



Comments of Pacific Gas and Electric Company on April 18, 2017 CRR Analysis Working Group

Submitted by	Company	Date Submitted
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Pacific Gas and Electric Company (PG&E) appreciates the opportunity to comment on CAISO's CRR Analysis Working Group held on April 18, 2017.

PG&E thanks CAISO for committing to investigate issues with the CRR auction design. Given the magnitude the losses to ratepayers and issues with CRR revenue inadequacy, PG&E appreciates the CAISO identifying and remedying issues with the CRR auction quickly in order to address these issues.

PG&E recommends that CAISO study two issues related to the CRR auction:

- The CRR auction appears to consistently sell CRRs for less than the expected payments to the CRRs based on Marginal Congestion Costs arising in the Day-Ahead Market.
- The CRR allocation and auction can oversell capacity available on the transmission system in the Day-Ahead Market which can lead to CRR underfunding and charges to loads.

Either issue alone can adversely affect ratepayers. However their interaction can increase the problems. If the CRR auction oversells transmission capacity, the Day-Ahead Market will not collect sufficient congestion rent to make the required payments to the CRRs. Load will make up the difference. If the CRR auction sells the CRRs for too low a value, the auction revenues paid to LSEs for the benefit of ratepayers may not provide sufficient revenue for load to make the payments needed to keep CRRs whole without load experiencing a net loss. Overselling transmission capacity in the CRR auction could depress the prices at which CRRs clear in the auction further exacerbating the problem.

Per DMM analysis of auction outcomes from 2012-2016, ratepayers have paid out \$567 million more in auction CRR rent to non-LSEs than collected in auction revenues for the purchase of those CRRs^{1 2}. PG&E suspects these outcomes are due to both underfunding and undervaluing of CRRs cleared in auction.

PG&E also notes that as of April 2017, there has been 55 consecutive months of CRR revenue inadequacy across all CRRs³. Revenue inadequacy has resulted in over \$500M in charges to ratepayers from October 2012 to April 2017⁴. Again, this underfunding is borne by ratepayers.

¹ "Shortcomings in the congestion revenue right auction design" California ISO Department of Market Monitoring. November 26, 2016. p2.

² "Q4 2016 Report on Market Issues and Performance" California ISO Department of Market Monitoring. March 6, 2017. p26.
<http://www.caiso.com/Documents/2016FourthQuarterReport-MarketIssuesandPerformanceMarch2017.pdf>



The magnitude and persistence of losses to ratepayers associated with CRRs sold in auction at less than their expected value in the Day-Ahead Market and revenue inadequacy is of utmost concern to PG&E and leads us to suspect that there are inherent issues with the current auction design driving these persistent shortfalls. PG&E appreciates stakeholder conversations that took place at the April 18th analysis working group meeting and looks forward to working with the stakeholder community to develop a path forward to remedy revenue adequacy and CRR auction issues. The following topics are described in detail in the subsequent sections:

- 1. PG&E Comments on Analysis and Initiative Timeline**
- 2. PG&E Proposed Analysis**
- 3. PG&E observations regarding CRR auctions**

PG&E Comments on Analysis and Initiative Timeline

PG&E appreciates the CAISO's commitment to conduct an analysis of its CRR auction design. PG&E reiterates the importance of this initiative as we seek enhancements that will mitigate persistent losses to LSE ratepayers related to CRR revenue inadequacy and auction undervaluing. PG&E requests that CAISO move expeditiously in its analysis efforts in order to begin stakeholder discussions on enhancements or alternatives to the current CRR auction design. PG&E suggests that CAISO commit to a timeline to complete its proposed analyses in May 2017, and complete its analyses by end of Q2 2017 so stakeholder discussions on solutions can begin in early Q3.

PG&E Proposed Analyses

PG&E supports CAISO in conducting further analysis on CRR auction outcomes and drivers of auction/DA congestion rent shortfalls. As described in our April 18th presentation⁵, PG&E suggests the following analyses, if feasible and can be completed quickly, to address two main concerns:

1. CRRs are underfunded in the Day-Ahead Market

- Identify causes of underfunding:
 - PG&E suggests analyzing 3 months over past two years with highest revenue inadequacy (June 2015, April and Dec 2016)
 - Investigate effect of differences between transmission models used in CRR allocation and auctions and those used in day ahead market

³ CAISO Monthly Market Performance Reports October 2013–February 2017 and Day-Ahead Daily Market Watch reports March 31⁵ and April 30⁶ 2017:

2012-2015 Monthly Reports: <http://www.caiso.com/market/Pages/ReportsBulletins/ReportsBulletinsArchive/MarketReportsArchive/Default.aspx>

2016-2017 Monthly Reports: <http://www.caiso.com/market/Pages/ReportsBulletins/Default.aspx>

March 31, 2017 Day-Ahead Daily Market Watch Report: http://www.caiso.com/Documents/Day-AheadDailyMarketWatchMar31_2017.pdf

April 30, 2017 Day-Ahead Daily Market Watch Report: http://www.caiso.com/Documents/Day-AheadDailyMarketWatchApr30_2017.pdf

⁴ CAISO Monthly Market Performance Reports October 2013–February 2017

⁵ "CAISO CRR Working Group – Discussion on Analysis". Pacific Gas and Electric Company. April 18, 2017.

<http://www.caiso.com/Documents/Presentation-CristySanadaPacificGasElectric.pdf>



- Different constraints and contingencies modeled in the CRR allocation and auctions and those modeled in the Day-Ahead Market
- Are there drivers of revenue inadequacy that cannot be fixed? (e.g. intra-period outages and derates, scheduled and unscheduled)
- How much transmission capacity is oversold in auction versus allocation rounds compared to what is available day ahead on an hour by hour basis?

2. CRRs are undervalued in auction compared to DA congestion

- PG&E suggests analyzing a subset of auction rounds from 2015-2016, enough to observe trends
- Why are CRRs undervalued in auctions, where clearing prices for CRRs in auction are less than the expected value of congestion rents collected in DA Market?
 - Are parties who hold CRRs offering to sell them at a price lower than their expected value in the Day-Ahead Market?
 - Does the CRR auction make use of unutilized capacity on transmission facilities to sell new CRRs or reconfigure CRRs offered in the auction?
 - Is the CRR auction selling capacity on lines that is often unavailable in the Day-Ahead Market? If so, does this depress the CRR clearing prices in the auction?
- The CAISO could develop a backcast to calculate the expected value of to evaluate the expected value of transmission capacity for an historical period and compare that to the price at which the auction sold CRRs using the capacity
- PG&E suggests separating transmission capacity between:
 - Transmission capacity made available in auction due to an entity selling CRRs or reconfiguring CRRs in auction
 - Unallocated capacity reserved for and released in auction by the ISO

This distinction is relevant because sellers can place a value on the first type of transmission capacity without making an offer to buy that capacity. Participants must place offers to buy the second type of transmission capacity in auction.

- Based on the distinction above, the CAISO can further break down transactions representative of the transmission capacity by type of market participant (LSEs, generators, power marketers, financial entities).
- If a calculation of expected values is time-intensive (would take more than one month to develop) or is infeasible, PG&E sees value in first identifying transmission capacity sold auction where CRR rent greatly exceeds auction revenues. CAISO can further analyze that transmission capacity as described above (distinguish between capacity made available from sales into auction v. unallocated capacity released by CAISO, break down participation on this capacity).

PG&E observations regarding CRR auctions

1. LSE ratepayers continue to bear costs of CRR underfunding



April 2017 marks the 55th consecutive month with CRR revenue inadequacy. This speaks to persistent inconsistencies between CRR and day-ahead market models. In the April 18th working group, PG&E and other stakeholders suggested conducting a constraint by constraint analysis of lines, contingencies, and modeling elements driving revenue inadequacy. PG&E believes this is important to investigate as any modeling enhancements the CAISO could undertake to help CRR and DA market outcomes converge would be an improvement and benefit to ratepayers.

There would be no revenue inadequacy if CRR Full Network Models (FNMs) and day ahead FNMs are identical. However, PG&E suspects there are modeling discrepancies that cannot be addressed due to the fact that CRR markets are based on a seasonal, yearly, or monthly full network model (each with On and Off Peak simultaneous feasibility tests) to award CRRs for up to 744 DAM intervals per month. A single CRR network model is expected to represent an entire time period, whereas day-ahead network models vary day to day and even hour by hour. Assumptions must be made not only about scheduled intra-period transmission outages and derates, but some outages and derates are simply not known up to a month in advance. As a part of a revenue adequacy constraint by constraint analysis, PG&E suggests identifying where revenue inadequacy cannot be mitigated – that is, where modeling inconsistencies and thus revenue adequacy could not have been improved. PG&E also suggests quantifying revenue inadequacy driven by discrepancies that cannot be mitigated.

2. CAISO’s CRR auction is structured such that load receives auction revenues and fully funds auctioned CRRs; LSEs are active participants in the CRR allocation and auction rounds, but are limited in how they can participate in auction rounds

CAISO’s CRR auction is structured such that load receives CRR auction revenues and also fully funds auctioned CRRs. Therefore risk of underfunding and undervaluing is borne by solely by load under the CAISO CRR market structure.

It important to understand that there is a distinct difference between how LSEs, specifically the three investor-owned utilities (IOUs), and other entities can participate in CRR auctions. Per California Public Utilities Commission (CPUC) ruling⁶, IOUs cannot use CRRs to speculate; this is specifically stated in each IOU’s Bundled Procurement Plans (BPP) filed with the CPUC⁷. That is, per CPUC directive, LSEs can only procure CRRs representative of the LSE’s expected grid use and use CRRs to hedge against expected congestion costs. Specifically PG&E’s BPP states, “PG&E is authorized to acquire CRRs and LT-CRRs for any path (represented by a source-sink pair) connecting existing generation sources to existing loads (retail loads, Helms pumping load, and wholesale load obligations) or for any path that PG&E reasonably anticipates it might need to flow energy in the future due to the addition of new contracts, resources, or load obligations. Additionally, there may be CRRs or LT-CRRs which are positively correlated in value with CRRs or LT-CRRs for paths that have limited availability. PG&E is authorized to acquire CRRs and LT-CRRs for such positively correlated

⁶ See Public Utilities Commission of the State of California Resolution E-4122. Energy Division. October 18, 2007. Pages 6-7. http://docs.cpuc.ca.gov/published/Agenda_resolution/75987.htm

⁷ Pacific Gas and Electric Company Bundled Procurement Plan. January 31, 2017 Commission Approved Version. Public Version. https://www.pge.com/pge_global/common/pdfs/about-pge/company-information/regulation/BundledProcurementPlan.pdf



paths as well.”⁸ PG&E’s CRR nominations are further subject to review in quarterly compliance reports and Procurement Review Group meetings.

PG&E and other IOUs do not and cannot use CRRs and LT-CRRs for financial speculation, and PG&E does not suggest modifying these provisions. PG&E expects that paths associated with significant profits and losses are not paths LSEs would typically procure because they are not representative of expected grid use and are inherently riskier positions – positions that pose significant upside as well as potential downside; this is risk the CPUC and IOUs seek to protect ratepayers against.

3. PG&E is concerned that auctioned CRRs are persistently undervalued in auction

PG&E believes revenue inadequacy and CRR rent/auction revenue shortfalls are interrelated. PG&E is concerned that CRRs are persistently undervalued in auctions where CRRs clear at prices lower than expected values of DA congestion. Undervaluing of CRRs could arise for a number of reasons. Sellers of CRRs into auction may be offering to sell transmission capacity at a price too low. Auction participants may be bidding to purchase CRRs at a discount. A lack of participation to purchase CRRs in auction rounds may be driving lower than expected auction clearing prices.

Turning to LSE participation in auction rounds, LSEs can effectively sell off CRR positions either held or allocated in allocation rounds into auction rounds by purchasing counter-flow from point to point, releasing transmission capacity in auctions at the LSE’s valuation. However, transmission capacity not allocated to LSEs and reserved for auction rounds is also released into auction by CAISO on behalf of LSEs at a \$0 reservation price. LSEs cannot specify a value for the sale of excess capacity without submitting an offer to purchase it. But, LSEs (specifically IOUs) cannot submit offers to purchase CRRs if paths are not representative of expected grid use per regulatory obligations. Therefore, if paths have a high expected value of congestion but these paths are not representative of and PG&E’s expected grid use, IOUs cannot feasibly increase the value of those paths.

A lack of participation from LSEs on certain paths can explain some participation deficiencies in auction, but PG&E also anticipates that barriers to CRR market entry identified by the DMM in its whitepaper (high transaction costs)⁹ could explain additional lack of participation.

Given the inherent difficulties in modeling the DA market FNM in the CRR process, PG&E believes CAISO is oversubscribing certain transmission paths which are causing revenue inadequacy. Similarly, given that certain capacity is effectively defaulting to a \$0 reservation price, auction participants may be able to undervalue CRRs and extract profits at the expense of ratepayers. To the extent these two problems overlap, CAISO can greatly increase market efficiency by improving CRR auction design.

⁸ Pacific Gas and Electric Company Bundled Procurement Plan. January 31, 2017 Commission Approved Version. Public Version. Page 153.

https://www.pge.com/pge_global/common/pdfs/about-pge/company-information/regulation/BundledProcurementPlan.pdf

⁹ “Shortcomings in the congestion revenue right auction design” California ISO Department of Market Monitoring. November 26, 2016. Section 5. Pages 14-15.