



# Congestion Revenue Rights Performance Update

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# CRR Enhancements and Policies Implemented in 2019



**Analysis Phase. Nov 2017:**

Understand the drivers to guide the policy discussion

**Phase 0. First half of 2018.**

Enhance ISO processes under existing Tariff requirements

**Phase 1A. 2019 Annual process:**

Additional reporting requirements for transmission outages

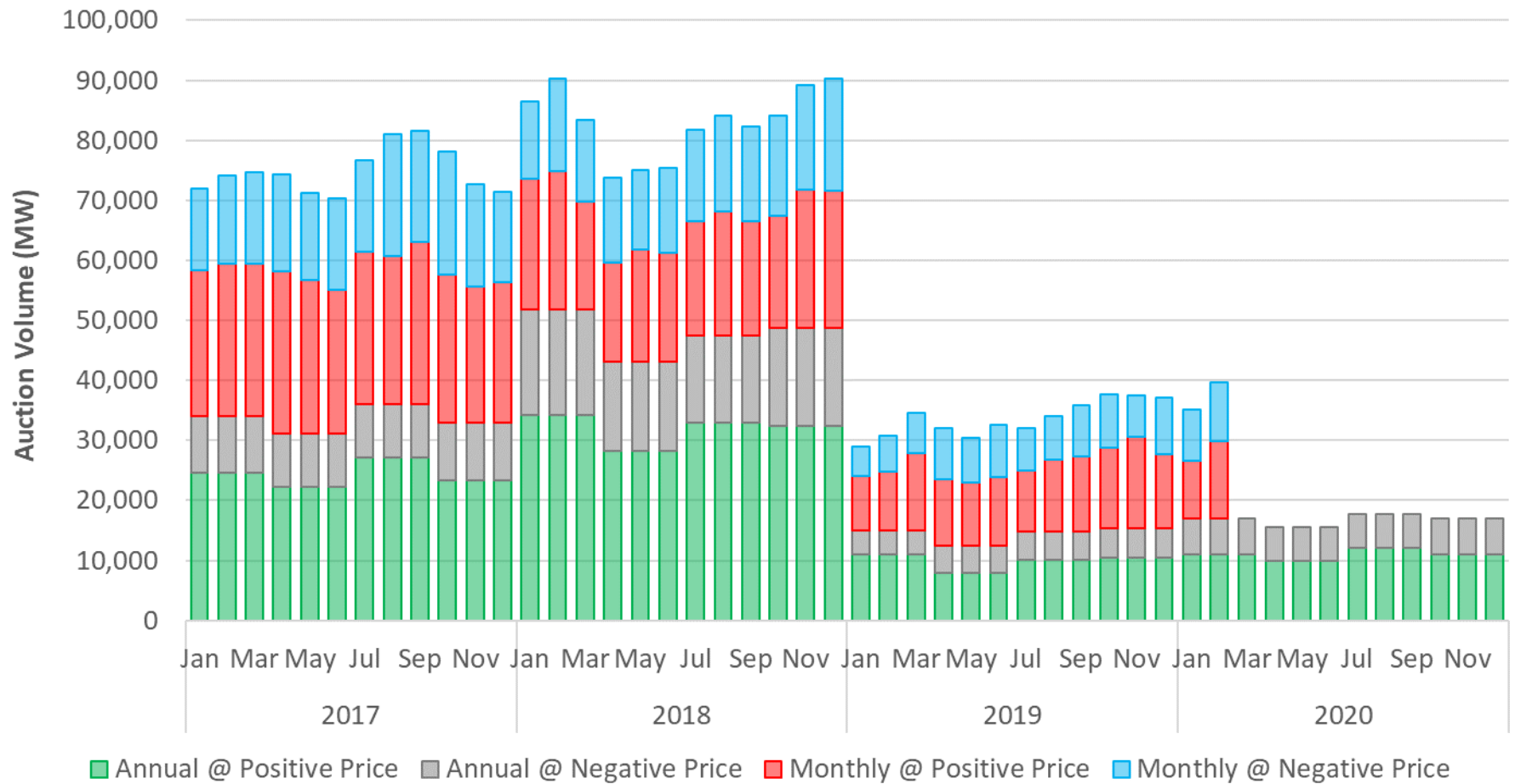
Elimination of non-delivery paths

**Phase 1B. 2019:**

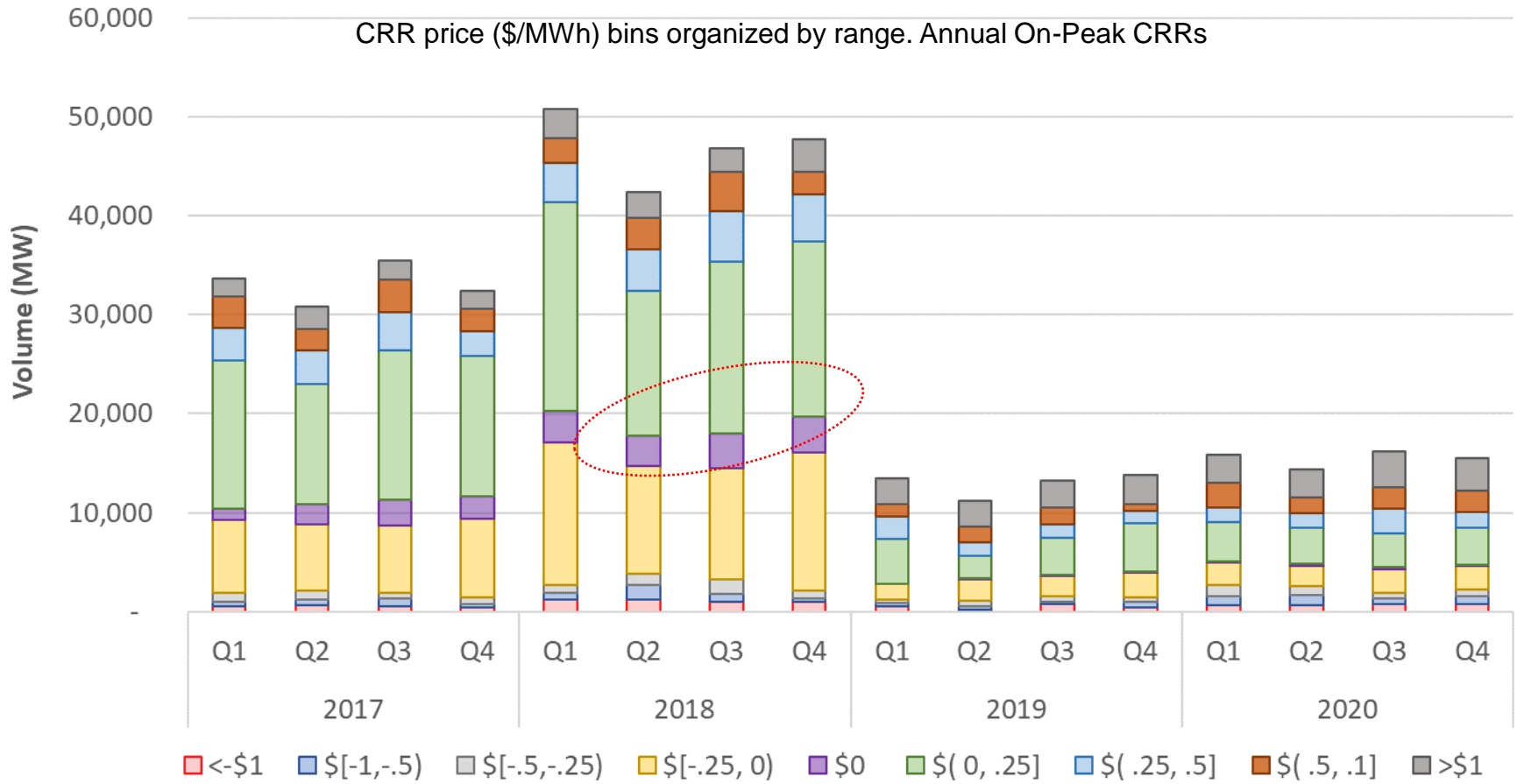
Pro-rata funding for CRRs on a constraint by constraint basis

Capacity released in annual allocation reduced from 75% to 65%

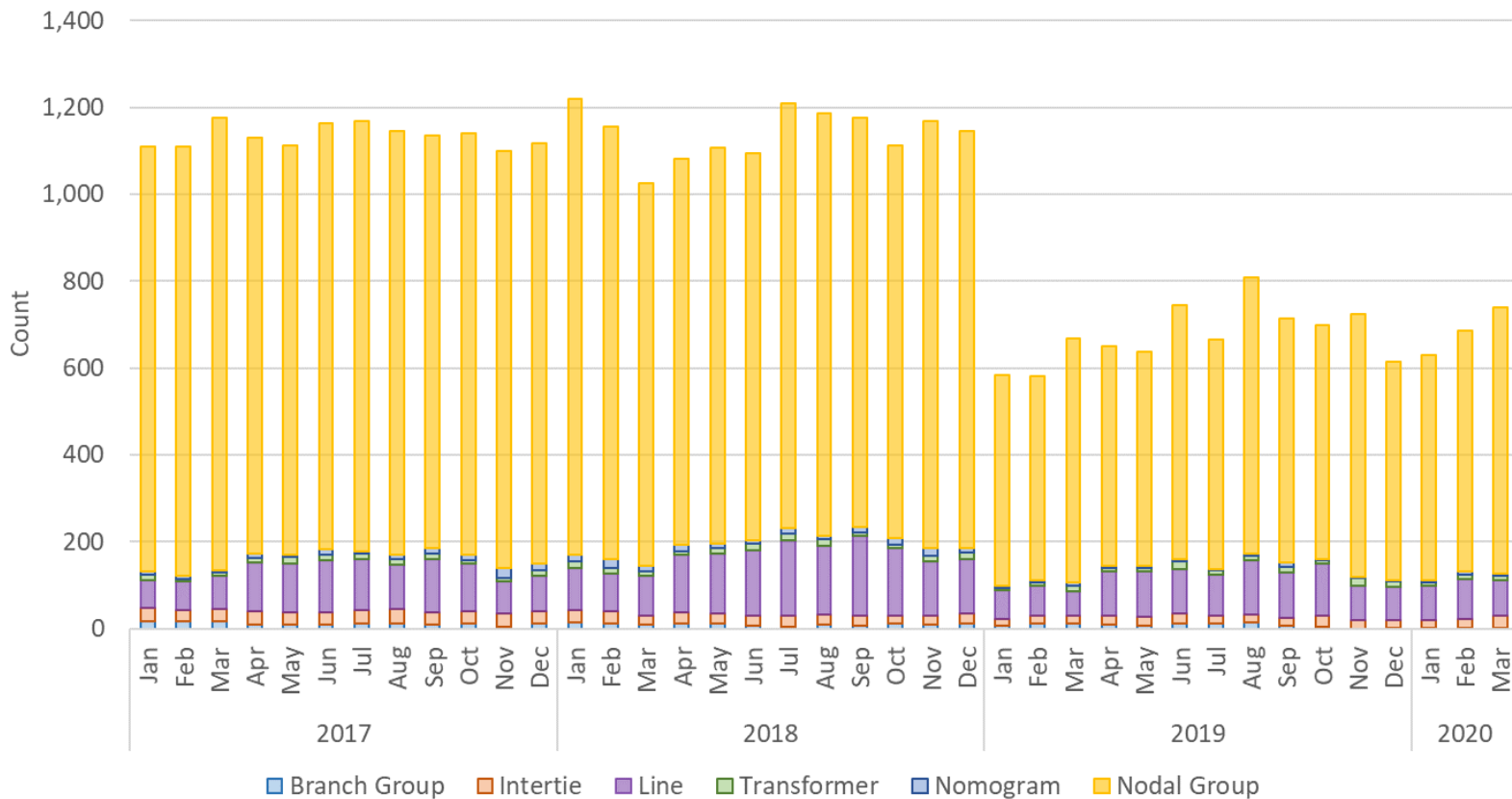
# The overall CRR volume cleared in auctions has decreased



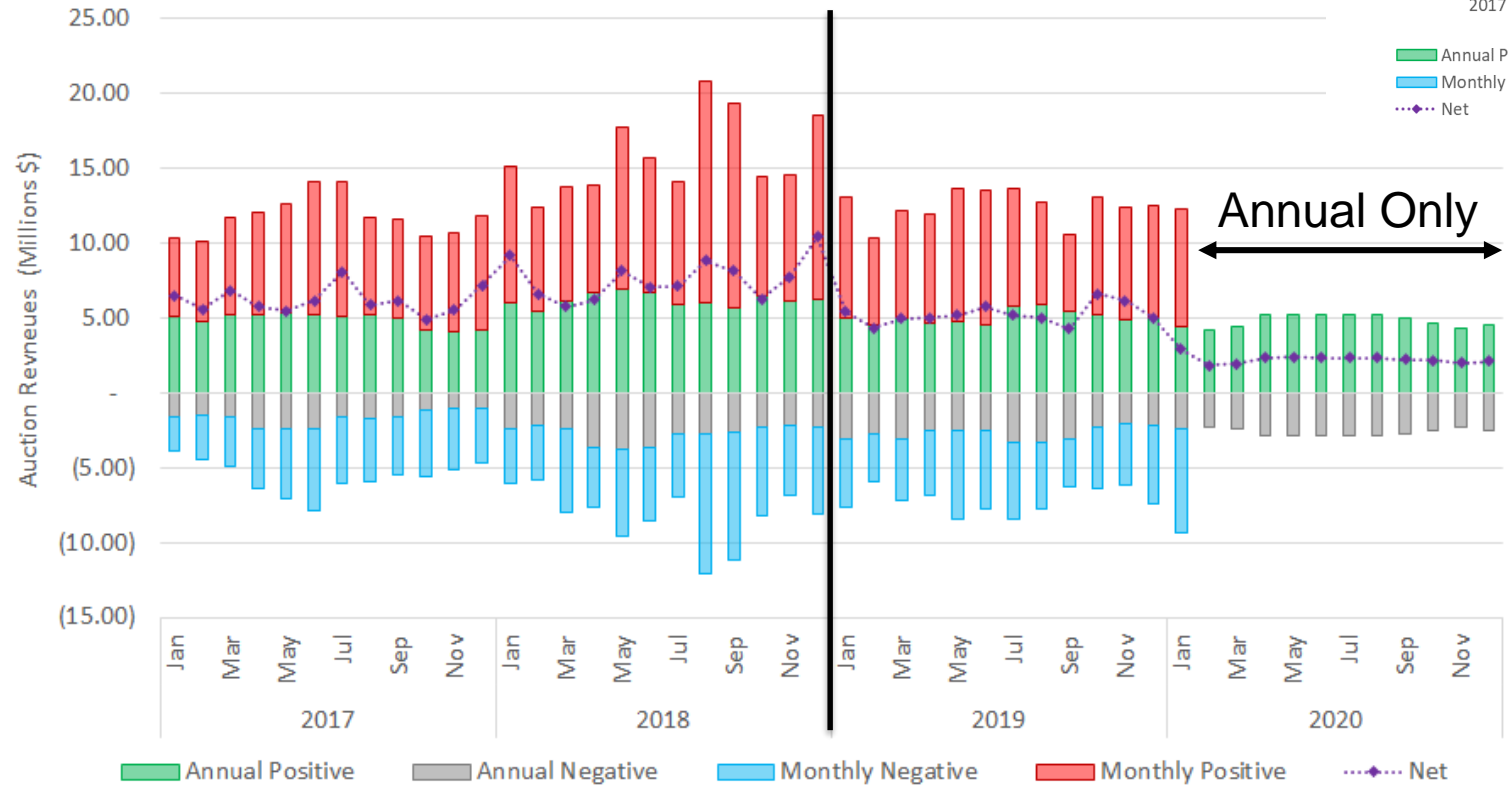
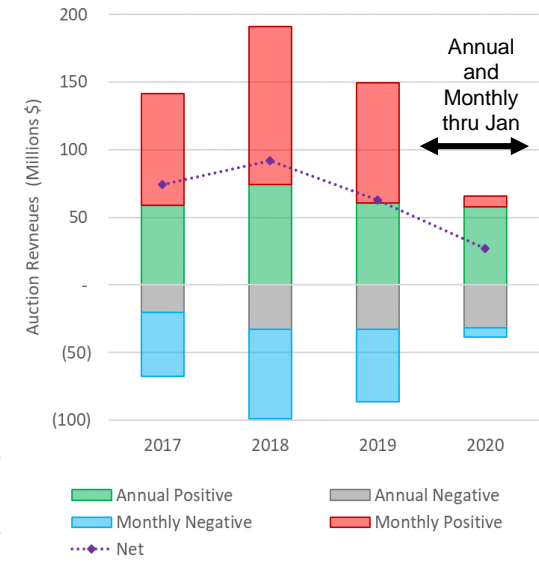
# The reduction of CRR volume happened mainly for the low and zero prices CRRs



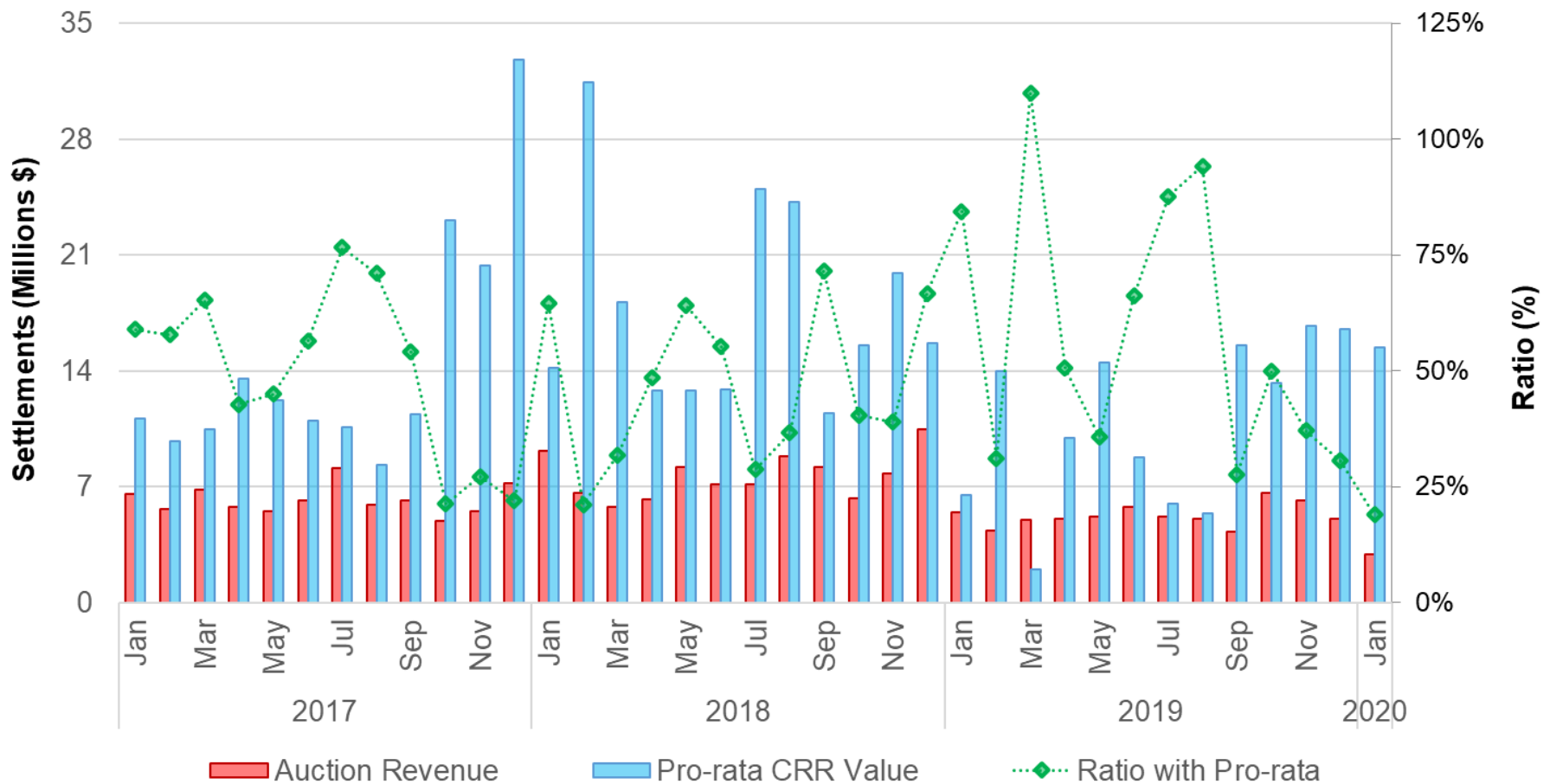
# The volume of constraints binding in the CRR auctions have decreased, but it is largely in the nodal-group constraints



# Overall trend of auction revenues has not changed significantly



# On average auction shortfall has improved modestly with the changes implemented in 2019

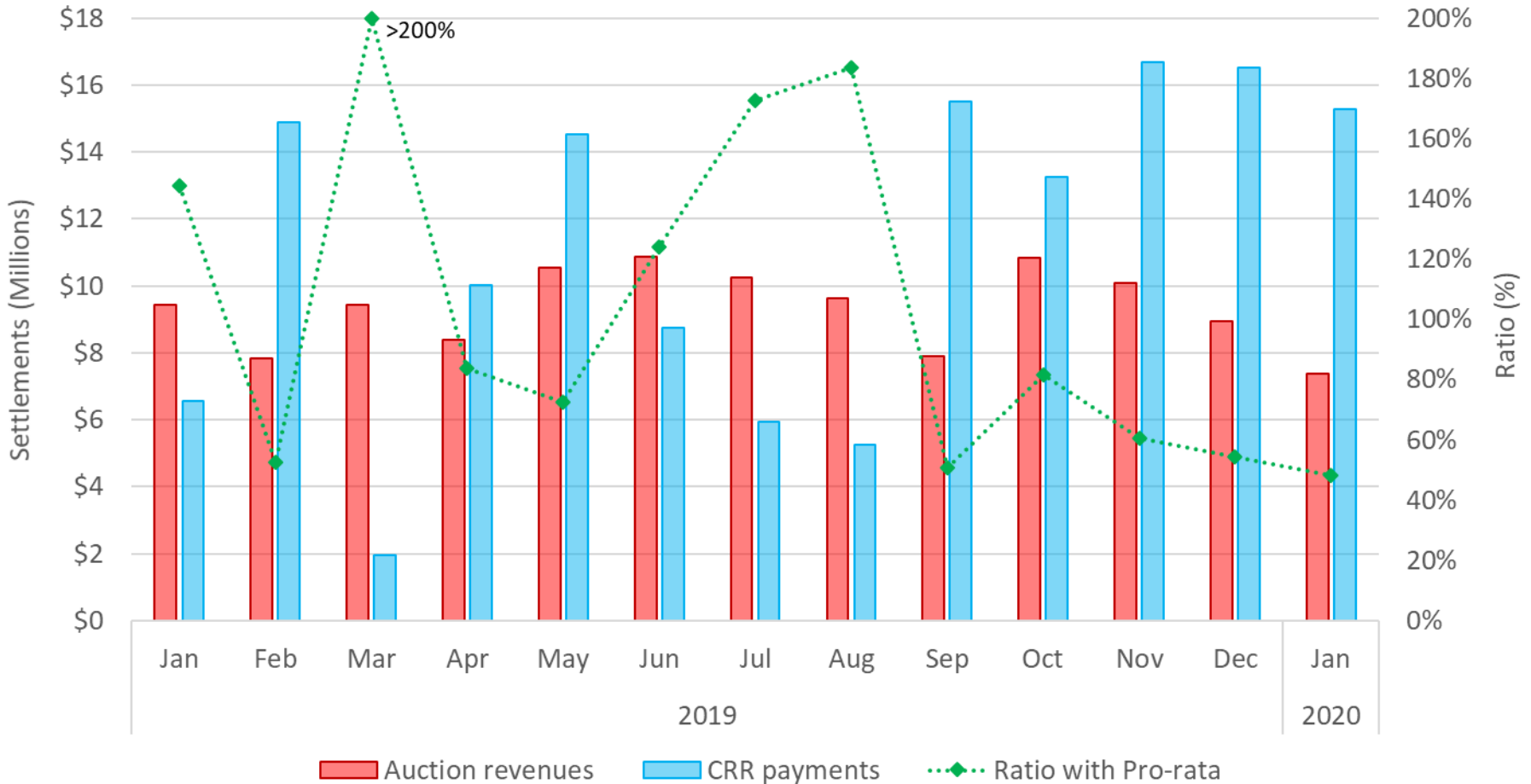


## How should the sell-type CRRs be considered in the auction shortfall metric?

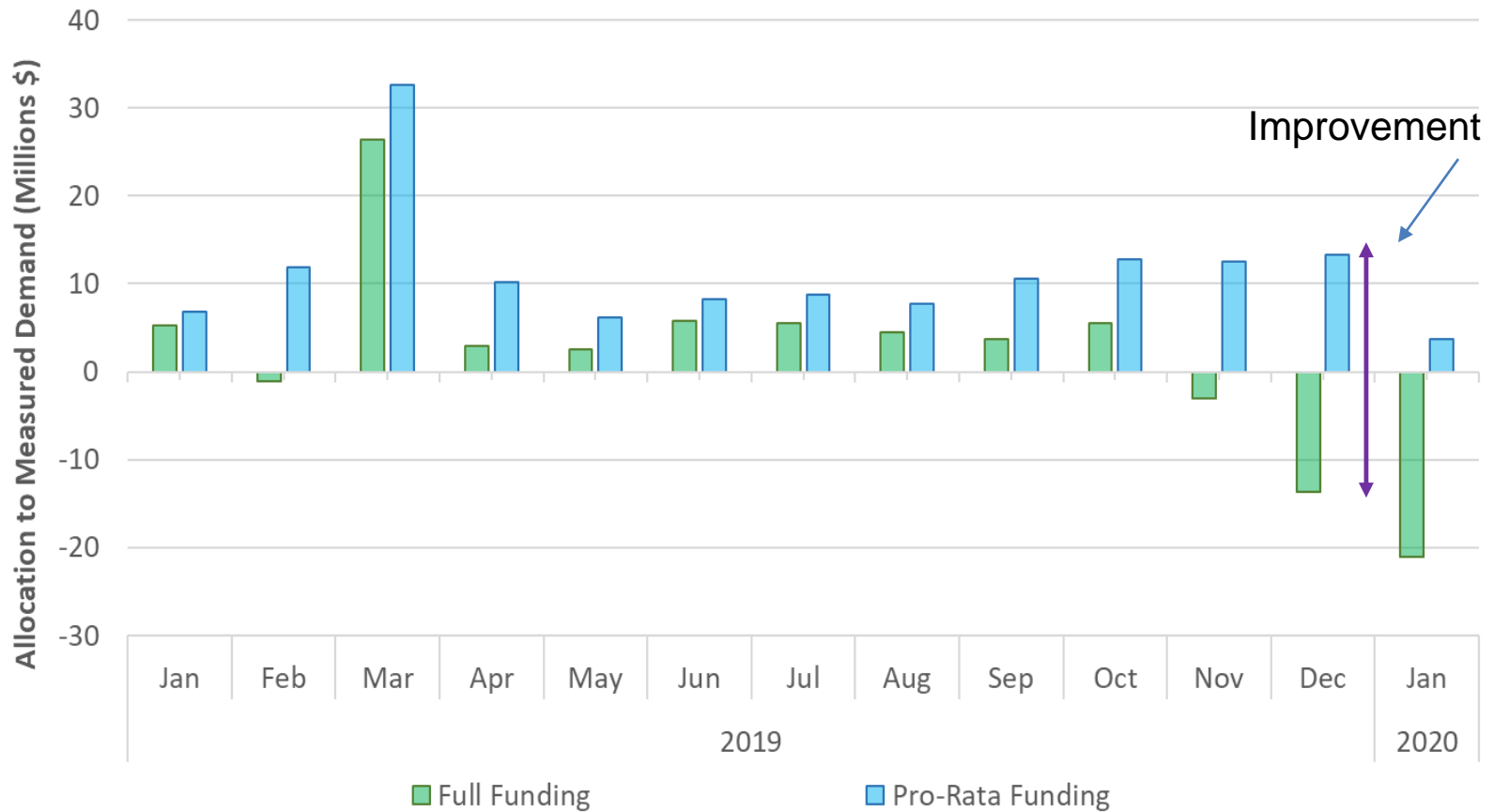
- Prior to 2019, an existing CRR could be sold only by buying a counter-flow position. Afterwards, CRRs can be sold explicitly
- Prior to 2019, CRR holders could buy counter-flow positions by bidding for non-delivery paths. Afterwards, CRRs for non-delivery paths cannot be bought
- Either of these CRRs may have negative auction revenues
- Money collected from buy CRRs will fund the payments to sell CRRs. Sell CRRs release capacity into the auction and enable the release of buy CRRs
- Sell CRRs will reduce the gross auction revenues



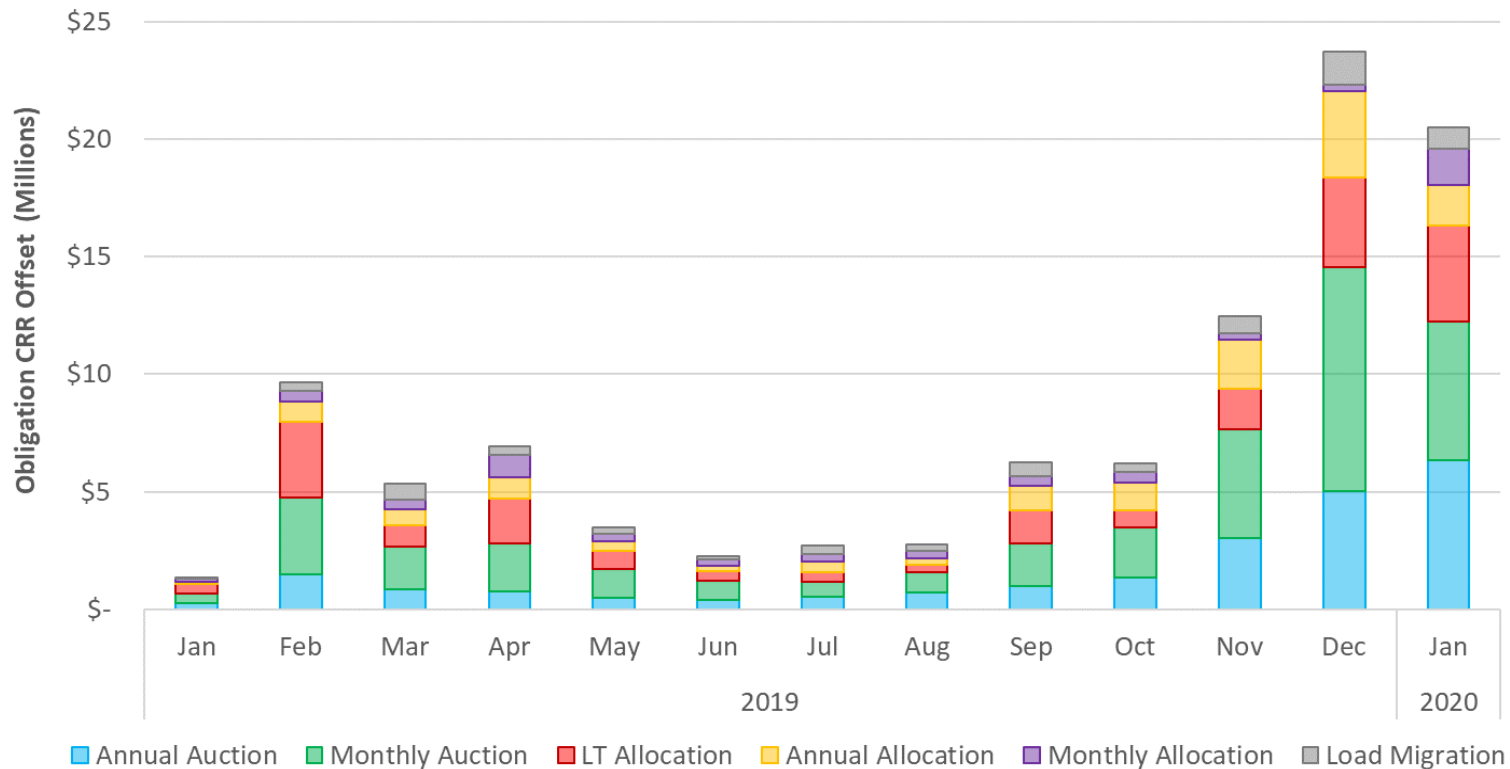
# An auction shortfall based on the gross revenues related to buy CRRs will show a more meaningful outcome



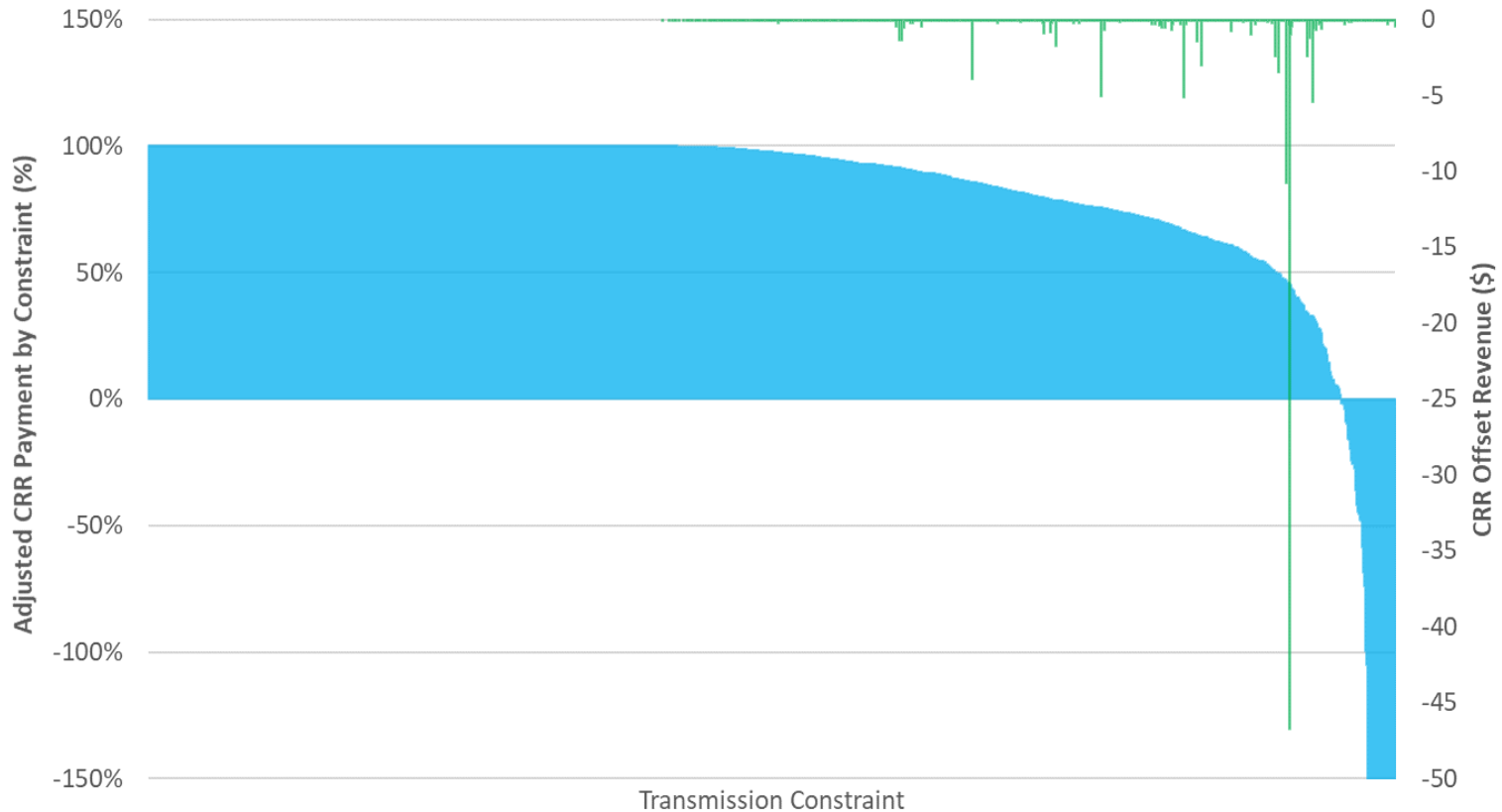
# Implementation of pro-rata funding has eliminated CRR revenue shortfall and increased revenues to LSEs by \$122 Million.



# CRR deficits have impacted all types of CRRs in the market, with the largest impact on the monthly CRRs auction



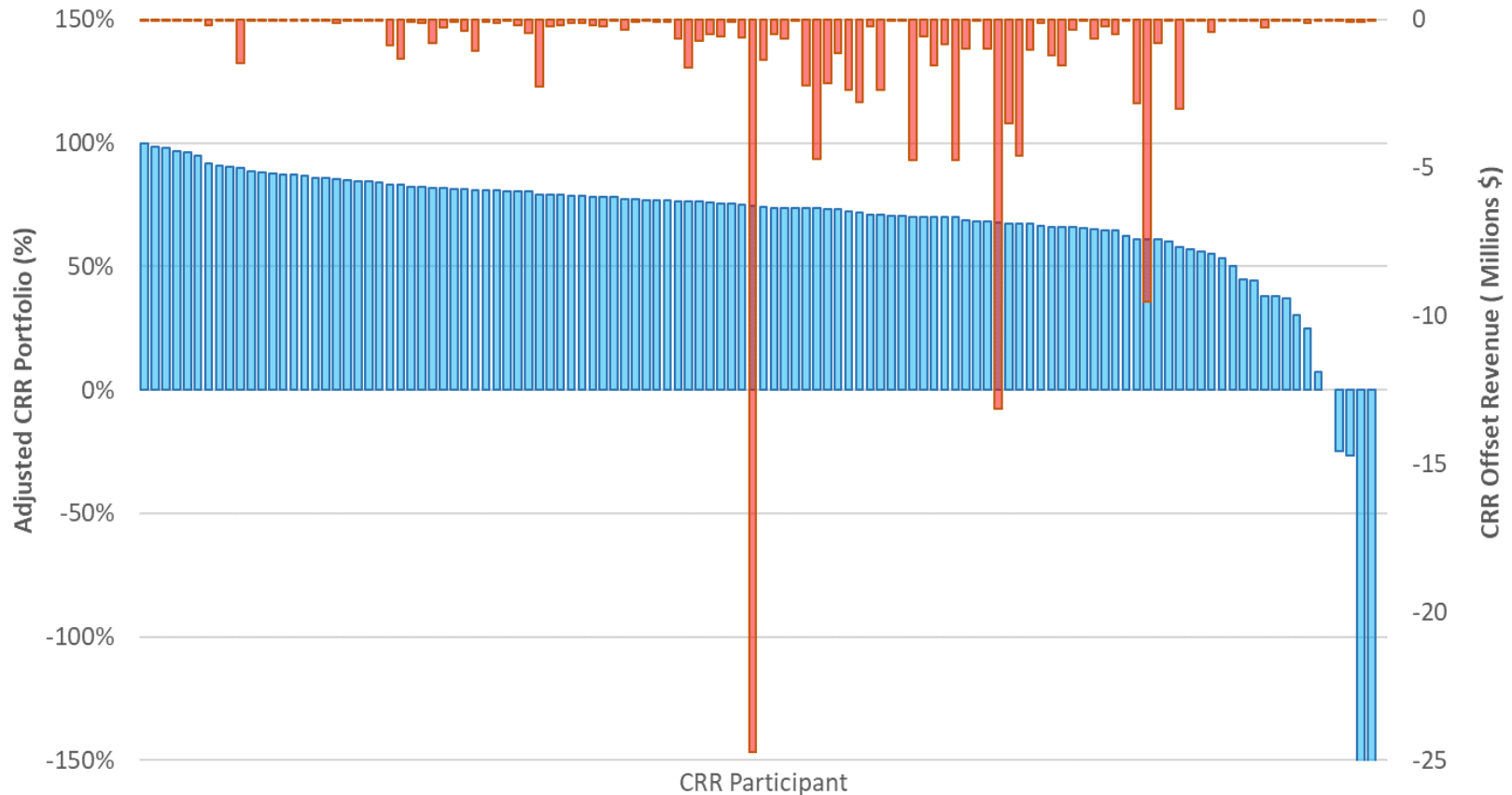
# Pro-rata funding has an impact on a large set of constraints



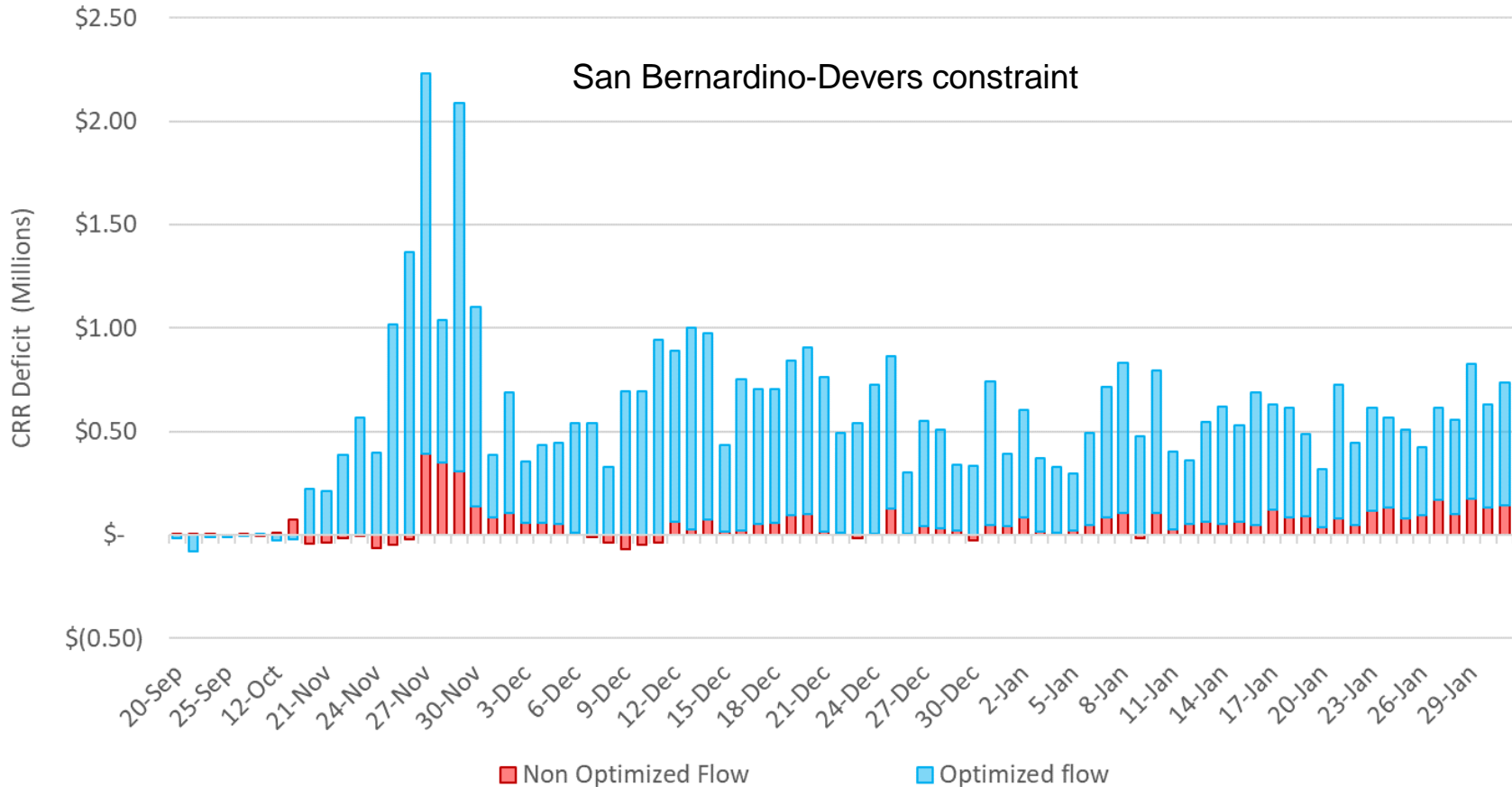
## Conditions leading to reversal of settlements at the constraint level

- The estimated Integrated Forward Market (IFM) flow is based on shift factors (SF) and injections from control variables in the SCUC (market) side of the optimization problem
- Only control variables with SF over 2% will contribute to the IFM estimated flow
- When control variables (such as default load aggregated point (DLAPs)) have SF below 2%, their flow contribution will not be accounted for in IFM flow estimated for CRRs; if they have positive contributions, that will not offset the negative flows
- CRR deficit from a constraint can exceed the CRR notional value when the estimated IFM flow is in opposite direction to the CRR flow

# Pro-rata funding has an impact on all CRR portfolios and may degrade the CRR portfolios value

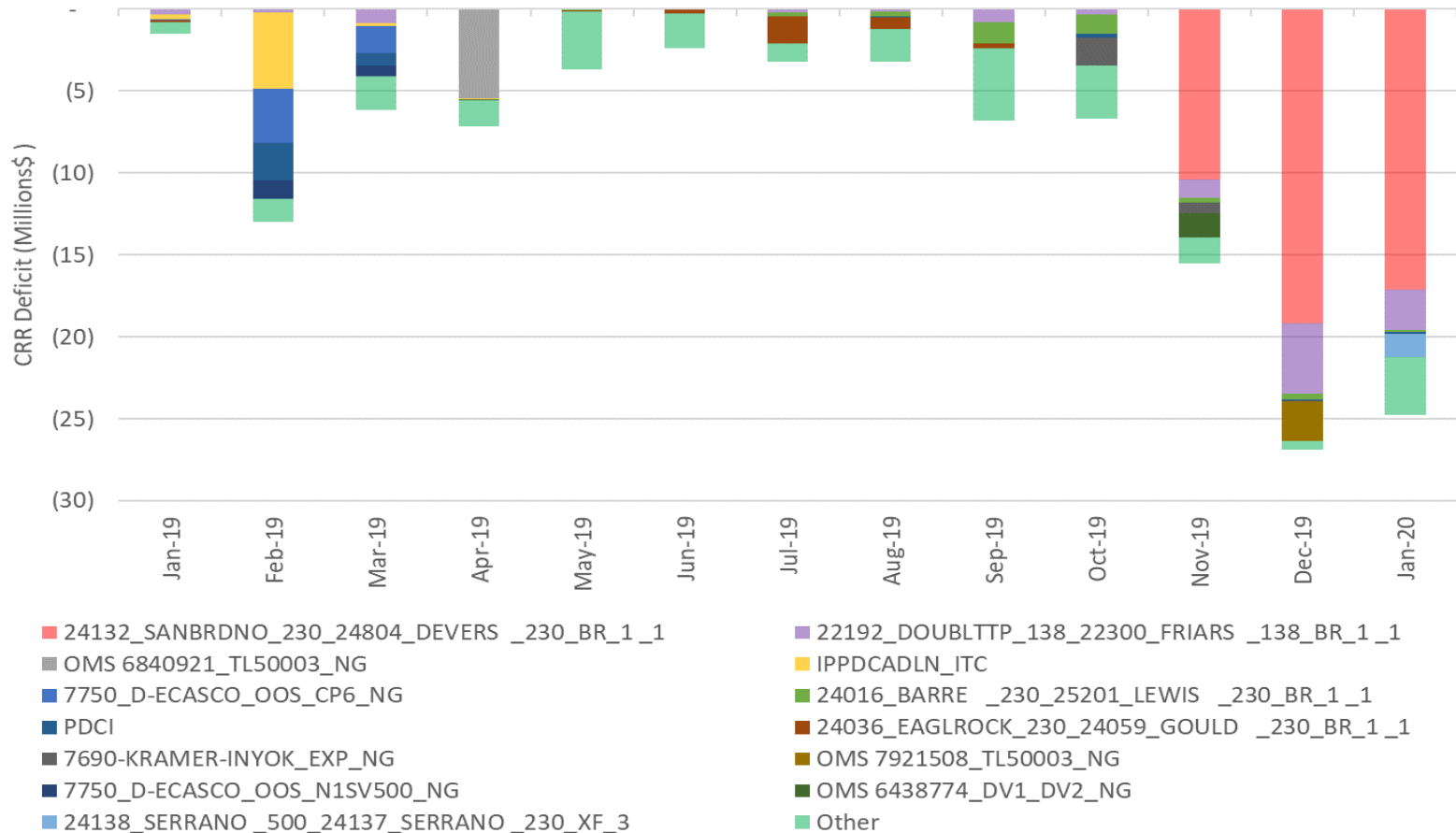


# Loop flows may be a factor in the level of deficits observed in certain constraints, but it is not the main driver



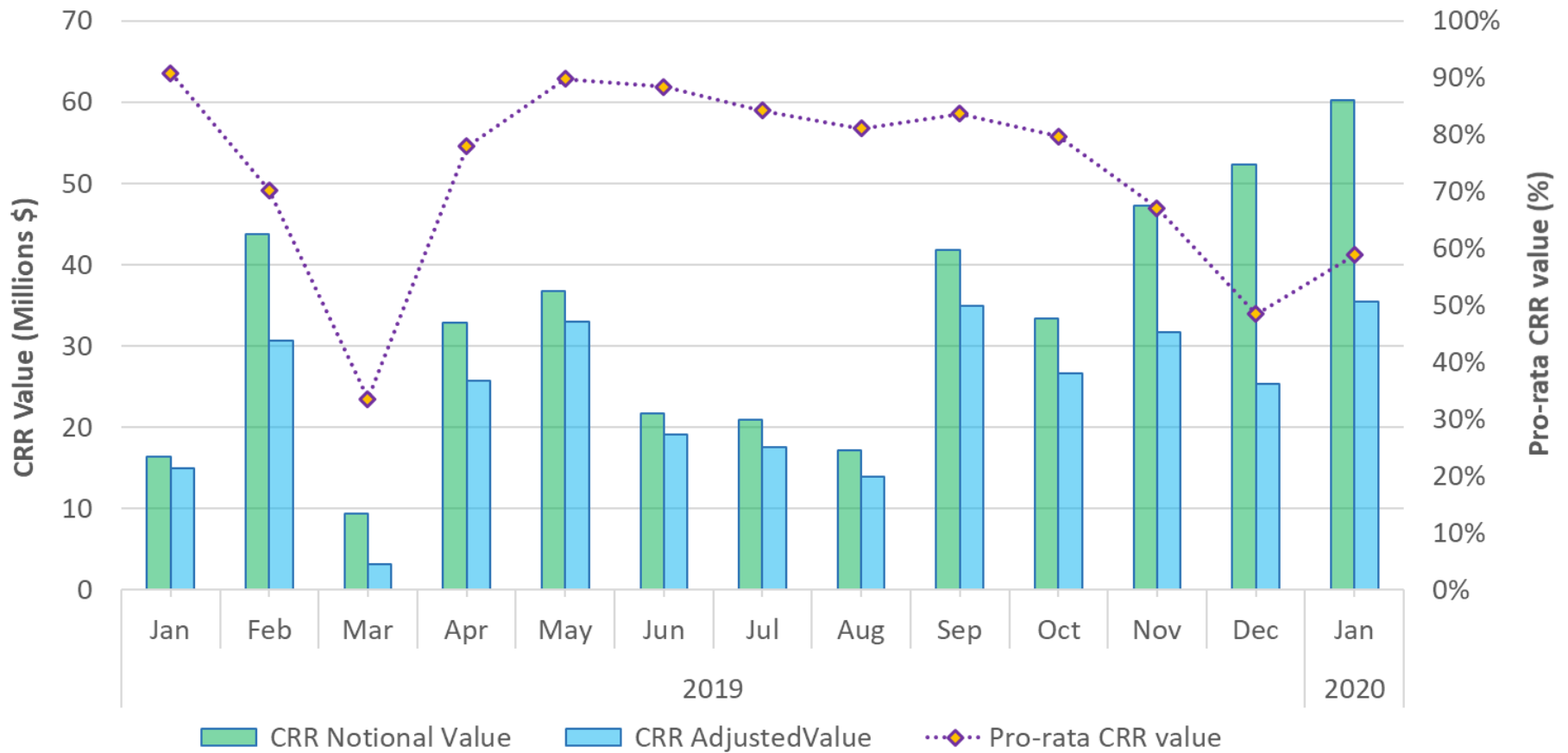
Loop flows are dynamically estimated as part of the IFM solution; they are not set in advance

# CRR deficits have generally accrued on many different constraints; the top constraint with deficits is San Bernardino Devers

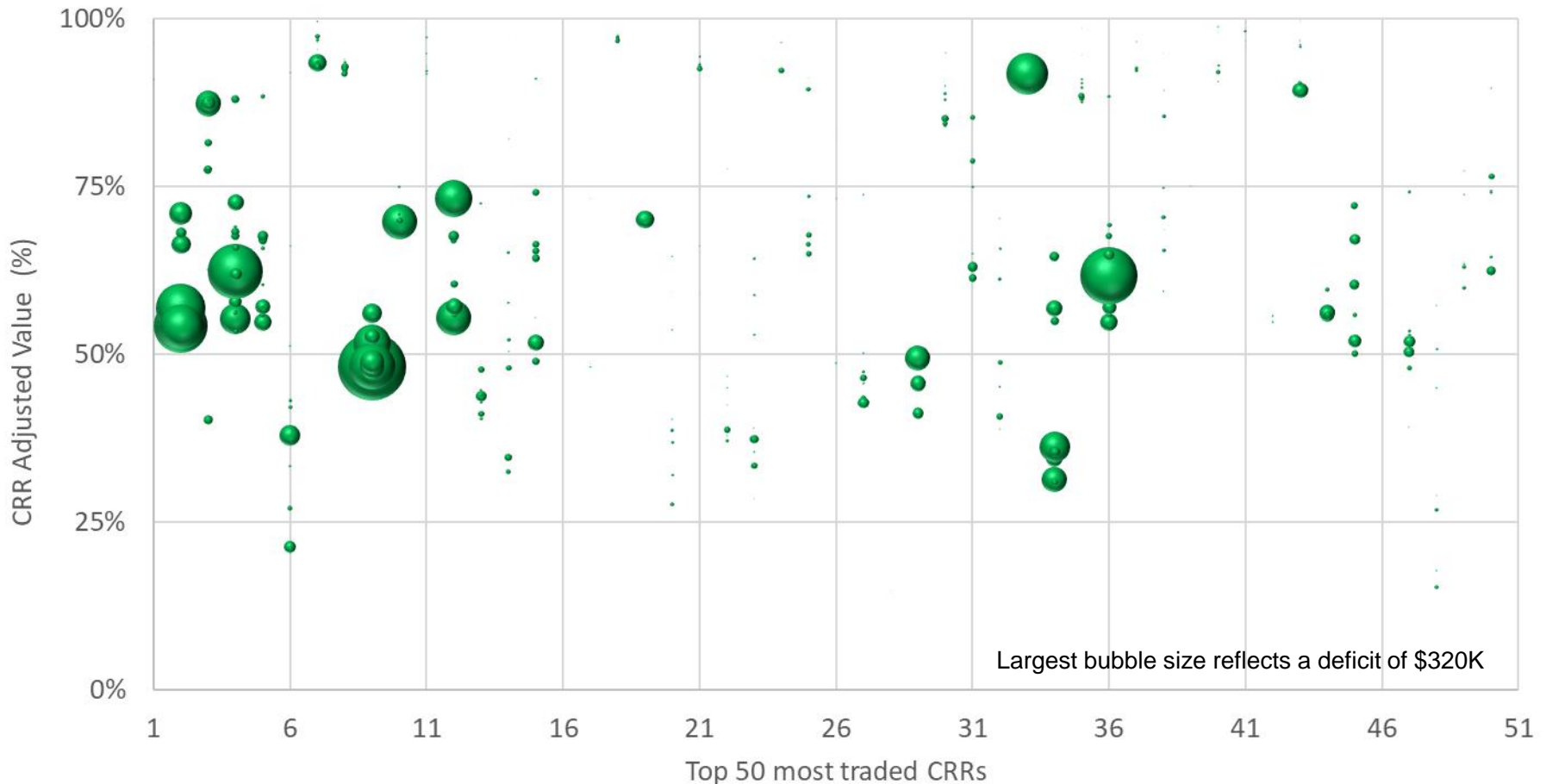




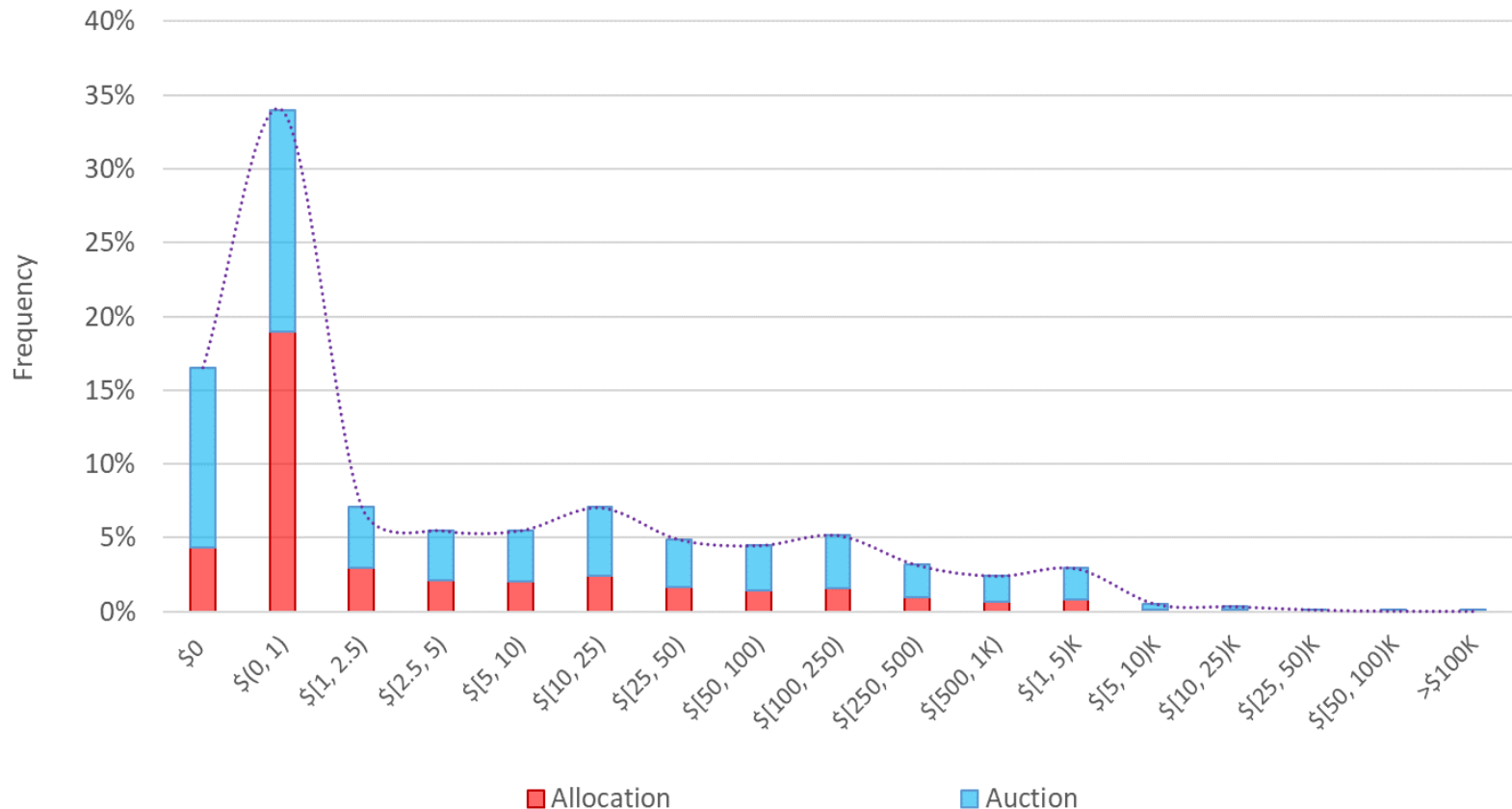
# Overall, the pro-rata funding has reduced the CRR value by 28 percent



The netting rule for pro-rata funding has led to different valuations of the same CRR depending on what portfolio they are part of



# About 60 percent of CRRs were allocated CRR deficit of less than \$1



# About 65% of CRRs had a pro-rata adjustment of less than 10% of its value

