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Stakeholder Comment Template

CAISO Integration of Renewable Resources (IRRP)

October 24, 2008 Stakeholder Meeting

Organization: Beacon Power	**Date Submitted:** November 7th, 2008
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Industry Segment: Energy Storage	

Instructions: The CAISO is requesting written comments on information discussed at the Integration o Renewable Resources Program (IRRP) stakeholder meeting held on October 24, 2008. This template is offered as a guide for entities to submit comments.

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

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, 200**

The IRRP effort is currently divided into two components – 20% RPS and 33% RPS. Each of these components wi 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 th task could impact meeting the 20% RPS goal by the start of 2012.***

Beacon Power appreciates the opportunity to submit comments in the ISO's IRRP plans. Our comments focus o Energy Storage interconnection and participation in ISO markets – specifically, the Regulation market. The ISO market runs short of Regulation even today, and removal of barriers to standard Regulation market participation by Energy Storage facilities would benefit the grid regardless of the pace or mix of future renewable-energy development. Any pilot programs needed for development of additional market products, such as Fast Regulatio should have specific objectives and a clear schedule, and should be included in the Phase 1 development process

There are many renewable activities occurring in California and various areas across the country. Please list thos 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.

New York ISO (NYISO) and Midwest ISO (MISO) have proposed or implemented many useful concepts that could serve as a model for ISO IRRP efforts, including creating a separate energy storage asset class for participation in the Regulation market. Specifically:

- ***MISO has created the Stored Energy Resource (SER).*** MISO schedules SERs to charge or discharg as necessary, and they do not offer into the Energy market. MISO has updated its Tariff to reflect specific SER characteristics, including removing the 60-minute sustainability requirement, adding Regulation bid parameters, and limiting SER Operating Reserve provision to ensure MISO compliance with N-1 contingenc requirements. SERs are subject to the same settlement structure as traditional resources, except that they are not subject to the Regulation Deployment Adjustment.

  We have attached the applicable MISO SER tariff provisions to these comments, for your information.

  MISO contact: Matt Tackett, Manager of Market Design, mtackett@midwestiso.org, (317) 249-5255

- ***NYISO has proposed creation of the Limited Energy Storage Resource (LESR).*** NYISO proposes to: (1) schedule LESRs the same as traditional Regulation resources; but (2) dispatch LESRs in a manner that recognizes and fully utilizes their capabilities. The LESR settlement structure will be only sligh different from that used for traditional resources.

  NYISO contact: Robb Pike, Manager of Energy Market Products, rpike@nyiso.com, (518) 356-6156

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.***

We offer these comments on several of the elements listed above.

- ***Roadmap changes:*** The ISO should consider adding to the Roadmap, as a high-priority item, elements th would remove barriers to participation in its existing Regulation market. The existing market rules are not "technology-neutral," but we believe that they could be made so without any major effort on ISO's part.

  Beacon believes that such Regulation-rule revisions should be placed in the Roadmap even higher in priority than Phase 1 IRRP actions, for the following reasons:

  - **Operational needs today and in the near future:** ISO markets sometimes run short of Regulation eve today. Only a limited number of resources are certified to provide Regulation, and rainfall and temperature uncertainties can sometimes limit availability and operation of the current large amounts of hydro-related Regulation resources on the ISO system. Increasing available Regulation resources, especially non-hydro resources, would be a "no-lose" action that would benefit the grid today, regardles of future renewable-energy penetration, and offer additional benefits later, when more intermittent resources are added to the grid.

- **FERC mandate:** Order 890 requires ISOs/RTOs to open the Regulation market to non-generation resources capable of providing Regulation, like Energy Storage technologies, on a basis comparable to generation resources.

First and foremost among the changes needed is some modification of the 1-hour sustainability requirement f Regulation services. Because many storage technologies can only store a finite amount of energy, they cann produce Energy for a continuous hour. This requirement effectively precludes participation in the existing market by Energy Storage facilities because of the risk to their capacity payments if called upon to provide Regulation for an entire hour.

However, if the Regulation dispatch fluctuates during the hour (as is typical), then Energy Storage facilities should be able to provide effective Regulation service for an hour and more. In 2006, Beacon Power successfully demonstrated its ability to provide Regulation to the ISO through an 18-month CEC-sponsored trial. Furthermore, as noted above, both MISO and NYISO proposed new market rules for Energy Storage resources resolve the 1-hour sustainability requirement.

There are also a number of lesser changes that need to be made to reduce market-participation barriers; many are only ministerial, e.g., providing that generator-interconnection applications and Scheduling Coordinator Agreements (Schedule 1) apply to Energy Storage facilities as well as generators. These changes should require very little effort to fix.

For the information of our fellow participants in this stakeholder process, we have attached to these commen a tentative one-page list of MRTU Tariff changes needed to remove barriers to Energy Storage market participation that we provided to the ISO several months ago.

Related comment: To conclude our comments in this area, we must express our great concern to learn, at th October 24th meeting, that the ISO had apparently interconnected a small (2 MW) energy storage facility to i grid and was preparing to allow some form of operation/market participation by this entity. We do not understand how the ISO could do this without making the tariff changes we have recommended - or, alternatively, violating several of those tariff provisions, e.g., the current limitation of the SGIP to generators

We know that the ISO is well aware of FERC rules and policies prohibiting undue discrimination and requiring similar treatment of "substantially similar" entities. Thus, to forestall potential misunderstandings and complaint filings at FERC, we strongly urge the ISO to: (1) disclose the tariff provisions it has apparentl waived in this instance, or alternatively why it believes that such waivers were not necessary; and (2) provide similar treatment to any entity similarly situated to the subject entity, including equal access to any additiona processes or privileges afforded to that entity through additional ISO actions or agreements.

- ***New market products:*** For the reasons described above, increasing Regulation-capable resources availab to ISO should be a high priority even today, but (as the ISO IRRP study last year pointed out) the ISO will likely have increasing Regulation needs as renewables/intermittent resource penetration increases over time. Investigation and implementation of a "Fast Regulation" service would allow ISO to maximize the capability of available Regulation resources and, potentially, allow ISO to reduce its Regulation purchases and costs overall (even if Fast Regulation itself commands a premium in the market).

  To implement a Fast Regulation service, the ISO must first determine the trade-off between use of Fast Regulation and "Standard" Regulation, differentiated as necessary by conditions on the grid. That tradeoff could then be incorporated into the ISO Ancillary Services optimization algorithms, so the ISO could optimi

its purchases of Fast and Standard Regulation products to meet its reliability needs at least cost.

As a general matter, pilot programs are not needed for technologies that are ready for commercial deploymer as long as these they are able to obtain revenues from such market participation. However, if the ISO believe that it needs such a program to determine the Fast-Standard Regulation tradeoff, the program design should include: (1) clearly defined objectives and deliverables, tied to the information needed; and (2) a clearly delineated schedule. Pilot-program participants should be paid for their participation, e.g., market value for products reducing ISO-market Regulation purchases.

- ***Market-design lessons from other ISOs/RTOs:*** See above remarks and information about NYISO an MISO programs. The main lesson from these areas is that Energy Storage is a commercially viable technolo that can be deployed now, if the market barriers are removed and the requirements are made technology-neutral.

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.***

We support the working groups as defined and are very interesting in participating in the Storage and Market Products working groups. These groups can be an important forum for identifying problems and building consensus in the development of ISO proposals.

Membership can be open to interested parties, with additional specialized expertise brought in on an as-needed basis; however, but it is very important that the ISO assert strong leadership to keep the groups focused and on schedule. Minority positions should be included in group proposals and respected but should not hold up the progress of the group as a whole.

The ISO should be proactive in publicizing group activities – e.g., posting and noticing meeting agendas, meetin minutes, proposals, and comment-submission deadlines – so that there are no due-process questions. Each group process should function as a separate ISO stakeholder process, with all the steps typically included in such processes.