

Stakeholder Comments Template

Subject: Integration of Renewables Report

Submitted by (Name and phone 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: vjetmalani@caiso.com.

The subject areas upon which CAISO seeks stakeholder input are:

1. Transmission Planning Issues associated with the integration of Renewables

2. Grid Operations Issues

Our remarks are related to storage technology and the Grid.

We appreciate the work of David Hawkins and CAISO in evaluating the various energy storage technologies and their potential for integrating renewable energy. I would like to further clarify the attributes of the VRB flow battery energy storage system for such a task.

- First, it's important to note that the main application of the VRB technology around the globe has been to integrate wind energy. From the 6 MW capacity installation in 2005 at Hokkaido Island in Japan, to the 200 kW capacity installation at King Island in 2003 in Australia, to the planned 2 MW capacity (12 MWhr) plant in Ireland; the VRB technology has proven its ability to integrate wind energy.
- Second, we feel it important to note that most advanced energy storage devices can provide the quick response outlined in the flywheel technology discussions. We suggest that the CAISO remain open to any technology that can meet the technical requirements needed to integrate wind. Each technology has its own applications and advantages in the "toolbox" available to the CAISO. For example, the VRB ESS can respond as quickly as the flywheel technologies and cycle rapidly. Plus, the VRB ESS, with its extended storage, can ramp up to full capacity and hold that level of production for hours, not seconds.
- We agree that one of the major obstacles to implementation is cost, although we have determined that the value of the CAISO ancillary services market would justify a VRB installation. The issues are more in the financing, as it's difficult to

persuade investors to commit to a market based merchant plant. We agree that subsidies or other financing guarantees would help. With the proper financial structure, a VRB plant can be built quickly, and many plants could be built at the source of the integration problem - the wind farm itself. This has been the practice in the past.

Of course, my office is available to provide any additional information on the VRB wind farms currently in place. Thank-you for this opportunity to comment.

3. Forecasting Issues

4. Implementation Issues

5. Other Issues