

California Independent System Operator

Renewable Integration: Market and Product Review Phase 2

Stakeholder Comments on the April 5, 2011 Discussion and Scoping Paper

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I. Introduction

In this Phase 2 of the Renewable Integration: Market and Product Review (RI/MPR), the California Independent System Operator (“CAISO”) proposes at page 5 of the April 5, 2011 RI/MPR Discussion and Scoping Paper (“Issue Paper”) to establish:

... both 1) near term changes to existing market design that may provide the ISO with additional operational flexibility, as well as 2) longer term market design changes in the form of new spot market products and forward capacity products that will provide the ISO the needed operational characteristics from the resource fleet to integrate variable energy resources successfully.

The Vote Solar Initiative (“Vote Solar”) completely agrees that, particularly in light of the recent signing into law of California’s 33% Renewable Portfolio Standard (“RPS”) (“Senate Bill 2X”), this CAISO Phase 2 effort is timely and critically necessary.

In determining which changes should be considered near term and which changes should be considered long term, Vote Solar strongly urges the CAISO to postpone consideration of element 2.4, Allocation of Integration Costs, until the very end of the entire RI/MPR processes, and limits these comments to this issue.

Vote Solar supports, and actively advocates for, the embodiment of fair and equitable principles of cost allocation. Accordingly, Vote Solar fully recognizes the need to eventually address renewable integration cost allocation. Nevertheless, for the reasons discussed later in these comments, Vote Solar contends that consideration of renewable

integration cost allocation at this time is extremely premature, pragmatically infeasible, and entirely unnecessary. Under these circumstances, Vote Solar instead recommends that in the near term, the CAISO acknowledge the need to eventually evaluate cost allocations issues, but postpone doing so until after:

- 1) *Renewable integration requirements that are fact-based, informed, well vetted, and accurate are established; and*
- 2) *Least cost/best fit solutions to minimize integration requirements are considered, developed and adopted.*

II. Considerable Time is Needed to Develop Integration Requirements That Are Fact-Based, Informed, Well Vetted and Accurate

In general, analysis and review of the impact of high levels of renewable generation on electric grids has only recently been initiated. The majority of the scholarly research dates back a mere two to three years.¹ Comprehensive regulatory and policy based review began only within the last two years.² Even the very earliest efforts of the CAISO, a recognized leader in renewable energy, began only four years ago, in 2007.³

As the ongoing analysis and review is revealing, integrating high levels of renewable generation is quickly proving to be a complex and challenging task. The technical elements require significant modeling efforts, and therefore formulation of “best guess” assumptions. Deep expertise in areas of traditional grid operations as well as renewable generation performance is simultaneously needed. The regulatory and policy aspects are multi-jurisdictional. State commissions, the Federal Energy Regulatory Commission (FERC), and balancing area authorities will all need to address potentially overlapping and never-before considered issues regarding operations, policies, and cost allocation and recovery.

¹ For example, see generally Understanding Variability and Uncertainty of Photovoltaics for Integration with the Electric Power System, Mills, Ahlstrom, Brower et al (December 2009). Available at: <http://eetd.lbl.gov/ea/emp/reports/lbnl-2855e.pdf>; Western Wind and Solar Integration Study, prepared by GE Energy for the National Renewable Energy Laboratory (May 2010). Available at:

http://www.nrel.gov/wind/systemsintegration/pdfs/2010/wwis_final_report.pdf; Implications of Wide-Area Geographic Diversity for Short-Term Variability of Solar Power, Andrew Mills and Ryan Wisler, Lawrence Berkeley National Laboratory (September 2010). Available at: <http://eetd.lbl.gov/ea/ems/reports/lbnl-3884e.pdf>

² For example, see generally California Independent System Operator, *Integration of Renewable Resources*. Available at: <http://www.aiso.com/23bb/23bbc01d7bd0.html>; California Public Utilities Commission, *Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans*, R.10-05-006. Available at: http://docs.cpuc.ca.gov/published/proceedings/R1005006_doc.htm; *Application of Nevada Power Company d/b/a NV Energy for approval of its 2010-2029 Triennial Integrated Resource Plan*, Docket No. 10-02009. Available at: http://www.nrel.gov/eis/pdfs/solar_power_high_penetration_chadliev.pdf; The Federal Energy Regulatory Commission, *Integration of Variable Energy Resources*, RM10-11-00. Available at: <http://www.ferc.gov/whats-new/comm-meet/2010/111810/E-1.pdf>

³ California Independent System Operator, *2007 Integration of Renewable Resources Report*. Available at: <http://www.aiso.com/1c60/1c609a081e8a0.pdf>.

Echoing the above stated reflections, in September 2010 comments filed at the California Public Utilities Commission, the CAISO states:

*[U]nderstanding of the operational challenges and system flexibility requirements necessary to successfully integrate different renewable technologies is evolving significantly. Furthermore, the supporting technologies that promise to provide additional control and balancing capability to offset the variability associated with higher penetration of renewable resources are also evolving.... **[T]he level of unknowns and the likelihood that [the CAISO's] understanding and technologies will change significantly over the next few years is great**.... For this reason, the [CA]ISO recommends the Commission and stakeholders seize the opportunity presented by the [Long Term Procurement Planning Proceeding] to seek to understand the variables of the renewable integration, potential methodologies, and use the body of data available and information at this point to identify **the minimum measures that must be taken now** to allow for the process to mature and evolve between now and the anticipated 33% RPS objective in 2020. (citations omitted, emphasis added)*

Thus, as the CAISO acknowledges in the above comments, the CAISO is in the very initial stage of evaluating the integration of high levels of renewable energy onto the grid. Likewise, the CAISO further acknowledges that the evaluation process is evolutionary, the CAISO's understanding will likely change significantly in the coming years, and, therefore, in the interim, only minimum measures should be taken.

Under these circumstances, the CAISO focus should be on the continued refinement of the integration needs analysis and exploration of policies and practices to reduce integration needs and costs. At this point, insufficient knowledge exists to properly identify what the integration needs and costs will or should be. Furthermore, because CAISO generators are not currently assessed integration costs, the CAISO would need to conclusively demonstrate that renewable generation causes the CAISO to incur an increased amount of such costs. Any potential costs assessed on renewable generation would be limited to the incremental amount of such costs above the integration services currently provided to all generators and all loads. Venturing into the highly complicated, controversial and time consuming process of cost unbundling and allocation could easily result in unjust, unreasonable and discriminatory FERC ratemaking, and certainly is inconsistent with a least regrets approach.

Furthermore, for the near to mid term, the CAISO has indicated that existing system resources will likely be sufficient under a 20% RPS in 2012 integration benchmark.⁴

⁴ See <http://www.aiso.com/2804/2804d036401f0.pdf>

Under this assumption, in addition to being premature and pragmatically infeasible, allocation of integration costs for the next year or more is unnecessary because no extraordinary integration measures will be taken in this time period.

III. In the Near to Mid Term, Time is Better Spent Focusing on the Consideration, Development and Adoption of Least Cost/Best Fit Solutions That Minimize Integration Requirements

In addition to some of the elements, such as sub-hourly scheduling (i.e. the 15 minute real-time market), discussed in the Issue Paper, Vote Solar requests the CAISO's consideration, at a minimum, of the following issues, both in the context of this Phase 2 RI/MPR and prior to launching an integration cost allocation review process:

- 1) Scheduling, balancing and settling the entire fleet of variable renewable generation as one portfolio, thereby capitalizing on the potentially smoothing effects of geographic and fuel source diversity;
- 2) Establishing a dedicated CAISO renewable energy "desk" with state of the art forecasting tools and the ability to implement fleet wide scheduling, balancing and settlement as discussed in #1, immediately above;
- 3) Wide area renewable balancing through cooperation with neighboring balancing authorities; and
- 4) Increased coordination with other agencies, such as the California Public Utilities Commission, to explore the use of demand response and other non-generation based methods to address variability, and to better understand the limitations and advantages of current utility renewable energy procurement policies and practices.

Many of these proposed items do not neatly fit into what the CAISO may consider to be market "incentives for developers of VER to design new renewable resources that are better able to manager their own variability and reduce such impacts on grid operation."⁵ The CAISO's preference for market based mechanisms to produce desirable renewable energy related outcomes is, however, postulated on the existence of a free flowing, completely transparent, fully mature renewable energy market economy. In reality, renewable energy development is often mired in cross jurisdictional regulations and utility procurement policies and practices, resulting in impeded to non-existent "VER developer" ability to respond to CAISO market signals.

Under these circumstances, the CAISO -- because it is organized "as a nonprofit, public benefit corporation, [that] shall conduct its operations consistent with applicable state and federal laws and consistent with the interests of the people of the state" of California⁶ -- is obligated to consider CAISO driven, as opposed to merely market driven, integration mechanisms that will support and promote the 33% RPS. Expending valuable time and energy to prematurely and unnecessarily rush to impose inadequately developed

⁵ Issue Paper at p. 15.

⁶ California Public Utilities Code Section 345.5(a)

integration costs is neither in the interests of the people of California, nor is it, arguably, sound market behavior.

Instead, Vote Solar urges the CAISO to dedicate that time to exploring and developing forward thinking methods for considerably reducing renewable integration costs and developing the most renewable energy-friendly grid possible. Some of the elements already in the Issue Paper are consistent with this approach, but Vote Solar believes the list to needs to be expanded, at a minimum, to the items discussed above.