

Stakeholder Comment Template CAISO Integration of Renewable Resources (IRRP) October 24, 2008 Stakeholder Meeting	
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Industry Segment: (Regulatory Agency, Load Serving Entity, Generator, Marketer, Municipal Utility, Participating Transmission Owner, Non-Participating Transmission Owner, Association)	
<p>Instructions: The CAISO is requesting written comments on information discussed at the Integration of Renewable Resources Program (IRRP) stakeholder meeting held on October 24, 2008. This template is offered as a guide for entities to submit comments.</p> <p>All documents related to the CAISO's IRRP Program Plan are posted on the CAISO Website at the following link: http://www.caiso.com/1c51/1c51c7946a480.html</p> <p>Upon completion of this template please submit (in MS Word) to Jim Blatchford at jblatchford@caiso.com. Submissions are requested by close of business on Friday November 7, 2008.</p>	
<p><i>The IRRP effort is currently divided into two components – 20% RPS and 33% RPS. Each of these components will assess operational and infrastructure needs, which will then drive solutions that will fall with four categories: (1) infrastructure additions, (2) internal operational tools, (3) market products, and (4) regulatory modifications. Many of the tasks identified are consistent with the specific projects included in the IRRP High-Level Plan published in May 2008. Please comment on whether those tasks, as discussed at the stakeholder meeting, are appropriate and whether other projects should be included as part of the IRRP.</i></p> <ul style="list-style-type: none"> ▪ <i>Please indicate whether you believe such tasks should be included for 20% RPS or beyond 20% RPS.</i> ▪ <i>If included in the 20% component, please provide a proposed schedule that would ensure the results of the task could impact meeting the 20% RPS goal by the start of 2012.</i> <p>See answers below</p>	
<p><i>There are many renewable activities occurring in California and various areas across the country. Please list those studies or activities that you believe have merit that may serve as an appropriate model or otherwise assist the CAISO in conducting the IRRP. If ongoing, please indicate how such activities may be coordinated with the IRRP.</i></p>	

See answers below

In response to the IRRP High-Level Plan, the Market Initiatives Roadmap, and the storage White Paper, several parties have indicated a strong interest in market product development to address aspects of renewable integration. To assist IRRP in prioritizing and coordinating its role in market development, please indicate your perspective on

- ***the effect of MRTU market design and planned enhancements (MAP) on renewable integration;***
- ***any changes to the Roadmap based on consideration of renewable integration;***
- ***which new market products, if any, are needed to stimulate needed capabilities;***
- ***market aspects of interdependencies with other market and policy developments (e.g., once through cooling, long-term RA, greenhouse gas regulations); and***
- ***market design lessons being learned in other ISOs/RTOs or other countries that are relevant to the California market context.***

See answers below

In response to comments on the IRRP High-Level Plan, several parties supported the creation of working groups. The CAISO proposes to create the following working groups to act as technical forums to assist the CAISO: Storage, Forecasting and PIRP, Needs Assessment Studies and Research, and Market Products.

- ***Please indicate whether you support the creation of such groups and whether your company would be willing to participate.***
- ***Are there other working groups that should be created?***
- ***Should there be limits on participation to those with appropriate technical backgrounds?***
- ***Describe the role the working groups should play in the IRRP.***

See answers below

PG&E's comments on information discussed at the
Integration of Renewable Resources Program (IRRP) stakeholder meeting of October 24, 2008

PG&E supports the CAISO's leadership role in the integration of renewable resources to the California electric grid. Based on information provided at the October 24, 2008 stakeholder meeting, PG&E understands the CAISO roadmap includes the following work items:

1. Complete an inventory of the existing generation fleet and quantify resource deficiencies to integrate a 20% RPS generation level (final report due February 2009)
2. Over-generation analysis (Final report due December 2008)
3. Development of visualization tools to help operators in the 2-3 hour and 24-hour ahead time horizon (prototype due December 2008)
4. Various studies and papers intended to improve wind forecasting to be vetted via the PIRP periodic (meetings and calls planned thru June 2009)
5. Development of near-term market products. Specifically noted at the stakeholder meeting was the 30-minute operating reserve product (Issue paper to be published in November 2008)
6. Operating needs assessment to determine the best mix of future resources to meet the operating requirements of 33% RPS goals (to be fed into the CPUC LTTP proceeding around the Q3 2009)
7. Transmission planning coordination with RETI
8. Additional market products for beyond 20% RPS
9. Other various activities to support the integration of RPS resources including
 - a. Potential changes to interchange scheduling (eg, 10-minute schedules across ties, ACE sharing with balancing authorities)
 - b. Changes to NERC and WECC standards that could facilitate the integration of intermittent resources;
 - c. Developing energy storage facilities, and
 - d. R&D projects

Of particular importance to meet the 20% or higher RPS goals is the quantification of resources that are needed to integrate incremental renewable resources (Items 1 and 6), and the construction of sufficient transmission to access those resources (Item 7).

With respect to quantification of additional operating requirements and resource needs for reg-up/down, load following, unit commitment, and ramping,

1. PG&E would like to work with the CAISO to accurately represent the flexibility of hydro resources to cope with the additional load variability and to integrate incremental intermittent resources.



2. PG&E suggests that the CAISO examine scenarios that account for the impact of proposed once-thru cooling regulation.

In addition to the resource information from RETI, the WGA and CPUC LTPP, we suggest that the transmission planning studies also include resource information from other sources, such as the CEC PIER Program or from market information. Such information can be included in the study as different resource scenarios. To avoid confusion, for each resource scenario the resources represented (for example, of sizes, types and locations) in computer programs such as Plexos be consistent with those used in transmission planning.

Because of the lead time required to obtain regulatory authorization and permits, and to procure new generation and transmission, PG&E recommends that the CAISO's RPS integration roadmap include initial deliverables into currently CPUC planned proceedings, which determine the type and amount of new resources needed. The CPUC's Energy Division is planning to prepare a 33% RPS analysis which will define possible implementation scenarios for a 33% RPS goal. The Energy Division expects to complete this analysis in February 2009, six months before the planned CAISO operating needs assessment for 33% RPS is completed. To be useful in explaining how a 33% RPS target could be implemented, the Energy Division analysis should have the CAISO's input on the amount, type, and location of resources needed to integrate additional RPS resources. The CAISO's input will also be useful to determine the feasibility of planning and building sufficient transmission to achieve the 33% RPS goal.

Although not covered in the discussion of proposed market products at the stakeholder meeting (Items 5 and 8), PG&E recommends that the CAISO address two additional items when considering market design changes for 20% or higher RPS targets. They are:

1. Impact on RPS integration on CAISO market prices. Since scarcity pricing is triggered by spot shortage of ancillary services, and integrating renewable resources increases the demand for ancillary services, it is essential that the increase in demand for ancillary services not be allowed to outpace the increase or procurement of new resources that can provide those services. This will be important fundamentally to maintain reliability, but also to avoid unnecessary adverse impact on CAISO market prices.
2. Allocation of integration requirements and costs. In designing market changes to accommodate RPS resources, the CAISO will need to decide how to allocate incremental ancillary service requirements and costs associated with incremental intermittent resources. There are two basic alternatives. First, using cost causation principles, the CAISO could allocate the incremental requirements and costs to parties with resources that demand additional ancillary services. The second alternative is to increase the incremental operating requirements to all load serving entities. PG&E prefers the first alternative.

PG&E supports the creation of the working groups that the CAISO proposes to use in its renewable integration roadmap, and is willing to participate and contribute in the above work streams. We believe it is important that the working group members have the technical expertise



or capability to contribute to the tasks planned by the working group. It is also important that, from the beginning, deliverables and deadlines be clearly defined to ensure timely completion of the deliverables.

The role of the working groups could vary depending on the particular task or project. For example, in quantifying the resource deficiencies to integrate RPS resources, working group members could contribute with developing methodology or in reviewing methodology and estimates a consultant of a third party could develop of type and quantity of integration resources needed. PG&E expects the deliverables from the various working groups will be shared with the wider stakeholder group.

Another item that should be added to the CAISO roadmap is the quantification of the increased need for flexibility in the gas transmission and storage system which is needed to integrate 20% and higher levels of renewable resources. This increased need for flexibility will almost certainly result in higher swings in intra-day gas usage. PG&E and California's other gas utilities will need to analyze the impacts this requirement for greater flexibility will have on their gas system operations. Because of the lead time required to improve the gas infrastructure, develop new gas transmission and gas storage services, and receive CPUC approval for new services and operational changes, PG&E recommends that this additional roadmap item be completed in parallel with the operating needs assessment for 33% RPS, and that an initial estimate of the steps and costs needed to provide this additional flexibility be available to input into the 33% RPS Energy Division study to be completed in February 2009.