

**RENEWABLES INTEGRATION: MARKET AND PRODUCT REVIEW,  
PHASE 1 ISSUE PAPER**

The California Energy Storage Alliance (CESA) generally supports much of the CAISO’s “Renewables Integration Market and Product Review, Phase 1 Issue Paper”, dated September 30, 2010 (Issue Paper). These comments, however, are addressed specifically to Section 4.1 of the Issue Paper titled “Finalize Design of Regulation Energy Management.” If implemented as anticipated, the REM concept will be a modest but important step toward bringing California closer into line with the comparability standard articulated in FERC’s Order 890 and 719, and the current practices of other RTOs to date regarding regulation services provided by energy storage technology. Long-term price certainty for regulation services is also a CESA goal, but It is CESA’s hope and expectation that prompt and full completion of the design elements associated with REM that will – at a minimum - enable the CAISO to provide a positive progress report to the FERC by March 2011, as required by the FERC’s Order Conditionally Accepting Tariff, 132 FERC ¶61,211, issued September 10, 2010.

**REM Should be Included in Phase 1.** In the CAISO’ stakeholder meeting held on October 5, 2010, opposition was expressed by some to including REM in Phase 1 of this initiative, in part because a few stakeholders believe there are enough resources on the system to provide foreseeable regulation requirements in the near future, and therefore adding REM in Phase 1 should not be a priority initiative. This is essentially an argument against the concept of innovation, because energy storage is grid-ready today. Arguments that current resources are capable of providing the regulation service requirements, and thus REM shouldn’t be a priority deny the value of innovation in new technologies, as well as stifling competition. The FERC has very pointedly stated that any resources that are capable of providing regulation should be allowed to provide the service on a comparable basis regardless of technology differences. Whether traditional fossil generation may also so or not is beside the point

**REM is Not a New Product.** REM is not a new product. Rather, it is a means to provide a well-understood existing product, regulation service. The *only* difference between REM and the current regulation service is the use of the 5-minute energy market to return REM resources to their preferred operating point of REM capable resources. REM resources will provide regulation up and regulation down in response to CAISO signals in exactly the same way that current generation resources provide regulation service.

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**Recent Stakeholder Discussions.** CESA, and its member companies, participated in the stakeholder meeting held by the CAISO on October 5, 2010 to discuss a number of topics included in the Issue Paper, including specifically REM and heard nothing that had not been said before. CESA accordingly urges the CAISO to proceed with implementation of REM as expeditiously as possible. The CAISO should proceed with the REM proposal that was developed by the CAISO’s staff earlier this year, which would simply use the 5-minute CAISO imbalance-energy market to continuously replenish energy storage resources with less than an hour of energy-storage capability to provide regulation continuously for a full hour or more. As noted by CESA in its comments submitted on July 30, 2010, there is currently no clear method to interconnect storage facilities to the CAISO grid, and the CAISO should therefore also promptly amend its interconnection rules to expressly include energy storage as a design element.

**Net Energy Settlement.** The CAISO’s original proposal was that REM energy would not be settled and would be allocated to load. However, CESA does not object to settling net energy at wholesale prices as described in the Issue Paper. Resources participating in REM should be paid for the energy injected and charged for the energy withdrawn like any other resources currently are. Any inherent losses should be accounted for in an average withdrawal that would be greater than the average injections over time. The [FERC PJM Station Power Docket](#) provides a fair, reasonable, and comparable basis for settlement of energy provided and used by energy storage resources.

**REM Procurement cap.** A procurement cap on REM is not necessary or desirable. CESA offers two alternatives to imposing a percentage cap on REM; the first alternative would be to limit resources that select REM to only provide regulation service, that is they could not provide Energy or other Ancillary Services while under REM. This would in effect be a self-limiting arrangement because not every resource would want to supply regulation only, and is consistent with other wholesale markets. Another alternative would be to limit REM participation to resources that have under an hour of continuous energy capability, this would allow sufficient amounts of limited energy resources to participate in the market, while due to construction and financing schedules would be nearly impossible to flood the market with REM resources immediately upon implementation, giving the CAISO time to review market data and gain operational experience with REM resources.

**Pay-for-Performance.** Since the CAISO has clearly identified a rapidly increasing need for faster-ramping regulation resources, it should consider changing its regulation payment method proposed in the Issue Paper to include a payment based on MWs of response to a CAISO control

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signal. This payment approach would fairly and reasonably compensate all types of resources for ramping performance on a comparable basis. Such a payment method should motivate existing resources to improve their performance, attract new fast responding resources, and compensate all providers based on the service that they actually provide. The CAISO suggests addressing pay-for-performance in phase 2, but pay-for-performance pricing should be considered in phase 1 to encourage improvements in the regulation response of the current fossil fleet or investment in new fast regulation resources.

**Conclusion.** It is generally recognized that resources that are more flexible and can ramp more quickly will reach their dispatch target faster, so that they can be re-dispatched more often, and provide much greater area control error correction than more ramp-limited resources. One widely quoted study has demonstrated that faster regulation resources could reduce the CAISO need for procurement of regulation by as much as 40%.<sup>1</sup> Another authoritative study found that a 30-50 MW fast-response storage device could provide as much or more Regulation capability than a 100 MW combustion turbine.<sup>2</sup> It also bears repeatedly emphasizing the well-documented benefit of energy storage in reduction of air pollution and greenhouse gases.<sup>3</sup> For these reasons, as well as those set forth above, the CAISO should promptly complete all of the design elements needed to implement REM.

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<sup>1</sup> Makarov, Y.V., Ma, J., Lu, S., Nguyen, T.B. *Assessing the value of Regulation Resources Based on Their Time Response Characteristics*. Pacific Northwest National Laboratory, June 2008.

<sup>2</sup> *Research Evaluation of Wind Generation, Solar Generation, and Storage Impact on the California Grid*, Study by KEMA, Inc. for California Energy Commission, June, 2010.

<sup>3</sup> *Air Emissions Due to Wind and Solar Power*, Carnegie Mellon Electricity Center, October 23, 2008.

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