Stakeholder Comments

Flexible Ramping Product – Second Revised Straw Proposal

Submitted by	Company	Date Submitted
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Southern California Edison (SCE) appreciates consideration of its comments on the California Independent System Operator (CAISO) Flexible Ramping Product Second Revised Straw Proposal. The proposal contains major advances from previous proposals, particularly in product design for real-time, but still requires significant additional work. Specifically, several major design components require thorough review and development, while various smaller aspects of the proposal also need refinement. The CAISO must provide sufficient time for consideration of all aspects and implications of the product to ensure a durable, comprehensive, and efficient market design for the entire suite of CAISO products, including Flexible Ramping Products (FRP).

SCE offers comments in two sections, major design issues, and proposal-specific issues.

I. Major Design Issues

A. The CAISO must allow more time for thorough discussion of major design aspects and their implications.

Multiple complex and important aspects of the FRP require significant attention prior to finalization of the proposal. Failure to address these major issues may significantly alter market performance. Additionally, finer points of the proposal likely require additional assessment to ensure proper design. Unfettered by Federal Energy Regulatory Commission (FERC) timelines in this process, the CAISO should allow sufficient time for discussion and resolution of key topics, all in pursuit of a robust and successful design. As the CAISO is now close to having a fully fleshed out proposal, it is important at this stage to pause and ask critical questions: What impact will this proposal have on the rest of the market? What is the true objective of the product beyond simply obtaining operating flexibility (e.g. what impact should this product have on energy and ancillary service prices, and what do Integrated Forward Market (IFM) energy prices mean in this new paradigm?) Will this design accomplish these objectives? Does the increased demand for flexibility in the IFM need to be accompanied with changes to IFM/RUC to ensure that flexibility is available and priced efficiently? Could alternative designs do a better job? What simulations can be done now to get a better idea of how the product will likely behave?

Specifically, SCE expects such a full and robust design process requires at least two additional stakeholder meetings to pursue in-depth analysis and consideration of the following topics:

- Flexible Ramping Down (FRD) Product (hardly discussed in any process to date)
- The role and effectiveness of the IFM in optimizing physical energy, FRP and Ancillary Services. (*See I – B.*)
- The significance of the IFM price-signal. (*See I – C*)
- The pros and cons of "locking" Day-Ahead (DA) energy bids for FRP resources, or potentially for all DA awards.
- Rules for Resource Adequacy units and the concept of "must-offer" FRP.
- The impact on bids of conversion of DA FRP awards into Contingency-Only Spinning Reserve (Spin) awards.
- Rules and logic for ramp-sharing between products.
- Inefficiencies in the current market design and their likely impact on FRP and other market prices

Additional stakeholder discussions on these topics should address critical questions and examine detailed aspects of the topic. The FRD product, for example, has seen much less scrutiny than the Flexible Ramping Up (FRU) product. Discussions on FRD should include: When units are moved up to provide FRD, is this adjustment allowed to set energy prices? How will procurement rules change if nearly all units are scheduled at minimum load? Contemplation of these and other issues will require stakeholder focus and time.

B. The current CAISO market structure systematically withholds physical flexibility from the IFM. This design inefficiency must be examined in greater detail to determine the magnitude of cost/inefficiency this structural problem will create with implementation of FRP.

The current IFM mixes and matches physical energy and flexibility with inflexible financial energy. Since flexible energy comes from physical resources, and physical resources often involve commitment costs, the IFM may view real physical and flexible energy as costlier than virtual energy. Even though the Residual Unit Commitment (RUC) process may subsequently commit physical units, the current design withholds the flexibility associated from this commitment from the IFM. In other words, the use of RUC to ensure sufficient physical sources of energy *after* the IFM creates inefficiencies because this paid-for flexibility is not available to sell FRP in the IFM. While virtual bidding alone raises this prospect today, the additional demand for IFM flexibility for FRP raises the possibility this inefficient commitment will cause material, unnecessary and unjustified costs to California customers. Since the current design is known to be sub-optimal, the CAISO must question just how much additional costs the current design will create with the introduction of FRP.

Similar "sequential" design structures, used in the past, proved highly inefficient and costly. In 1998-1999, Reliability-Must-Run (RMR) after-market dispatches yielded material inefficiencies. In *only 4 months* in 1998, cost estimates of this inefficiency ranged as high as

$272 to $313 million.[1] The Market Surveillance Committee and the Department of Market Analysis criticized this inefficient design, and the CAISO implemented changes.[2,3] Between June and August of 1999, after-market RMR commitments ranged from only 500 to 700 MW.[4] Compare these numbers, noting that markets have changed since 1999, to recent RUC volumes that show daily average peaks of 1168MW and hourly averages of 475 MW in Q4 of 2011.[5] These volumes imply significant potential inefficiencies as a result of sub-optimal physical scheduling outside of the IFM. A similar "structural withholding" issue also resurfaced in the market power "Limited Pool" discussion in 2009.[6] The CAISO resolved this by increasing the pool of resources (beyond the limited "market power run pool") to participate in the IFM. To protect rate-payers in the CAISO's Balancing Area, ineffective market designs regarding unit commitment should be addressed.

The CAISO's sequential RUC process knowingly repeats this same form of mistake (e.g. withholding supply from the IFM). That is, the CAISO knows it will require physical resource to supply physical energy, but instead of including this physical flexibility in the IFM, it is structurally and systematically withheld from the IFM.

To mitigate this inefficiency, physical flexibility requirements should be modeled into the IFM run to ensure optimal physical commitments. The NYISO applies this design by iterating its DA market solution to include units committed through its physical unit commitment process (i.e. the NYISO equivalent RUC process).[7] Based on the NYISO's mitigation approach, the problem of withheld flexibility clearly can be acknowledged and addressed. It is not an "unsolvable problem". A description of the NYISO process is appended.

In sum, CAISO should discuss impacts from current market practices and potential improvements to this design need in FRP design processes. Discussions should begin by trying to quantify the impact this inefficiency may create, and then moving forward from there.

C. The CAISO's stakeholder process must look comprehensively at the purpose and pricing for all market products.

The significance and "meaning" of the IFM energy product and prices may change due to flexibility products or constraints. This change needs to be discussed and understood.

In today's market, IFM energy includes physical inflexible energy, physical energy with varying degrees of flexibility, and inflexible financial energy. In designing FRP, the

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[1] "Report on Impacts of RMR Contracts on Market Performance", Market Surveillance Unit, 1999, p. ii.: http://www.caiso.com/docs/2000/09/27/200009271459565137.pdf

[2] "Report on Redesign of California Real-Time Energy and Ancillary Services Markets", Market Surveillance Committee of California Independent System Operator, 10/18/1999, http://www.caiso.com/Documents/ReportonRedesign-CaliforniaReal-TimeEnergyandAncillaryServicesMarkets.pdf

[3] "Predispatch and Scheduling of RMR Energy in the Day Ahead Market", Department of Market Analysis, 1999. http://www.caiso.com/docs/2000/09/26/200009261423077369.pdf

[4] Ibid. p. 16.

[5] OASIS data for October-December, 2011.

[6] CAISO Stakeholder Initiative, 2009. http://www1.caiso.com/23d8/23d8bb9a6ee20.html

[7] http://www.nyiso.com/public/markets_operations/documents/technical_bulletins/index.jsp

efficiency of this pricing structure should be evaluated. This evaluation should include consideration of explicit alternatives where flexibility attributes are priced separately from inflexible energy, and the role of the IFM in creating such prices. Market designs should ensure the product mix and corresponding pricing and selection mechanisms align and neither over nor under pay for each product.

Evaluation of the impacts of FRP on energy prices is also needed in order to ensure prices align and make sense. For instance, when the FRU target binds, energy prices are likely to increase under the current design. SCE sees a possibility that in turn the IFM may overpay all energy resources while also paying for flexibility separately or redundantly.

D. The proposal needs cost-allocation based on cost-causation, prior to filing with FERC.

The proposal's cost-allocation design is flawed and must be redesigned to create incentives for corrective action by market participants who contribute variability and uncertainty that FRP will manage. Such a cost allocation based on cost-causation is widely known to increase market efficiency and improve resource planning and dispatch decisions.[8] Entities allowed to bypass such costs through subsidies from other market participants enjoy preferential treatment. Previously, CAISO staff lauded cost-causation principles and developed a reasonable, appropriate, and actionable cost allocation structure based on cost-causation. The former proposal should be revisited. Causation-based cost allocation will save California Ratepayers money in the long-run, and provide appropriate operating signals for all resources. In the end, CAISO market design should ensure an enduring and workable platform for Variable Energy Resources (VERs) in the CAISO system.

The CAISO's current stance on cost allocation will be challenged at FERC. FERC noted that cost-allocation to load for the Flexible Ramping Constraint, a service similar to FRP and designed to integrate renewable power, may not adequately reflect FERC's "cost-causation principles, and accordingly that allocation [to load] may not be just and reasonable".[9] Should the CAISO fail to apply cost-causation designs, SCE (and likely other stakeholders interested in market efficiency) will seek a superior design through FERC. Additionally, SCE will repeat these basic principles, logic, and advocacy on behalf of all Californians for an efficient and long-term approach to renewables integration in any separate stakeholder workshops on cost allocation.

II. Proposal-specific Comments

A. Two elements of the proposed substitution and conversion rules require additional development.

[8] "Renewables Integration Market Vision & Roadmap – Revised Straw Proposal", California ISO, August 29th, 2011, pp. 4-5. http://www.caiso.com/Documents/RevisedStrawProposal-RenewablesIntegrationMarketandProductReviewPhase2.

[9] ER12-50-000, "Order Accepting and Suspending Proposed Tariff Changes and Establishing Hearing and Settlement Judge Procedures", 137 FERC ¶ 61,191, pp. 29

The CAISO proposal details rules for real-time substitution for FRP and other products. SCE supports appropriate substitution because it creates optionality in the procurement process that mitigates some of the uncertainty faced in DA markets and potentially lowers costs.

Two issues must be addressed with the substitution and conversion rules. First, in the IFM, the CAISO should better explain why it does not propose to allow Non-Contingent Spinning Reserve as a substitute for FRU. This substitutability may improve results in circumstances where the CAISO is flush with less expensive Non-Contingent Spinning Reserve but has limited low-cost FRU supply.

Second, the CAISO must consider and anticipate the impact of the Real-Time Pre-Dispatch (RTPD) conversion between DA awarded FRU to Spin. In this case, resources awarded for DA FRU may have factored a likelihood of real-time energy dispatches and corresponding revenues into bids for DA FRU. These resources, if converted to Spin for an RTPD interval per the CAISO's proposal, may inadequately recover costs. Put another way, converting Non-contingent Spinning Reserve to FRU only stands to benefit the bidder and thus should not create a problem. However, converting FRU to contingent Spin may harm the bidder (relative to simply remaining FRU capacity eligible for in-merit RTD energy dispatches). This raises the question of if this substitution is appropriate. The CAISO should examine the impacts and likelihood of this conversion and either propose rule changes or explain how proposed rules are fair.

B. The justification for the DA target needs additional discussion. Reasonably priced Demand curves should be used.

The CAISO's proposed procurement strategy appears to involve the systematic procurement of additional FRP in the real-time market. SCE asks the CAISO to clarify if this understanding is correct, and if so, how it may impact bidding behavior. This approach may yield inefficient market behavior if market participants regularly anticipate a sizeable need for flexibility in RT markets.

Additionally, SCE strongly supports the use of a demand curve for IFM FRP to avoid "procurement at all costs" situations. Through the use of a reasonable demand curve, the substitution approaches considered above, and through prudent procurement levels and targets in DA, the CAISO can guard against market power and unduly expensive FRP costs. The CAISO should consider the price of energy as the basis for the demand curve, rather than extreme parameters. Put another way, if energy is cheaper than FRU, what is the rational of buying expensive capacity rather than cheap energy?

Also, the CAISO has not justified the need to procure FRP to address sub-RTPD uncertainty and variability with 95% confidence. This confidence interval seems too high and will incur unnecessary costs much of the time. If extreme variability and uncertainty confront the ISO and threaten reliability, Ancillary Services should be used. This raises the related issue of under what circumstances the CAISO will be willing to utilize contingency reserves.

C. Additional discussion on the pros and cons of the "locking of DA bids" is needed.

The proposal to fix or lock energy bids from resources with DA awarded FRP appears to make sense but may have implications. SCE proposes this issue for additional consideration in upcoming stakeholder processes in order to address the potential gaming aspects of unlocked bids, and to better define the true "obligations" on FRP sellers. Further, the ISO may need to consider locking bids for all DA awards (energy and Ancillary Services). Whenever bids are locked, however, SCE suggests the CAISO consider some hold-whole provisions for extreme fuel-price changes.

D. The priority among market products for No-Pay needs clarification.

If a resource receives awards for multiple products but, due to poor resource management, fails to provide sufficient available capacity, rampable window, or energy for all products simultaneously, the resource must receive No-Pay on one or more of its awards. The CAISO should clarify which product award is no-paid, and the so-called "pecking order". A pecking order likely to drive high quality performance and reliability should involve rescission of payment for highest priced product first.

E. HASP rules must align with flexibility needs – HASP declines warrant stronger price recourse.

Hour Ahead Scheduling Process (HASP) declines may constrain the CAISO's energy supplies, forcing in-state resources to provide energy and, in turn, limiting available flexibility. Ultimately, this situation could raise prices for energy and flexibility and threaten reliability.

HASP rules should reflect these risks and impacts by establishing harsher treatment for HASP declines. For example, declined HASP bids should be expose to FRP costs. Current rules allow energy importers to decline a certain percentage of HASP awards with the mere requirement to pay for replacement energy (from the real-time energy market) at the HASP rate.[10] This structure does not capture the true costs of HASP declines, particularly the potential impact on real-time FRP costs.

F. Bid caps, Bid mitigation, Parameter and Scarcity Pricing approaches need clarification.

The CAISO should clarify administrative pricing limits for FRP. Even with thoughtful procurement strategies and demand curves based on energy prices for procurement, scarcity situations may occur, necessitating scarcity prices.

SCE supports the CAISO's proposed use of penalty pricing to avoid procurement at unreasonably high costs. Along these lines, parameter prices should allow reasonable revenues to FRP providers but should avoid windfall profits.

In addition, more discussion is needed on market power mitigation of FRP bids. For example, what will the bid cap be for FRU? FRD? Will the FRP be subject to bid mitigation? If so, under what circumstances?

[10] Additional rules may apply in certain situations. Source: CAISO Tariff, section 11.4.2. http://www.caiso.com/Documents/Combined_Tariff_2011-12-01.pdf

In conclusion, the introduction of the FRP product represents a material and potentially foundational change to the current market. As a result, the CAISO should ensure any proposal is properly vetted and tested before moving forward.

APPENDIX

01/28/2002: Revised 1/9/2009; reposted 2/14/2011

Subject: Multi-Pass Methodology of Security Constrained Unit Commitment

Security Constrained Unit Commitment (SCUC) creates the NYISO Day-Ahead Market schedules and prices by performing two commitment runs and two dispatch runs in sequence.

Details:

Pass #1 – Bid Load, Virtual Load, and Virtual Supply Commitment

The first pass of SCUC commits and schedules generating units, including units nominated to be Day Ahead Reliability Units, to supply Bid Load (Physical and Virtual) less Virtual Supply while securing the bulk power transmission system. The system is secured against the normal NYISO bulk power system contingency set so that monitored facilities do not become overloaded. Also, the program secures for certain Local Reliability Rules' contingencies and monitored facilities.

Once this commitment run has converged, the automatic mitigation evaluation is performed for energy price caps, including a recommitment/redispatch. This commitment/dispatch is evaluated by a security analysis. Additional iterations of unit commitment with bids and security analysis are performed until convergence is again achieved.

Pass #2 – Bulk Power System Forecast Load Commitment

The next pass commits any additional units that may be needed to supply the forecast load. Load bids (physical and virtual) and Virtual Supply bids are not considered in Pass #2. At the beginning of this pass, generator limits and commitment statuses are modified to ensure that the units selected in Pass #1 will not be de-committed or dispatched below their Pass #1 value. Generating units selected in Pass #1 may be dispatched higher, and additional units may be committed and dispatched. Since Pass #2 is used to assure that sufficient capacity is committed to supply forecast load it considers only incremental uplift costs and does not consider energy costs. Pass #2 also secures the bulk power system. In Pass #2, only the wind energy forecasts are used for scheduling intermittent resources that depend on wind as their fuel.

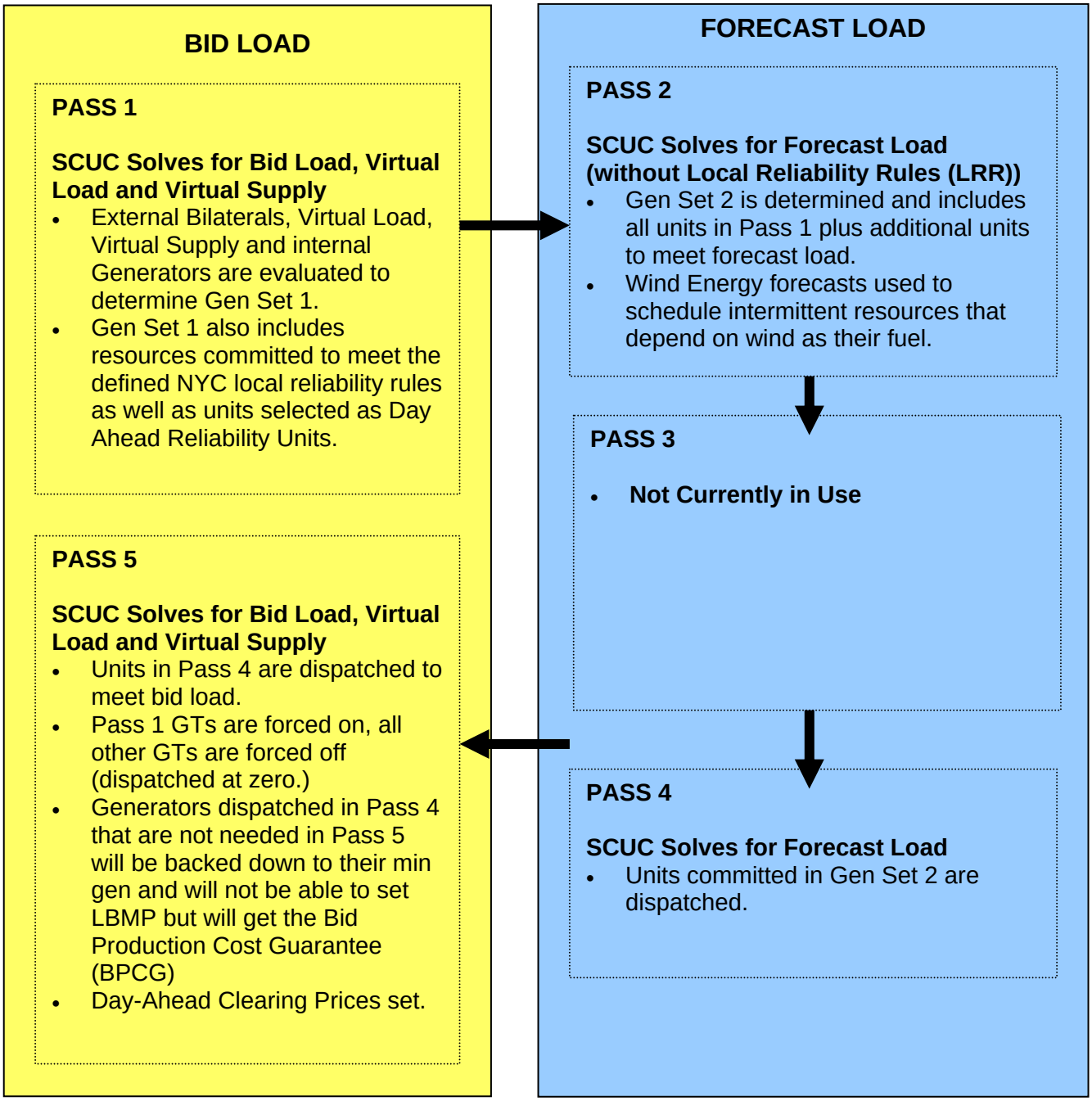
Pass #3 - Reserved for future use.

Pass #4 – Forecast Load Redispatch

In Pass #4, the set of generators from the final commitment is dispatched using the original energy bids. The dispatch supplies the forecast load and is limited by the bulk power system constraint set produced in the Pass #2 commitment. The unit capacities (energy + 30 minute reserve + regulation) from this dispatch are used to calculate the forecast reserve for economic dispatch. The power flows are created for the transmission providers' review and the interface transfer flows to be evaluated in the non-firm transaction selector.

Pass #5 – Bid Load, Virtual Load and Virtual Supply Redispatch:

In Pass #5, the final dispatch is to supply the bid load, virtual load, and virtual supply (where virtual supply is treated as negative virtual load) and is limited by the constraint set produced in the Pass #1 commitment. The quick start units selected in the forecast run will not be dispatched.



The NYISO anticipates that this Technical Bulletin will be incorporated into the Day-Ahead Scheduling Manual during its next available recertification period.