



# Western Power Trading Forum comments on CRR Analysis

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# Summary

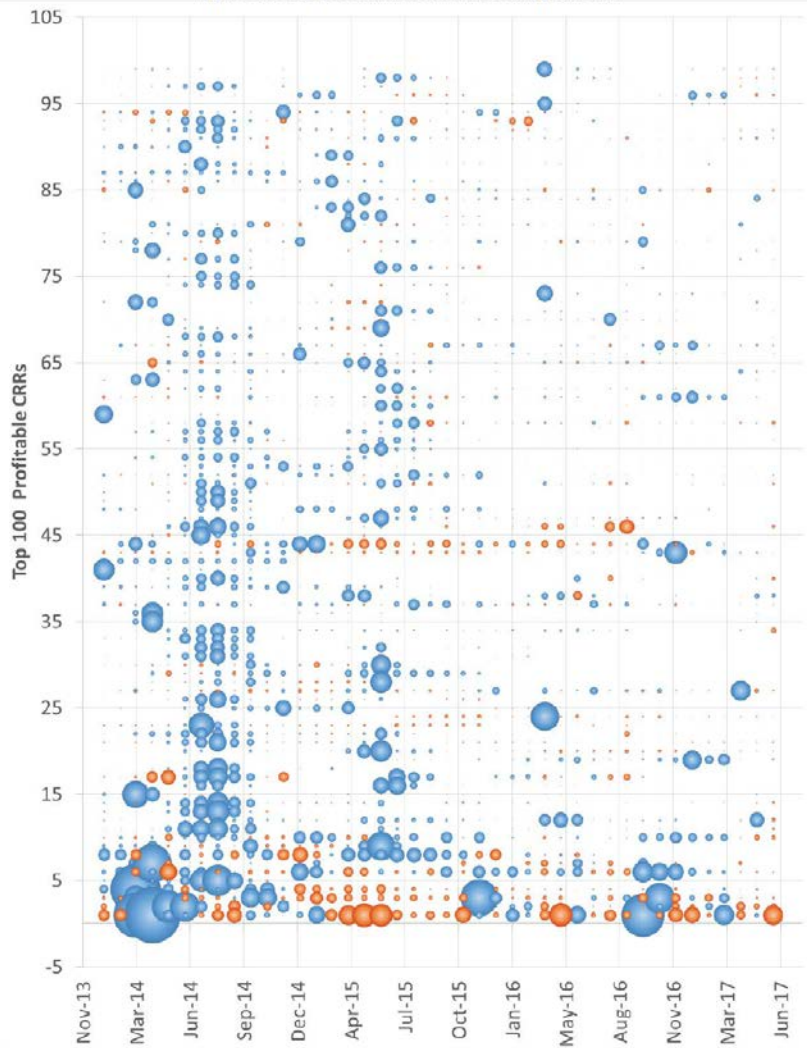
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- Study is thorough and points to a number of underlying drivers
  - Study did not identify any systematic or repetitive profitable patterns
  - ISO analysis identifies a number of drivers of revenue inadequacy
  - Resolving revenue inadequacy is good for all market participants
  - Analysis showed strong correlation between revenue inadequacy and net CRR payments
  - Alternative policies and practices could well reduce revenue inadequacy and reduce net CRR payments
  - CRR auction has wide-spread benefits

# Study is thorough and points to a number of underlying drivers

- WPTF appreciates the detailed analysis and clear and direct presentation in the ISO's study
- Study reflects metrics that parties had requested
- Provides clear information presented in thoughtful ways
- ISO provides detailed and insightful examples of the root causes of CRR revenue inadequacy/CRR inefficiency
- ISO's analysis offers much to address regarding modeling and operational processes

# Study did not identify any systematic or repetitive profitable patterns

Figure 81: Top 200 CRRs based on net CRR payments




- “[There are] no persistent positions over time, some top CRR see large inflows followed by large outflow. For many other top CRRs, they are more scattered over time, meaning that there is no persistent system conditions where they can be profiting from over time. To a great extent this is expected given the constantly changing dynamics of congestion in the system.”

# ISO analysis identifies a number of drivers of revenue inadequacy

- 57% of outages required to be reported were not reported in time for the ISO to factor them into the CRR model. PG&E 50%, SCE 65%, SDGE 70%
- “[The] common factor [affecting revenue adequacy and CRR net payouts] happens to be the misalignment of transmission modelling between the CRR auctions and the day-ahead market”
- “Late or missed outages and constraints in the CRR auctions [is] the primary driver for revenue shortfalls and large net CRR payments to auction CRRs”
- Nomograms are at times modeled in the DA and not modeled in the CRR process and this creates a “persistent divergence” between the markets
- Not modeling outages < 24 hours in duration, and prorating for outages between 1 and 10 days long can lead to revenue inadequacy

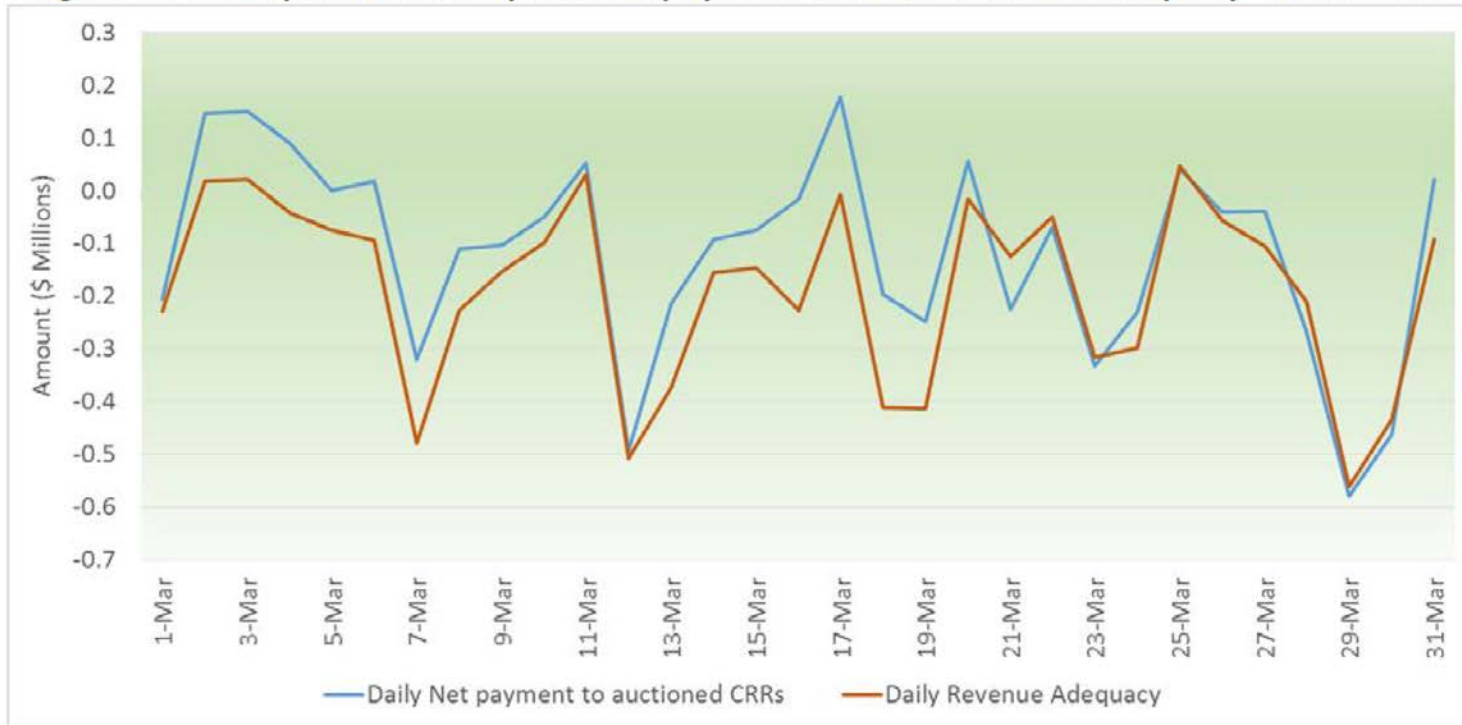
# Resolving revenue inadequacy is good for all market participants

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- Revenue inadequacy creates distortions in the market
  - The greater the underlying drivers, the more difficult it is for the market to properly value the hedges and for the CAISO to efficiently conduct the CRR processes
    - e.g., if the CAISO constraint limits are too high in the allocation process, the CRR allocation process may not bind when it should, creating too many allocated CRRs to pay out on, and between rounds this can affect an LSE's decision-making in an inefficient way
  - Revenue inadequacy can also create distortions *across* LSEs

# Analysis showed correlation between net CRR payments and revenue inadequacy

“The analysis in th[e] report shows that there is a persistent and strong correlation between CRR revenue inadequacy (congestion rents not being sufficient to cover all CRR payouts) and net CRR payments (difference between auction CRR payments and auction revenues).”

**Figure 151: Comparison of daily net CRR payment with CRR revenue adequacy –March 2017**



# Alternative policies and practices could well reduce revenue inadequacy and reduce net CRR payments

WPTF does not agree that:

- The majority of revenue inadequacy is unavoidable [PG&E]
- Models cannot be further aligned [PG&E]
- Given the temporal separation of the CRR and DA processes substantial improvements cannot be made [Six Cities]
- There is nothing that can be done for short-duration outages [implied by PG&E]
- Small changes are not worth pursuing [PG&E]



# Alternative policies and practices: Could well reduce revenue inadequacy and reduce net CRR payments

Analysis pointed to a number of areas for further examination...

- Outage timing
  - Inconsistent success rate across IOUs (e.g., 50% vs 70%)
  - What is the best practice in other regions, and why might other regions have better success?
  - What are the policies around capturing reasons for violations and remedying them?
- Constraints CAISO places in DA but not in CRR
  - What is the policy on how the ISO decides to invoke certain constraints?
    - All for dire reliability purposes?
    - Or rather, can there be a look ahead?

# Alternative policies and practices (continued)



Additional areas for further examination...

- Limits that are too high in the CRR process
  - Can ISO offer further transparency on how limits are set – on what happens between CRR and DA market?
  - Can a post-mortem be done on some of the high-impact constraints?
- Treatment of shorter outages
  - “Short” duration outages may provide more ability to manage that one might expect
    - See next slide for example
- End of the year “unknowables”
  - Consider balance-of-market auctions where more capacity gets released toward end of year as year progresses

Many actions do seem possible yet that have not yet been weighed; it is appropriate to pursue these

# Example regarding short-duration outages

CRR Month						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000
TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000
TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000
TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000
TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000	TO Outage 0600 - 2000


Outage less than 24 hours not in CRR model

Yet, series of repetitive outages could be represented in CRR model

# CRR auction has widespread benefits

- CRR auction has wide-spread benefits in market – a market \$10B in size overall
  - Used to obtain hedge for delivery of renewable energy through intertie points and to load centers
  - Used by generators to obtain hedge between gen nodes to manage outage/replacement risk
  - Used by CCAs and smaller LSEs to reconfigure CRRs when supply sources change
  - Used by importers to obtain CRRs to manage risks of imports for offers into the DA market
- Without CRR auction, costs of energy and renewable deliveries will increase given increased risks and/or increase costs to obtain hedges
- Allowing many buyers and sellers in CRR process enhances CRR process efficiency, especially relatively to if - for example - only generators and loads were able to participate

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