

Stakeholder Comment Template

CAISO Integration of Renewable Resources (IRRP)

October 24, 2008 Stakeholder Meeting

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AES respectfully submits its comments on the IRRP stakeholder meeting held on October 24, 2008. AES looks forward to working collaboratively with the CAISO and other stakeholders in the IRRP, with a focus on energy storage market integration and market products.

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.

- ***Please indicate whether you believe such tasks should be included for 20% RPS or beyond 20% RPS.***
- ***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.***

An appropriate starting point for the IRRP (20% RPS time frame) is to perform modifications of existing market products to support energy storage integration. Energy storage project developers are anxious to enter the existing CAISO ancillary services markets for regulation up and regulation down, an achievement which would at once satisfy the combined needs identified by the CAISO for additional regulation and additional ramp capability for regulation. The expedient deployment of energy storage projects would simultaneously create a platform for further development of identified market product needs (e.g. additional ramp capability for load following).

The participation of energy storage resources in the regulation markets faces minimal technical and operational barriers, as the resources themselves are already capable of meeting the CAISO certification requirements for regulation resources. The operation of such resources would strongly resemble the profile of existing generators participating in the markets, with the primary differentiating factor being that energy storage resources would operate in the regulation up/down markets around a scheduled set point of 0 MW.

With a view to the future, opportunities will exist to develop market products that take advantage of the characteristics unique to the energy storage resources already participating in existing CAISO markets. One example, as suggested previously by CAISO, is to improve regulation signaling from traditional AGC to a manner appropriate to the changing resource mix, harnessing the capabilities of fast-responding storage and load resources.

The proliferation of energy storage resources on the CAISO system will enable ramping capabilities (MW/min) and control that far exceed those of the existing resource fleet. An opportunity exists to develop market products to support the identified need for increased ramping capability required for load following.

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.***

Market design to integrate energy storage in existing ISO/RTO markets is being addressed in a number of other regions, and through collaboration and coordination can prove valuable to CAISO.

- **PJM:** PJM Interconnection has indicated that it plans to introduce storage resources, including electric vehicles, directly in the existing regulation market, as it has previously demonstrated.
- **New York ISO:** NYISO has been looking closely at energy storage, with an emphasis on limited energy storage resources (LESR) participating in the regulation market as outlined in a recent presentation to the NYISO Market Issues Working Group (MIWG) on November 3, 2008. The proposed functionality includes recognition of LESR capabilities (e.g. fast response) and management of LESR charge levels. The presumed reasoning for the focus on energy-limited resources is that longer-duration storage resources carry many characteristics in common with existing resources already in the market.
- **Midwest ISO:** MISO has proposed tariff revisions to include a Stored Energy Resource (SER) category to be integrated into its Ancillary Services Market.
- **ISO New England:** ISO-NE has initiated an Alternative Technology Regulation Pilot Program which allows a limited capacity of alternative technologies, including energy storage, to participate in the regulation market.

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.***

AES supports the creation of working groups to support IRRP. If defined as proposed, AES volunteers to participate in the Storage and Market Products working groups. However, AES recommends that such working groups are organized around applications, operational areas and market products, rather than a technology category (e.g. Storage). This distinction is made to increase the probability that the working group process does not focus on storage (or other) technologies in a narrow application, but that it consider how the newest technologies be integrated and applied broadly across all market needs and how those technologies might allow new market services to be developed.

Participation should not be limited to those with technical backgrounds, as the role of working groups should be to guide the IRRP to market-oriented solutions in their respective areas of focus.