



Appian Way Energy Partners Comments on CRR Auction Analysis Report

Abram W Klein & Tal Levy

December 6, 2017

Summary Comments

Thank you for the opportunity to offer comments on the CRR Auction Analysis Report posted on November 21, 2017. Appian Way Looks forward to participating in the upcoming ISO-hosted workshop to discuss the findings of the report. We may provide more detailed comments following the discussion to be had at the upcoming workshop.

Appian Way applauds the ISO for conducting a thorough analysis of the CRR auction. The report does an excellent job of highlighting many examples of operational issues that cause CRR underfunding. The report points out that the CRR auction is not doing an adequate job of reflecting congestion that occurs in the Day-Ahead market. In particular, the report highlights that transmission outages are inadequately communicated and represented in the CRR auctions, and that nomograms and line derates that occur in ISO operations are often not reflected in the auction model. We believe outage planning and modelling represents a significant opportunity for improvement that should be a priority in the policy stage of this initiative.

Appian Way believes the current set-up of making available all the system transfer capacity as allocated or auctioned CRRs while excluding critical binding monitored elements and contingencies does not make sense. However, we also believe that the CRR auction is an essential aspect of the nodal market design of competitive electricity markets and provides liquidity, transparency and hedging benefits that reduces the risk for market participants engaging in electricity market competition.

We have several specific comments on the report which we think it will be useful for the ISO and stakeholders to consider.

Specific Comments

Unbundling Revenue Adequacy from CRR Auction Net Payments – In looking at the specific monthly data, there is a significant amount of useful data, including revenue adequacy and CRR profitability. However, it is important to distinguish these concepts, and the report does not identify how much revenue inadequacy during each period is associated with capacity released in CRR auctions vs. grandfathered and allocated CRRs. It may be that revenue adequacy from transmission derates occurs on constraints that did not have excess capacity released in the auction, and may be due to the allocation of infeasible CRRs even prior to any auctions. For instance, the data for August 2016 shows a weak correlation between revenue adequacy and CRR profitability, especially on August 15 and 19, with

the vast majority of revenue inadequacy clearly resulting from allocation of CRRs and grandfathered rights. Even if the CRRs were profitable on a specific day for a specific constraint, that does not necessarily suggest revenue inadequacy, as there may be sufficient congestion rents with respect to the constraint on that day. A further breakdown of the monthly data would be helpful. I.e. to what extent is the revenue inadequacy occurring on constraints that had additional transfer capacity auctioned? And to what extent is revenue inadequacy associated with allocation of infeasible CRRs and grandfathered rights?

In summary, Appian Way believes the ISO should provide supplemental data showing the extent to which revenue inadequacy may occur unrelated to, and independent of, the auctioning of CRRs. We believe the data should be available as part of the analysis already done by the ISO.

Constraint Matching and Consistency of auction model and Day-ahead market – Even separate from the outage modeling problems identified by the report, there remains a significant challenge of inconsistency between the CRR model and the Day-Ahead model. For instance, this month for December 2017, the CRR model had only 96 contingencies in the model. Historically, over 500 have bound in the Day-Ahead and Real-Time markets. Likewise, the CRR auction monitored list of constraints is incomplete compared to what exists in the market. It will be worth evaluating the extent to which these model inconsistencies contribute to underfunding. It is worthwhile noting that the report shows the specific constraint mismatches in each month between the auctions and the market. However, care must be taken not to make too much of this information. There may be constraints in the auction that act as proxies for similar effective constraints in the market. The monthly tables may show more of a mismatch than is in fact occurring.

Use of Nomograms – Appian Way remain concerned about the extent of operational use of, and potential over-reliance on, nomograms by the ISO. When CAISO has an outage, operators may decide that the market software is inadequate and will study the outage and create a nomogram. These nomograms are often deployed just before the outage starts so often are not modeled in the CRR auction. The nomograms can incorporate gen drops, so the use of a nomogram instead of normal contingency analysis to secure the system should result in higher transfer capacity. However, the nomograms often seem to be more restrictive than normal contingency analysis, worsening the impact on revenue adequacy. Sometimes the nomograms can be associated with very explosive congestion and subsequently large underfunding. We wonder if operators are using nomograms as a proxy to dispatch specific preferred units. Also, if the nomogram is attempting to address a voltage issue and is not designed precisely, it may inadvertently send an incorrect high price signal to a unit that is exacerbating the voltage problem, resulting in the uncontrolled real-time congestion. We believe that the ISO should trust the software to properly monitor contingencies, especially when the limiting facility is a thermal constraint. Nomogram should allow for less restrictive transmission limits over an interface by accounting for the potential for gen drops.

Unique path fallacy – The nature of the nodal market design means that each node represents a unique node for pricing. With 1,113 valid nodes in the CRR auction model, there are approximately $1,113^2$ or ~\$1.2 MM potentially unique paths. Figures 7 and 8 show that there are over 6000 unique paths in the annual auction and even more in the monthly auctions. Figure 9 shows that 45% of these paths represented paths with a single unique source/sink combination clearing.

The report suggests that the existence of many unique paths calls into question the liquidity and competitiveness of the CRR market. However, this formulation represents a misunderstanding of what happens in the CRR auctions. That there are many unique paths is irrelevant – what matters is that each of these paths is competing in the CRR auction model for a pre-defined and limited amount of **transfer capacity**. Paths that may have different sources and different sinks nevertheless may be in competition with one another for the limited transfer capacity available. If instead, the analysis looked at specific constraints that bind in the market, the analysis would likely show many different unique CRR paths competing to buy or sell transfer capacity over each constraint.

Appian Way is looking forward to the workshop and to continued robust discussions with the ISO and other stakeholders. Thank you for your consideration of these comments.

Submitted by,

Abram Klein & Tal Levy

Managing Partner & Principal

Appian Way Energy Partners

Phone: 617-899-5022

Email: aklein@appianwayenergy.com & tlevy@appianwayenergy.com