

Comments on Renewable Integration Market and Product Review

Phase II Straw Proposal Dated September 2, 2011

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General Comments:

Although the ISO's proposal to divide this redesign effort into more manageable pieces is understandable, it does expose stakeholders and ISO staff to a lengthy, drawn-out design and implementation effort that is likely to last past 2020. One consequence of a longer design and implementation process is that the ISO risks losing its institutional memory and the institutional memory of key stakeholder participants.

Some stakeholder comments, including earlier comments by this author, have recommended taking more time to consider and debate design elements. However those comments should not necessarily be construed to mean the effort should be broken up into a number of smaller pieces. Whatever emerges from this process has to work reliably, seamlessly and in conjunction with policies established by the CPUC and the FERC. It can't be designed one piece at a time.

In several places the ISO connects prices with investment and operating decisions¹. In fact, prices from the ISO's markets have little bearing, if any, on investment or operating decisions. The ISO's markets are largely oriented around costs rather than prices, and for all practical purposes, their principal function is to allocate variable operating costs incurred by suppliers to load. Suppliers are pressured to submit offers that reflect their marginal costs, many of the ISO's pricing discussions related to services focus on opportunity costs, stakeholder discussions often use the term cost causation, this document contains an extensive discussion of bid cost recovery, and both loads and resources are heavily discouraged from chasing prices. The ISO's discussion papers, proposals and other communication view price volatility (or price variability) as a problem that has to be intensively managed rather than as a means of communicating system conditions and coordinating the operation of supply and flexible demand. So long as the ISO focuses on costs rather than prices, there will be little or no price-driven demand-side participation, storage will either struggle to make operating profits or it will have to rely on the ISO to determine feasible, cost-effective operating schedules, and no market participant will make investment and operating decisions based on ISO prices. Moreover, the ISO markets are designed in a way that makes it impossible for market participants to make any operating decisions based on price, even if the ISO did not actively discourages market participants from doing so.

Cost Causation:

The ISO uses the term "cost causation" in several places in the context of dealing with fixed and variable costs associated with balancing the grid, and how those costs should be borne by various market

¹ The Transparency Principle on page 8, and the introduction to Section 7 on page 14.

participants. Rather than thinking about this issue in the cost-of-service-centric way implied by “cost causation” it might be more useful to think about the issue in market-oriented terms.

There has always been a certain amount of variability and uncertainty associated with demand and conventional supply, but as the proportion of supply contributed by Variable Energy Resources (VERs) increases, this problem grows in scope and size. One of the ISO’s responsibilities is to deal with this variability and uncertainty by acting as a market-maker in the sense that it continually buys or sells energy to keep the grid in balance. In some cases, it uses bids and offers for energy. In other instances, it exercises options on energy (more commonly known as the regulation, spinning and non-spinning reserve ancillary services) that have been procured in the forward market. At the same time, there has been a great deal of discussion about whether and how VERs should manage and/or pay for the variability and uncertainty of their supply. While the simple answer is to make the ISO responsible and send out bills, this is neither commercially reasonable nor efficient. The ISO may be able to deal with a smaller balancing problem in aggregate, but VERs that are able to self-manage their variability and uncertainty should not be required to bear the cost burden imposed by VERs and load that cannot self-manage their variability and uncertainty. In fact, there are four methods available to the ISO and the Scheduling Coordinators (SCs) that represent affected loads and resources:

- SCs can self-manage their variability and uncertainty by adding better controls, storage, co-located generation or other similar methods that allow loads and resources to control the amount of power they inject into or withdraw from the grid so that it matches their commitments in the forward (today limited to the day-ahead) market.
- SCs can pay the ISO to manage the operational impacts of their variability and uncertainty.
- SCs can pay a third party to manage the operational impacts of their variability and uncertainty.
- SCs can acquire and either self-manage or turn over to the ISO’s operational control options on energy that effectively hedge the cost of managing variability and uncertainty (self-provision).

The ISO should allow all four of these methods to be used, either individually or in combination. SCs that meet their forward commitments with no deviation should not be responsible for shares of any balancing costs incurred by the ISO, and any SC that does deviate from its forward commitments should expect to pay a pro-rata share of the balancing costs. The ISO should ensure that its spot energy market provides a means for cash-settling options on energy exercised at the ISO’s discretion, even if the SC that purchased the option and turned it over to ISO operational control precisely matches its forward market commitments.

More importantly, the ISO’s proposal for dealing with SCs who offer flexibility and then fail to perform should be revised. So-called “no pay” provisions are both inappropriate and an ineffective means of incentivizing performance. Instead, the ISO should require any SC that fails to perform to bear the cost of replacement services. There is no reason why SC’s that have purchased forward contracts for options on energy should be required to bear any of the additional costs incurred by the ISO when the writer of that option fails to perform.

It is appropriate for the ISO to “find little sympathy” for arguments that favor assigning balancing costs associated with VERs to load. The ISO should similarly find little sympathy for arguments that favor assigning balancing costs to VERs. The ISO settles with SCs, not individual resources or loads. SCs, and in particular the three IOUs, have entered into a variety of commercial arrangements with VERs in order to meet their obligations under the 33% RPS. The SC that represents a VER is responsible for determining whether and how to allocate any costs associated with ISO management of variability and uncertainty among the portfolio of VERs, loads and other resources it represents. This is not the ISOs responsibility and the ISO should avoid becoming entangled in what is essentially a commercial matter between the VER and its SC. If the IOUs want VERs to pay for any balancing costs associated with their variability and uncertainty, they are free to amend existing commercial arrangements accordingly. All balancing costs, including those associated with providing contingency reserves, should be allocated in this way.

The ISO can also simplify its settlement with SCs and the settlement between SCs and VERs by ensuring that the cost of balancing is reflected in prices rather than via some arbitrary cost allocation scheme. To the extent costs incurred by the ISO in its role as market-maker are recovered through uplifts, prices can’t be used by market participants to make investment and operating decisions. This is particularly true for certain kinds of flexible demand that may be perfectly willing to offer flexibility with short notice but will not be willing to offer flexibility under long-term contracts that essentially place the customer’s business under ISO operational control.

Market Products:

As noted earlier, the ISO’s toolkit for dealing with variability and uncertainty on the part of supply and demand consists largely of options on energy, including typical ancillary services and available but otherwise uncommitted production capability from controllable resources in the upward and downward directions. Before designing any new services, the ISO should develop an attribute framework for energy options so that they can be fully specified. Attributes should include, but may not be limited to, the period for which they are valid (term), delivery rate (capacity), strike price, premium, duration once struck, and time to reach full delivery rate. By fully defining options on energy in this way, the ISO provides clear direction to physical resources that might be capable of offering and delivering on certain types of options, and the ISO ensures that options are readily tradable bilaterally outside the ISO, or in markets that could be run by the ISO or a third party. Once fully defined, the ISO can label a specific option product in any way it chooses. If options on energy are designed correctly, a market participant that, for example, strikes a long-term contract to provide spinning reserve should receive its entire option premium from the three year contract and none of the option premium from the ISO’s spot markets.

The ISO will probably not be able to define its Flexible Ramping Constraint in terms of an option on energy, because ramping has to be defined in terms of a change in the rate of delivery over a period of time. The Flexible Ramping Constraint is more likely to be an interim product that will be replaced at a later time by shorter energy market settlement intervals.

In its presentation materials, the ISO seems to be proposing that flexible ramping offers will include a price tied to ramping speed. Presumably the ISO has determined that this structure can be made to work with its mixed-integer programming solution, but arguably undesirable side-effects include what appears to be an option premium tied to ramp speed that must be recovered via uplift, and a needlessly complicated settlement process for suppliers.

Day-Ahead Procurement:

Generally speaking, the ISO should wait as long as possible to resolve uncertainty. Committing generation many hours ahead of time “just in case” VERs fail to deliver may give ISO operators some comfort that they can better manage unexpected reductions in VER production or increases in demand, but it is also likely to create a new problem by limiting their ability to reduce output from controllable resources, and it will depress market prices for other services. As demand variability and VER penetration increase, the ISO will need more resources (and flexible demand) that can act quickly and with little notice. Generation and flexible demand with lead times of more than 2-3 hours will be more burdensome than helpful because once committed, they could take more flexibility away from the ISO than they add.

Intertie Pricing:

The ISO will likely discover that the single-clearing price auction mechanism used in its spot energy markets is incompatible with the pay-as-bid bilateral trading mechanism that is used by every other entity in the Western Interconnection. Several researchers have discussed the advantages and disadvantages of pay-as-bid and single clearing price auctions, including <http://power2.eee.hku.hk/ceespub/papers/APSCOM2006-024.pdf>, http://www.power.ece.mcgill.ca/Seminars/PresentationDocs/Ren_2003_1.pdf, and http://www.psc-central.org/uploads/tx_ethpublications/s07p06.pdf.

Market and Scheduling Time Granularity:

As a matter of policy, the ISO should generally avoid making exceptions for certain kinds of resources and certain kinds of customers. Carve-outs and exceptions create preferences that complicate the ISO’s operations and are discriminatory. With respect to the time granularity issue that is discussed on slides 40 and 41 of the presentation materials, the ISO should provide for market and scheduling intervals of no more than five minutes in length by 2020 for all resource types and loads. It should allow parties to make hourly commitments and strike trades on hourly intervals until an hour or two before delivery, and then it should provide for successively smaller trading intervals as delivery approaches. It should also ensure forward visibility for both the hourly and shorter intervals so that SCs can trade as necessary to adjust their delivery commitments based on new information and updated forecasts, and so that storage can self-manage its charging and discharging schedules.

Disclaimer: I have prepared and am submitting these comments on my own initiative. They reflect my views alone. No stakeholder has retained my services or paid me to prepare them.

