

**Comments of Pacific Gas and Electric Company**  
***Bid Cost Recovery and Variable Energy Resource Settlement –***  
***Straw Proposal 4/9/15***

| Submitted by                    | Company | Date Submitted |
|---------------------------------|---------|----------------|
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Pacific Gas and Electric Company (PG&E) offers the following comments on the California Independent System Operator's (CAISO) Bid Cost Recover (BCR) and Variable Energy Resource (VER) Settlement April 9<sup>th</sup> Straw Proposal.

- CAISO should apply the same Expected Energy settlement methodology for economically bidding VERs and economically bidding thermal resources.
- PG&E supports the CAISO's proposal to use operational ramp rates in VER Master Files rather than a proxy ramp rate.
- PG&E supports CAISO's proposal to continue applying the Persistent Deviation Metric to VERs.
- PG&E supports the CAISO's proposed modifications to the Day-ahead Metered Energy Adjustment Factor (MEAF).
- Tariff clarifications following the market issues bulletin should be explained in the market design phase of this initiative.

**I. CAISO should apply the same Expected Energy settlement methodology for economically bid VERs and economically bid thermal resources.**

CAISO has proposed changes to VER settlement classifications for Expected Energy, currently being classified as Residual Imbalance Energy (RIE), in Real Time Dispatch (RTD) intervals when the resource is being dispatched due to forecast changes. PG&E is concerned that using the existing RIE classification in this manner could create unintended problems for these resources in later initiatives. CAISO has proposed that the reduction of VER output due to a forecast change is analogous to a thermal resource derate. PG&E disagrees with this comparison, and believes that the reduction of VER output due to a forecast change is analogous to a thermal resource reducing its maximum economic bid quantity. PG&E proposes instead classifying changes in VER dispatch due to forecast changes as optimal energy (OE), consistent with the way conventional resources are currently settled, on the LMP of the current hour.

PG&E believes that it is advantageous to classify this energy as OE because doing so would reduce the risk of similar settlement problems occurring in the future. As the

March 10<sup>th</sup> RIE Settlement Market Issues Bulletin<sup>1</sup> highlighted, the issue with the non-payment of VERs occurred because of the Persistent Deviation Metric (PDM) interaction with FERC 764 VER 5-minute dispatch adjustments. It is reasonable to assume that such a situation could occur again if CAISO continues to classify these types of energy differently for VERs and thermal resources.

PG&E is specifically opposed to treating output changes due to VER forecast adjustments as a derate, as this could inaccurately penalize resources for otherwise regular behavior. PG&E believes that the use of SLIC energy (SE) should be reserved only for situations where a resource's output is physically limited, as reported through the OMS system, and prevents the unit from responding to an otherwise valid economic dispatch. This distinction is especially important when identifying and resolving contractual responsibilities relating to unit outages and/or reduced capacity.

Additional background information and illustrative graphs are provided below.

#### Background Information

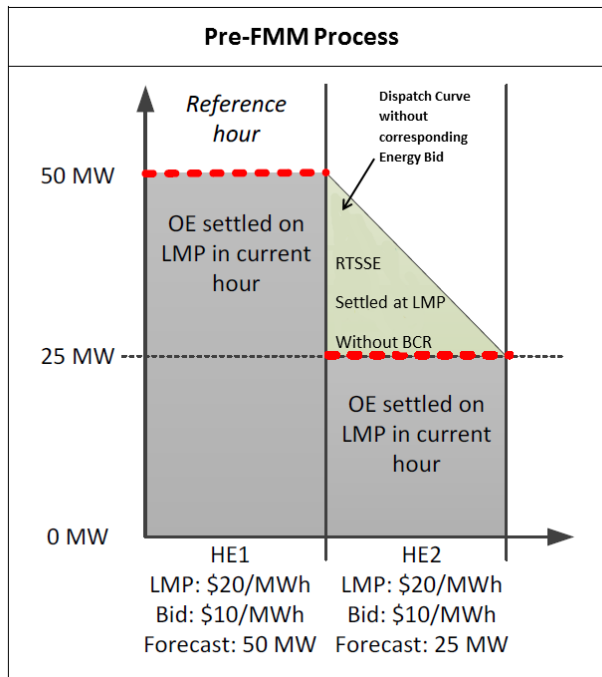
As an example, a conventional unit may decide to change the highest MW value in its bid stack from one hour to the next (i.e. reducing its economic bid maximum) without necessitating any interactions with SLIC unless the reduction brings the new economic bid maximum below the unit's RA capacity obligation. For changes to maximum bid quantities between the unit's RA monthly capacity value and its PMAX there are no such restrictions and any resulting changes in dispatch levels are categorized as Optimal Energy (OE) during the expected energy process so long as the resource remains economic in the new hour.

Before the start of the Fifteen Minute Market (FMM) FERC 764, the energy associated with an unbid downward shift in a unit's energy output was classified as Real Time Self Scheduled Energy (RTSSE) and was settled at the 5-minute LMP (See Figure 1). This energy was also ineligible for Bid Cost Recovery (BCR) payments and did not affect the resource's overall BCR position for the day.

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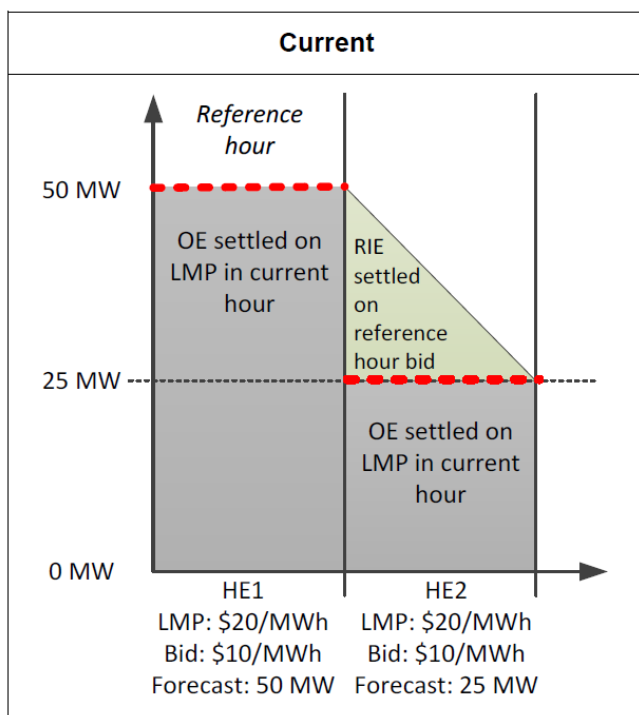
<sup>1</sup> CAISO, Market Issues Bulletin: Residual imbalance energy settlement and ramp rate changes for self-scheduled variable energy resources. March 10, 2015.

Figure 1. Pre-Fifteen Minute Market Process



With the removal of the RTSSE classification this energy then began being classified as Residual Imbalance Energy (RIE). This reclassification introduced an inconsistency with the previous process since RIE may be settled at a price different from the corresponding 5-minute LMP and is also considered for purposes of BCR, using the reference hour bid price to establish its cost basis (See Figure 2).

Figure 2. Current Settlement Process



Under the CAISO's proposed solution, the resulting RIE would instead be settled only against the 5-minute resource LMP (See Figure 3). This RIE would still be used in calculating and modifying BCR values for the day however. PG&E believes this is inconsistent with prior energy classifications and with the details discussed during the stakeholder process. The continued use of RIE also raises questions concerning the marginality of the resulting unbid energy. In this case the energy in the triangle is neither economically bid nor self-scheduled and, as such, is neither infra-nor extra-marginal.

PG&E believes that a more accurate representation for this condition would be to use the OE energy type and use the resource's 5-minute LMP for both settlement and cost basis (See Figure 4). This would pay the resource appropriately for the energy produced without allowing for any possible exploitation of BCR. This process is also consistent with how similar energy is classified when produced by a conventional resource. PG&E believes that when resources participate in the market using similar mechanisms, the results of such participation should be evaluated and settled in a consistent manner, regardless of the resource's technology type.

Figure 3. CAISO's Proposed Settlement Process

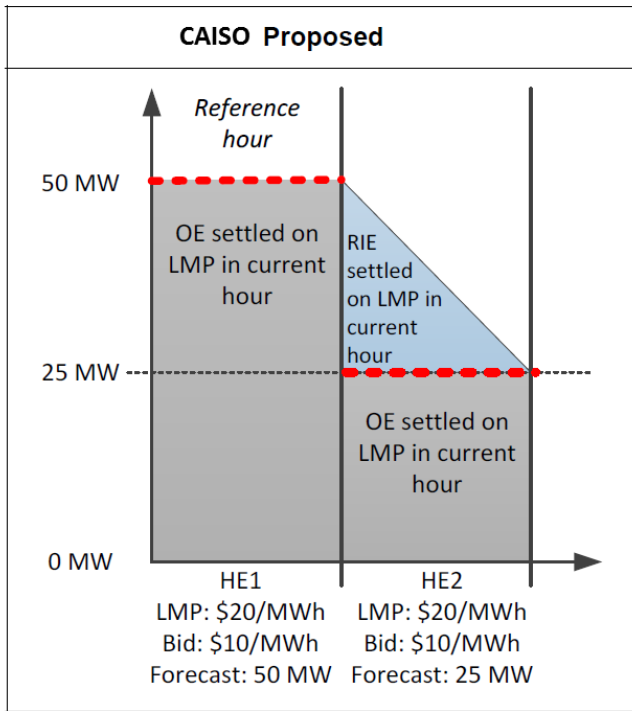
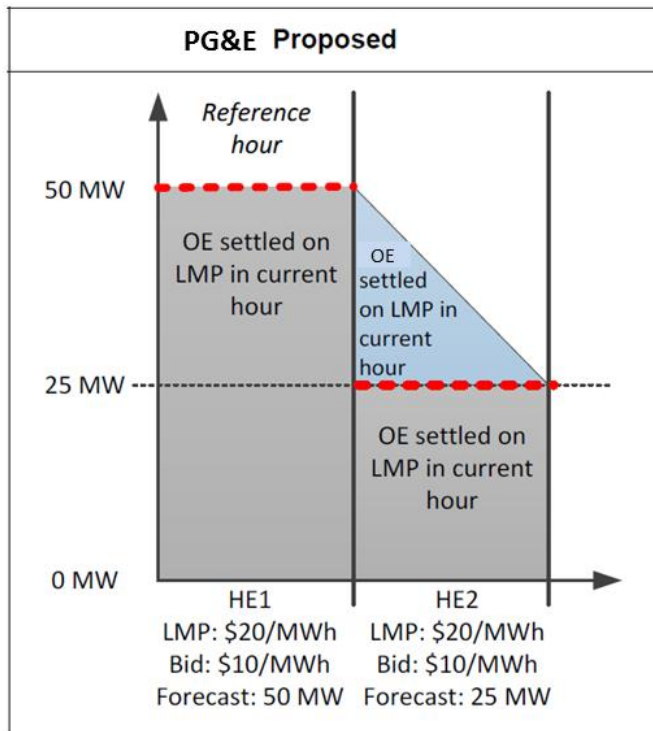


Figure 4. PG&E's Proposed Settlement Process



## II. **PG&E supports the CAISO's proposal to use operational ramp rates in VER Master Files rather than a proxy ramp rate.**

The March 10, 2015 CAISO Market Issues Bulletin introduced the concept of the “infinite ramp” (9999 MW/min) to help address the non-payment issues created after the introduction of the Fifteen Minute Market (FMM) on May 1, 2014. The intention was that this near-instantaneous ramp rate would be used as a proxy for the unit's actual maximum ramp rate value to prevent self-scheduled VERs from being penalized by the Persistent Deviation Metric (PDM) during the course of interval-by-interval operations.

Dispatchable VERs may operate in one of two modes:

1. using a controlled dispatch when changing output levels for economic or reliability reasons, and
2. under a non-controlled output change when responding to changes in availability and/or intensity of the unit's primary fuel source.

As an example, a wind turbine may need several minutes to safely feather blades in order to reduce its actual generation output when operating under modest wind conditions. This same unit would stop generating much more quickly however if the wind simply stopped, requiring a much larger “effective ramp rate” to describe it properly.

PG&E believes the 9999 MW/min proxy ramp rate is appropriate in modeling a VER's ramping behavior in response to changes in fuel availability (as predicted through the resource's incremental forecasts) but may not be accurate to a more controlled dispatch in response to a CAISO Automated Dispatch Signal. Because these two scenarios represent such distinct behaviors, PG&E agrees with CAISO's assessment that the Master File ramp rate value for each VER should represent the unit's controlled ramping ability (Mode 1 above) and suggests that output changes relating solely to fuel availability (Mode 2) should be evaluated and dispatched using the aforementioned proxy ramp value.

## III. **PG&E supports CAISO's proposal to continue applying the Persistent Deviation Metric to VERs.**

PG&E supports the CAISO's plan to retain the Persistent Deviation Metric for VERs, as any unit engaging in Real-Time economic bidding should be subject to persistent deviation metric penalties regardless of that unit's technology type. While it may be unlikely that a VER would try to exploit the market by bidding their resource at an elevated price and then failing to follow the resulting dispatch (for purposes of elevating their BCR payments) it is still possible and should be protected against. If CAISO determines through its monitoring that the PDM is having a detrimental financial impact on VERs, CAISO could then consider alternative mechanisms to prevent inflated BCR and RIE payments to VERs while still allowing for the proper settlement of their generation output.

**IV. PG&E supports the CAISO's proposed modifications to the Day-ahead Metered Energy Adjustment Factor (MEAF).**

CAISO has proposed two modifications to the MEAF calculation to account for boundary condition scenarios that were not envisioned when the MEAF was developed. PG&E agrees that the proposed calculation changes are reasonable, and address the oversights that CAISO identified related to resources operating at or below their Pmin. PG&E also supports the use of a tolerance band in the MEAF calculation.

**V. Tariff clarifications following the market issues bulletin should be explained in the market design phase of this initiative.**

CAISO has proposed to clarify tariff sections written before MRTU, and present those to stakeholders during either the policy design phase or the tariff phase of this initiative. PG&E prefers these tariff sections be identified in the next draft of the design proposal to give stakeholders ample time to consider the proposed changes.