysis. It is recommended that since DPV2 and the Sunrise Powerlink were modeled, that these contingencies (Imperial Valley to Central 500kV for Sunrise) be studied for impacts.
- For the contingency on page 35, SONGS G-1-1 (one SONGS out of service initially, system readjusted, followed by the second unit outage), what was the system readjustment? If there was no system readjustment this contingency should be corrected to state SONGS G-2 (two nuclear units) outage.
- If curtailing wind generation as a mitigation option under certain conditions is acceptable, the CAISO needs to be specific on when this acceptable and who make the decision to curtail. Has the CAISO thought about the cost to curtail wind generation?
- SDG&E notes that any policy decision associated with wind generation must ensure that all applicable NERC mandatory standards are met.

## 2. Grid Operations Issues

### REGULATION.

The Operations Issues section of the Draft Report identifies a need for additional regulation beyond the average 350 MW of upward and downward regulation normally procured in today's market. The Draft Report concludes that while the integration of renewable resources will increase regulation requirements, the increased regulation will resolve the problem. However the Draft Report fails to take into account market and other external issues within California that may dramatically impact the availability and cost of additional regulation beyond current MW levels.

In the current market, a unit's regulation capacity rating is based on its certified regulation ramp rate in MW/min time a 30 minute duration. Under MRTU, the duration for establishing a unit's regulation capacity rating is reduced to 10 minutes. As a result, the CAISO's available regulating capacity will be reduced by a factor of 3 under MRTU. In addition, a substantial portion of the CAISO's regulation capacity is provided by old thermal steam units. Not only is this fleet of units aging, there is regulatory pressure through the "Old Generation Retirement and Replacement of Once-Thru Cooling Systems" initiative that may further reduce the availability of these units. These plants are being replaced by CCGT units with smaller regulating ranges. The Draft Report fails to address the future availability of regulation capacity to manage the growth in renewable resources or its cost in light of the shrinking capacity quantity.

### OPTIMAL DISPATCH.

The ISO study points to the need to make changes to the manner in which plants that are conventional units are dispatched, including additional commitment of units, in order to allow integration of intermittent resources. However, no quantification of the effects of these changes in dispatch is made. The technical ability to allow integration of intermittent resources needs to be balanced with a policy decision on the cost of doing so. The ISO should undertake modeling to examine the extent of changes to optimal dispatch and quantify the costs in a 20% RPS scenario vs low wind integration scenarios. Additional costs will also be incurred through the ISO's anticipated requirement of a significantly larger supplemental energy stack.

#### RESOURCE ADEQUACY.

The ISO report raises issues with changes that may be required to the RA program currently in place. Specifically, the ISO suggests a requirement for certain (to be determined) levels of quickstart units on the system. The additional costs of these RA enhancements need to be quantified. Intermittent resources already create additional RA costs due to large discount to nameplate capacity of these resources that can be counted toward a LSE's RA obligation.

#### SCHEDULING OF INTERMITTENT RESOURCES ACROSS THE INTERTIES.

Finally, the ISO report raises important questions regarding the scheduling of intermittent resources across the inter-ties. SDG&E encourages the ISO to work with stakeholders (including WECC and neighboring control areas) to resolve issues and create procedures to allow for inter-control area scheduling of intermittent energy as this will likely be an important tool to be used by the California LSE's in meeting the states ambitious RPS goals.

### 3. Forecasting Issues

### 4. Implementation Issues

### 5. Other Issues