Comments of Pacific Gas & Electric Company
FERC Order 764 Draft Final Proposal

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I. Introduction

The Pacific Gas and Electric Company (PG&E) offers these comments on the California Independent System Operator's (CAISO) Draft Final Proposal regarding Federal Energy Regulatory Commission (FERC) Order 764 Compliance.

II. Summary

PG&E supports much of the CAISO's design included in the Draft Final Proposal. PG&E believes that the CAISO's core design feature, employing a 15-minute optimization with awards at the interties and internal nodes will increase market efficiency, reduce market distortions and uplift costs, and comply with Order 764.

The CAISO's plan for Order 764 constitutes a significant change to the CAISO's real-time market that augment the role of the real-time market, especially at the interties in providing imbalance service. Therefore, the CAISO should avoid changes that do not directly support these new market structures. For instance, as discussed further below, the CAISO *should* limit Bid Cost Recovery (BCR) for economic block imports in order to encourage intertie participation in net-load shaping (and to limit clear opportunities for participants to exploit market rules). In addition, the CAISO *should not* make changes unrelated to encouraging the increased dispatchability of resources. For example, the CAISO should not simultaneously reactivate virtual bidding on the interties until the CAISO can ensure that the market functions properly such that virtual bids can be restored at those nodes and operate as intended (instead of mask potential inefficiencies as this order 764 and the Energy Imbalance Market (EIM) are implemented).

PG&E promotes the following key points and positions in its comments:

- Intertie rules should encourage participation in the 15-minute market rather than the status quo. PG&E agrees with the CAISO that no BCR should be provided for economic hourly block schedules.

- The CAISO should sunset the economic block scheduling functionality proposed at the interties.

- Activation of convergence bidding on the interties simultaneously with FERC Order 764 changes is inappropriate, risky, and unnecessary as part of FERC Order 764. At a minimum, the CAISO should wait 120 days after Order 764 and the Energy Imbalance Market (EIM) have been implemented to ensure the market functions properly such that virtual bidding will improve market efficiency.

- Decline Charges applied to hourly block schedules that overstate their forecasts should be evaluated for their effectiveness and, if necessary, increased in the future.

- PG&E supports the proposed enhancements to the Participating Intermittent Resources Program (PIRP). The CAISO should discount inaccurate stakeholder assertions regarding the effects of the elimination of PIRP netting.

III. Comments

A. Intertie rules should encourage participation in the 15-minute market rather than the status quo; therefore, the CAISO should reject calls for BCR at the Interties

Order 764 market changes will affect intertie transactions, creating opportunities to improve market efficiency by adjusting schedules depending on the value of energy in the CAISO and neighboring areas. While such transactions may force adjustments to business practices, these adjustments are necessary for the pursuit of an efficient and non-discriminatory electricity market. Any design that attempts to retain the hour-ahead scheduling process (HASP) settlement in the form of BCR are unreasonable and will undermine incentives for entities to respond to the value of energy reflected in the market prices. In recommending no BCR for economic block intertie schedules with intra-hour adjustments, the Department of Market Monitoring (DMM) similarly notes that "offering out-of-market uplift to create incentives … is inconsistent with the ISO's guiding principle of relying on price signals to incent participant behavior."[1]

i. **Allowing BCR for hourly block intertie transactions creates clear gaming opportunities and therefore should not be allowed.** Essentially, BCR for hourly block imports and exports creates a Bid or Better structure for these market awards. As previously reviewed in the Intertie Pricing and Settlement Initiative[2], a symmetric Bid or Better structure – one that is available to both imports and exports simultaneously – creates a money machine which provides no benefit to actual grid operations yet creates uplift costs borne by load.

   For example, consider the following trade: in the hour-ahead market, a marketer places bids for an import and an export at the same node. The bids have different prices, such that *both* can likely clear based on the advisory price. If the ultimate settlement price falls outside of the range between the bids, one bid will receive BCR while the LMPs for the import and export offset one-another. The trader is left with the BCR money for providing no actual power, only through exploitation of the BCR rules.[3]

ii. **BCR for interties will likely delay adoption of 15-minute economic scheduling.** During stakeholder discussion, parties mentioned that the 30-minute scheduling pilot market had sub-optimal liquidity. PG&E hazards that this situation results from the ability for day-of power marketers to receive hourly price-certainty via the HASP settlement. To actually drive participation in a more granular market, in line with the CAISO's needs for day-of balancing and shaping to net load, market structures should favor fifteen minute economic scheduling by placing the price risk on those entities not choosing to take

[1] Comments on FERC Order 764 Market Changes Revised Straw Proposal by the Department of Market Monitoring, p3-4. http://www.caiso.com/Documents/DMM-Comments-FERC_Order764MarketChangesRevisedStrawProposal.pdf

[2] http://www.caiso.com/informed/Pages/StakeholderProcesses/IntertiePricing_Settlement.aspx

[3] Other examples can apply as well. For instance, an IFM physical Supply bid offset by a Virtual Demand could be followed by an HA deep in-the-money Physical Demand Bid. This demand bid will likely clear, its LMP will cancel-out the liquidating virtual bid, yet if the price spikes in the 15-minute market, the trader could receive BCR from a net-0 position.

advantage of the 15-minute market functionality . With an option to retain the status quo with no ill effects, marketers may continue business as usual to the detriment of the real-time imbalance market's effectiveness.

iii. **Liquidity fears are likely overblown.** Stakeholders have frequently mentioned reliability and liquidity issues as justification for providing BCR for hourly block schedule imports and exports. They claim that without BCR, physical energy may not flow to California hurting reliability. Research and analysis by the DMM, however, undermines this theory. DMM's findings show that HASP can be used to close out day-ahead (DA) schedules, meaning that marketers routinely use the DA intertie trades to reduce total power flows to and from the CAISO, not increase them. Such transactions primarily reduce imports, as the DMM found that physical net imports decreased in the hour-ahead market "in almost 96 percent of the hours" in the third quarter of 2012.[4] Such financial transactions are akin to virtual trades, and their potential absence cannot imply that physical imports in the Integrated Forward Market (IFM) – the scheduling run with the majority of physical reliability benefits on the ties – will truly "dry up." PG&E further notes that Resource Adequacy Must-Offer rules specifically seek to ensure adequately supplied spot markets, further undermining reliability concerns related to participants not bidding at the interties.

iv. **Load should not subsidize risks for power marketers.** Power marketers are often noted to be more effective at risk-management if given clear incentives and market signals. A no-BCR approach supports this basic efficient-market construct. Why should CAISO customers, for instance, pay uplifts to marketers (via BCR), when instead, marketers could price the risks explicitly into their bid, providing more transparent costs for risks and allowing better in-market competition while lowering total costs? Heretofore, CAISO market designs have forced loads to accept these risks under the hope that the hour-ahead optimization's load forecasts were accurate. While loads have limited control of participation in the real-time market due to the ISO's reliability role and the inelasticity of real-time loads, marketers can directly control their participation by opting into the real-time market and are then better positioned to manage or price-in risks. With the ISO's no-BCR rule change, a more efficient, actionable, and transparent design is available.

B. The CAISO should Sunset the economic block scheduling functionality at the interties.

Sunsetting the economic block scheduling functionality, after an appropriate but minimal transition window, is prudent. Transitional tools should not be needed forever, and the economic block scheduling and economic block scheduling with single intra-hour adjustments are not noted as a key pieces of the ultimate market design. With plans to retire these features, marketers have incentives to adapt to 15-minute economic bid participation quickly.

To support this goal, PG&E requests that the CAISO continue to actively engage other BAs (in particular, non-FERC jurisdictional entities) in the WECC to develop their systems to facilitate more widespread 15-minute scheduling of resources. WECC-wide adoption of 15-minute scheduling is essential to minimize seams issues.

In previous comments, PG&E indicated that the economic bid hourly block and economic bid hourly block with single intra-hour curtailment options should also be made available to Participating Load (PL) and Proxy Demand Response (PDR) resources operating internal to the CAISO market. PG&E maintains that it

[4] Q3 2012 Report on Market Issues and Performance, Department of Market Monitoring, November 13, 2012, p 23. http://www.caiso.com/Documents/2012ThirdQuarterReport-MarketIssues-Performance-Nov2012.pdf

is inappropriate to not offer internal resources the same bidding options that exist for the interties. In an attempt to move all resources toward the 15-minute dispatch, PG&E offers that PL and PDR resources and intertie resources alike should be subject to a sunset date for the utilization of the economic block scheduling options. Just as intertie resources should be encouraged to move toward 15-minute scheduling, no further benefit should be granted to internal resources. It is our hope that a sunset date will encourage evolution and development of PL and PDR programs and their operational abilities.

C. **Activation of virtual bids at the interties in conjunction with FERC Order 764 is inappropriate, risky, and unnecessary.**

PG&E requests that the CAISO shift its stance on the reactivation of virtual bids at the interties. Clear evidence of problems with virtual bidding exist and, rather than expanding it at a time of significant market change and risk, the CAISO should:

1) Delay expansion of convergence bidding capabilities by a minimum of 120 days from the date that Order 764 and EIM are incorporated into the markets,

2) Establish a separate stakeholder process for assessing the role and rules for convergence bids, and

3) Propose circuit breakers to turn off convergence bids if related uplifts exceed certain levels.

The only change to convergence bid rules vis-à-vis Order 764 changes should be the settlement of convergence bids at the 15-minute prices, rather than RTD (5-minute) prices.

Further details follow.

i. **CAISO should delay reactivation of virtual bidding at the interties and also establish a separate stakeholder process to assess the benefits of convergence bidding throughout the CAISO.** At the minimum, the CAISO should allow the market to settle in to the major shift to 15-minute scheduling. PG&E recommends the CAISO thus delay reactivation by a minimum of 120 days following the implementation of Order764 and EIM. .

Until the volatility and consistency of the new real-time market is established, it is inappropriate for the CAISO to exacerbate the capabilities of virtual bids by expanding the number of nodes available for virtual bids to include the interties. Premature implementation of virtual bidding at the interties has the potential to mask modeling problems within the markets that would be better discovered and corrected. Also, some functionalities enabled by virtual bids are unreasonable in so far as they create unavoidable uplifts borne by load and fail to lead to the goal of price convergence and more efficient commitment and dispatch.[5]

[5] The CAISO's Department of Market Monitoring also has found that in practice convergence demand at internal scheduling points (which in theory could result in additional capacity being committed and available in the real-time market to help alleviate these issues) has in practice not materialized. The Department of Market Monitoring's Q4 2012 Report on Market Issues and Performance in fact found that "In practice, the impact of internal virtual demand on real-time price spikes appears to have been limited by the fact that any additional capacity available to convergence bidding may not be enough to resolve congestion or the short-term ramping limitations. This is further exacerbated by the hour-ahead market, which often does not reflect the same system conditions as in the real-time market and frequently reduces net imports, decreasing the benefits of additional capacity added in the day-ahead market. Price spikes associated with upward ramp insufficiencies are typically associated with brief shortages of ramping capacity and congestion." (Page 36)

If the effects were small, perhaps arguments for the existence of virtual bidding, e.g. claims they improve dispatches or market efficiency in excess of the unavoidable costs, could hold merit, but the effects, unfortunately for load, have been very large.[6] In 2011, $53 million in uplift charges were directly attributed to virtual bidding on the interties. In 2012, $60 million in uplift was paid to convergence bidders even without virtual bids at the interties.[7] Moreover, DMM anticipates an increase in RTCO costs resulting from the reintroduction of virtual bids at the interties and recommends the CAISO "reduce the biasing down of real-time limits of constraints for which intertie schedules have a strong impact on flows" prior to re-implementing virtual bids at the interties.[8] Based on these reasons, decisions on reactivating virtual bidding on the interties should emerge through a separate stakeholder process and only following a stabilization period. Such a process should also consider cost allocation based on cost causation for uplifts derived from virtual bids in order to ensure the correct parties pay for virtual bidding profits. A separate stakeholder process will also allow for better consideration of the role of virtual bids in the proposed EIM.

ii. **The change to a 15-minute settlement for virtual bids both at the intertie and internal nodes is an improvement that PG&E supports, but is not a stand-alone solution.** This change will help to protect parties from leveraging virtual bids in manners that produce unreasonable outcomes by settling virtuals in a market optimization with a granularity that more accurately corresponds to the hour long blocks in the IFM. It also ensures intertie and internal LMPs bind and settle simultaneously. In addition to the delay of 120 days previously discussed, PG&E also recommends:

   a. **Position limits are helpful and should be used for any effort to reform convergence bids.** In the case virtual bidding is reinstated, position limits are needed. These limits buffer against excessively rapid increases RTIEO or RTCO. However, there is still some uncertainty if these position limits are fully enforceable since a SC could potentially create a new SC to bypass the restrictions; as such, position limits should be enforced by holding company.

   b. **Other circuit-breakers should also be established for all virtual-bid related uplifts, internal or intertie.** The CAISO has leveraged circuit breakers in the past. Such circuit breakers played a critical role in discouraging trading patterns that drove uplift while providing extremely limited (or no) benefits on price convergence or improved dispatch efficiency. The CAISO should pre-establish uplift limits to protect against both the known and unknown problems which could result from expansions of virtual bidding or uses of these tools during the major shift to 15-minute scheduling. PG&E recommends prudent limits comprised of both a 30-day rolling limit and a cumulative limit across a rolling twelve months.

iii. **The CAISO and DMM should commit to monitor liquidity effects in the IFM based on the proposed dual-constraint solution.** The CAISO should develop a 30-day rolling average metric of

[6] An additional problem with internal virtuals is that they may not effectively change day-of prices because the timing of the liquidation of internal convergence bids likely allows over or undersupply conditions caused by IFM virtual bids to be resolved in HASP, such that conditions in real-time no longer reflect all the effects of the virtuals.

[7] Department of Market Monitoring Reports, Quarter s 1, 2, 3 and 4 of 2012, http://www.caiso.com/market/Pages/MarketMonitoring/MarketIssuesPerfomanceReports/Default.aspx

[8] Comments on FERC Order 764 Market Changes Revised Straw Proposal by the Department of Market Monitoring, p4-5. http://www.caiso.com/Documents/DMM-Comments-FERC_Order764MarketChangesRevisedStrawProposal.pdf

day-ahead intertie liquidity and suspend virtual bids if the metric drops below a threshold to be determined in the separate virtual bidding stakeholder process.

Ultimately, reductions in physical liquidity in the DA will demonstrate a clear failure of virtuals to augment total market liquidity, undermining much of their value proposition. Moreover, discouraging physical participation in the IFM is counterproductive for reliability, as the IFM is the primary market for positioning imports so if such effects manifest, a "circuit breaker" should be in place.

D. Decline Charges, used for hourly block schedules, should be tracked and, if necessary, increased in the future.

The proposed decline charges are appropriate for the initial launch of the 15-minute market. Under the proposal, intertie imported VERs using their own forecast to schedule, which are found to overstate their forecasts beyond a threshold value will be subject to a decline charge similar to the existing HASP Schedules Decline Charge of $10 or 50% of HASP LMP, applied to MWs produced above the threshold value. After a transitional period, more stringent decline charges should be enforced. Specifically, resources found to continually and willfully deviate from schedules or attempt to block intertie space should be subject to larger penalties over time. PG&E also sees merit in future discussions on clearer protections, e.g. worse-of pricing, against willful deviations, if appropriate.

E. PG&E Supports the Enhancements to PIRP; the CAISO should be Skeptical of the claims about the Impact of Elimination of PIRP Netting on the Market or Existing PPAs.

PG&E supports the proposed enhancements to the Participating Intermittent Resource Program (PIRP). Elimination of PIRP netting along with the closer timelines for forecasting production are key improvements that will enhance market efficiency and reduce deviations. Scheduling coordinators of intermittent resources should be given the correct price signals to determine whether to modify their output. In addition, the Order 764 proposal brings forecast timelines much closer to the delivery period so deviations should be greatly reduced. For the overwhelming majority of PG&E's existing intermittent contracts, very little will change as a result of this modification as explained below, but this will better position scheduling coordinators of those units to respond to clear price signals of the market.

i. **Claims that elimination of PIRP netting will cause widespread disruption in the market or cause risk of abrogation are false.** Some stakeholders have made incorrect assertions about the impact of the elimination of PIRP netting. For example:

- "If PIRP, as we know it, is changed as CAISO proposes without grandfathering these projects, ***there will almost certainly be a widespread disruption in the market***, ***as the contracting parties are forced to sort out the allocation of deviation risk*** without PIRP and the financing community fears the worst."[emphasis added][9]
- "Elimination of the PIRP program, or fundamental features of the PIRP program including the netting duration, ***undermines existing contracts and risks abrogation of contracts if certain parties can no***

[9] CalWEA Comments to CAISO on FERC Order 764 Implementation Revised Straw Proposal, p4-5, http://www.caiso.com/Documents/CalWEA-Comments-FERC_Order764MarketChangesRevisedStrawProposal.pdf

longer comply with the requirements of their contracts as a result of the CAISO's actions."[emphasis added][10]

To clarify for these stakeholders, and those with similar concerns, PG&E cannot unilaterally (and will not seek to) renegotiate the allocation of financial benefits and burdens in its contracts due to the elimination of PIRP netting. PG&E's review does indicate that many of its intermittent renewable contracts will require a simple letter agreement change to address scheduling procedure changes required by the 764 proposal. In addition, PG&E does have one contract in which it is required to discuss **allocation of benefits or burdens** as a result of a material change to the eligible intermittent resources protocol (EIRP) if the counter-party requests such change.

ii. **Contrary to claims, PG&E's contracts do not require generators to be in PIRP.** In stakeholder workshops some parties have also claimed that PG&E's contracts require participation in PIRP to function, which is false. For the vast majority of PG&E's intermittent renewable PPAs, existence of PIRP is not necessary for the parties to perform their obligations, as reflected in contract language such as "the Project is certified as a Participating Intermittent Resource ***to the extent such status is available at such time***."[emphasis added][11] To the extent PIRP is not available, the Project may easily remain compliant with such PPA obligation without further action.

PG&E further clarifies that it requires variable intermittent resources to be certified through the EIRP program, but that PIRP scheduling is not always required.[12] EIRP certification primarily governs the telemetry of meteorological and production data from the facility to CAISO, but does not require that the generator schedule through PIRP. The CAISO's enhanced PIRP proposal here would not remove the telemetry and meteorological production requirements of the PIRP program. Further, in the vast majority of its PPAs, it is PG&E's sole discretion whether or not to schedule eligible and certified resources through PIRP. As provided in our form PPA, "if the EIRP is no longer made available by the CAISO or if Buyer directs Seller not to participate in such program, then throughout the Delivery Term, Seller, at its sole cost, shall participate in and comply with all other protocols, rules or regulations issued by the CAISO for generating facilities providing energy on an intermittent basis."[13]

iii. **Concerns of the impact of eliminating PIRP made by industry groups here do not appear to be the actual concerns of the Seller's to PG&E under its contracts.** Statements made by industry groups that represent intermittent resources in this process do not appear to reflect PG&E's PPAs from its review of the contracts and from the lack of concern that its counterparties have raised directly. PG&E is fortunate to have contracted with sophisticated and experienced intermittent resource developers, ***none of whom have expressed to PG&E concern or confusion over the impacts of the CAISO's implementation of FERC Order 764, including modifications to PIRP, on their PPAs.*** In the event that any counterparty has apprehension about their PPA terms, PG&E would encourage them to contact their contract manager, as PG&E is always available to answer questions and appreciates opportunities for collaboration with its counterparties

[10] Comments of the Independent Energy Producers Association on the CAISO's Revised Straw Proposal Regarding FERC Order 764 Compliance 15-Minute Scheduling and Settlement, p2, http://www.caiso.com/Documents/IEP-Comments-FERC_Order764MarketChangesRevisedStrawProposal.pdf

[11] See PG&E 2012 RPS Form of Power Purchase Agreement, http://www.pge.com/includes/docs/word_xls/b2b/wholesaleelectricsuppliersolicitation/RPS2012/Attachment_H1_2012_RPS_PPA_Final_12102012.DOC

[12] See PG&E 2012 RPS Form of Power Purchase Agreement.

[13] See PG&E 2012 RPS Form of Power Purchase Agreement.

iv. **The timeframe for PIRP forecasts needs to consider SC trade timelines as well.** There is one aspect of the proposed modification to PIRP that is unclear to PG&E. Specifically, PG&E would like to clarify that the CAISO will continue to provide PIRP forecasts for at least a three hour period such that parties can have updated forecasts available for the hourly block schedules and inter-SC trades (submitted at T-75 min) for the entire trade hour.

F. Other Comments:

i. **The implementation of FERC Order 764 should be prioritized above other market initiatives.** PG&E is concerned about the aggressive schedule and Spring 2014 implementation of market changes associated with FERC Order 764 compliance. In particular, PG&E is unsure about the ability of stakeholders and the CAISO to meet the proposed Order 764 schedule when faced with numerous other significant market changes. To date, the CAISO has at least eight initiatives underway or soon beginning that impact each other.[14]

A single stakeholder process for all of the interrelated initiatives that impact each other, as opposed to separate stakeholder processes whose outcomes are largely dependent on portions of the others, would likely lead to more reasoned and effective market design. The luxury of time does not exist for implementation of FERC Order 764, thus the implementation of Order 764 to take precedence over other proposed initiatives and asks the CAISO to consider staggering the other implementation dates. This staggering will allow greater attention be paid to implementation issues related to the processing of 15-minute rolling forecasts as self-schedules in the market systems, which impacts all other real-time market timelines.

ii. **CAISO should closely examine Order 764 Structures fit with EIM designs.** PG&E requests stakeholder discussion on the interplay and interrelationship between Order 764 implementation and the EIM, particularly on operational changes that may be required of existing CAISO members as well as on systems changes and specifications to the CAISO's operating systems.

EIM designs must fit with the core Order 764 structure for the CAISO's market in order to ensure the software and market design enhancements fit together. PG&E has further concerns that a poor fit could lead to inefficiencies and uplifts.

iii. **The CAISO automated e-tagging for 15-minute market awards is important and supports a transition to liquid 15-minute markets.** In previous comments PG&E expressed concern around the tagging timelines. PG&E anticipates that the user-option for the ISO to directly update energy schedules on e-tags for the 15-minute market awards is a significant and important market feature given the CAISO's proposed brief 2.5 minutes between the 15-minute market awards and e-tagging deadlines. The CAISO automation will ease the transition to the Order 764 market design and functionality, and will address a key implementation concern raised earlier by stakeholders.

[14] Those initiatives include: FERC Order 764 Implementation, Energy Imbalance Market (EIM), Flexible Resource Adequacy Criteria and Must Offer Obligation (FRAC-MOO), Capacity Market, Flexible Ramping Product, Contingency Modeling Enhancements, Deliverability of Distributed Generation, and the upcoming Full Network Model Expansion.