

# Memorandum

**To:** ISO Board of Governors

**From:** Eric Hildebrandt, Executive Director, Market Monitoring

**Date:** August 24, 2022

**Re:** Department of Market Monitoring report

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*This memorandum does not require Board action.*

## EXECUTIVE SUMMARY

This memo provides an update by the Department of Market Monitoring (DMM) on two forms of congestion related costs that increased significantly in the second quarter of 2022. Both of these costs have exceeded totals for all of 2021 in just the first half of 2022.

- **Real-time congestion offset costs increased from \$34 million in the second quarter of 2021 to an estimated \$120 million in the second quarter of 2022.** Congestion offset costs in the first half of 2022 have totaled \$150 million, which exceeds the \$146 million in congestion offset costs incurred in all of 2021.
- **Ratepayer losses from the congestion revenue rights auction were almost \$58 million in the second quarter.** This brings total ratepayer losses to about \$70 million in just the first half 2022, compared to \$43 million in all of 2021. These were the largest losses since the ISO instituted significant changes to the auction starting in the 2019 settlement year.

Additional details of these issues are provided in this memo and in DMM's forthcoming quarterly and annual reports on market issues and performance.

## REAL-TIME CONGESTION OFFSET COSTS

The real-time imbalance offset cost is the difference between the total money paid out by the ISO and the total money collected by the ISO for energy settled in the real-time energy markets (i.e. the 15-minute and 5-minute market). Within the ISO system, the real-time imbalance offset costs are allocated as an uplift to measured demand (i.e. physical load plus exports).

The real-time imbalance offset charge consists of three components corresponding to the main components of real-time settlement prices: (1) energy, (2) congestion, and (3) transmission losses. Any revenue imbalance from the energy components of real-time settlement prices is collected through the real-time imbalance energy offset charge (RTIEO). Revenue imbalance from the congestion component is recovered through the real-time congestion imbalance offset charge (RTCIO). Revenue imbalances from the loss

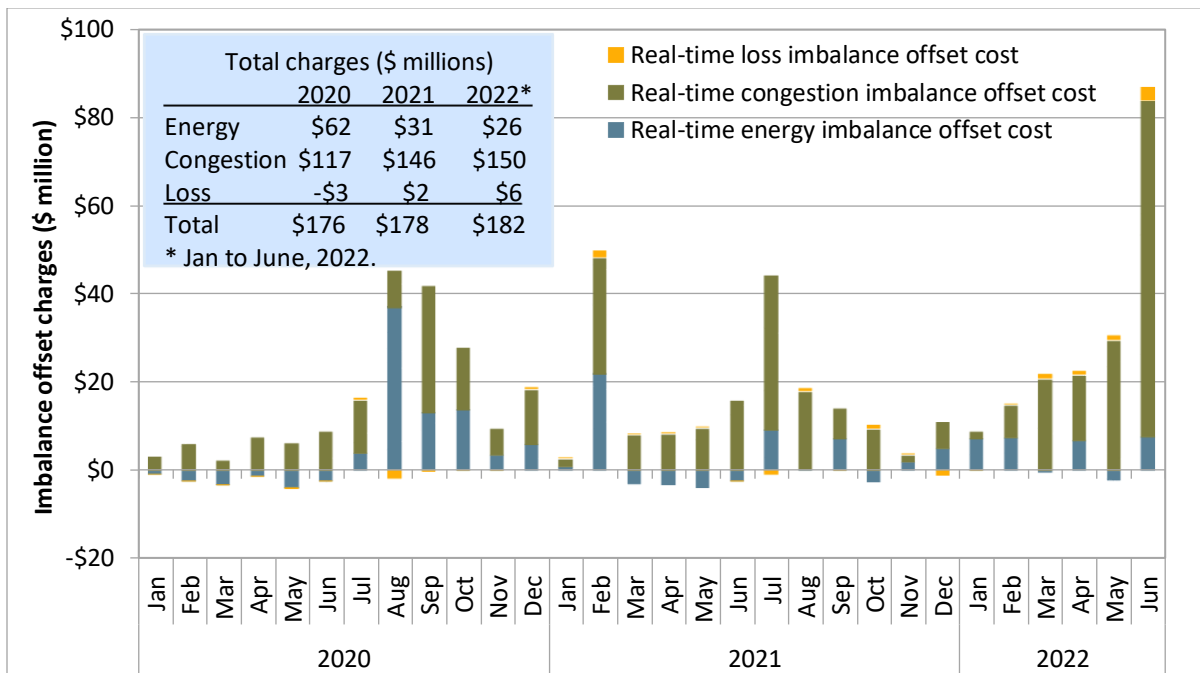
component is relatively small and is collected through the real-time loss imbalance offset charge.

Congestion offset costs are caused by a difference between the market model used in one market run for a given time interval and the market model used in a subsequent market run for the same time interval. For example, assume the day-ahead market model uses a 100 MW limit for a transmission constraint in one hour, but the 15-minute market uses a 75 MW limit during that same operating hour. Further, assume that this constraint is binding in both the day-ahead and 15-minute markets.

In the 15-minute market, the modeled power flow over this constraint will be reduced by 25 MW and will be settled at the 15-minute market price of the constraint. In this scenario, there is no counterparty in the market that directly pays the resources that are re-dispatched to reduce the power flow from 100 MW to 75 MW in the 15-minute market. The cost of this re-dispatch creates a congestion revenue imbalance that is assigned as an out of market uplift to measured demand.

As shown in Figure 1, the congestion component of the real-time imbalance offset charge was extremely high in June. DMM estimates that the second quarter real-time congestion offset costs will be about \$120 million. This will be the highest quarterly value since the ISO implemented its nodal market in 2009. Congestion offset costs were also relatively high in March (\$21 million). DMM estimates that congestion offset costs in the first half of 2022 are \$150 million, which exceeds the \$146 million in congestion offset costs incurred in all of 2021.

**Figure 0. Real-time imbalance offset costs**



Many types of modeling issues can create the modeling discrepancies that cause or contribute to real-time congestion offset costs. For example, the 5-minute market model may have errors that result in the modeled 5-minute flow over a constraint being significantly less than the actual metered flow over the constraint. In that case, the ISO may have to greatly reduce the limit of the constraint in the 5-minute market far below what the ISO uses in the 15-minute or day-ahead markets. Congestion offset costs could also potentially be caused by the ISO's day-ahead market not accurately modeling the impact on a constraint's flow from the injections and withdrawals from other balancing areas around the west that are currently not settled in the ISO's day-ahead market.

DMM is working on analysis that we hope may provide insight into the causes of the historically high real-time congestion offset costs. We have recommended that the ISO prioritize determining the causes of this offset cost and expedite any modeling or policy enhancements that could address the causes.

## **CONGESTION REVENUE RIGHTS**

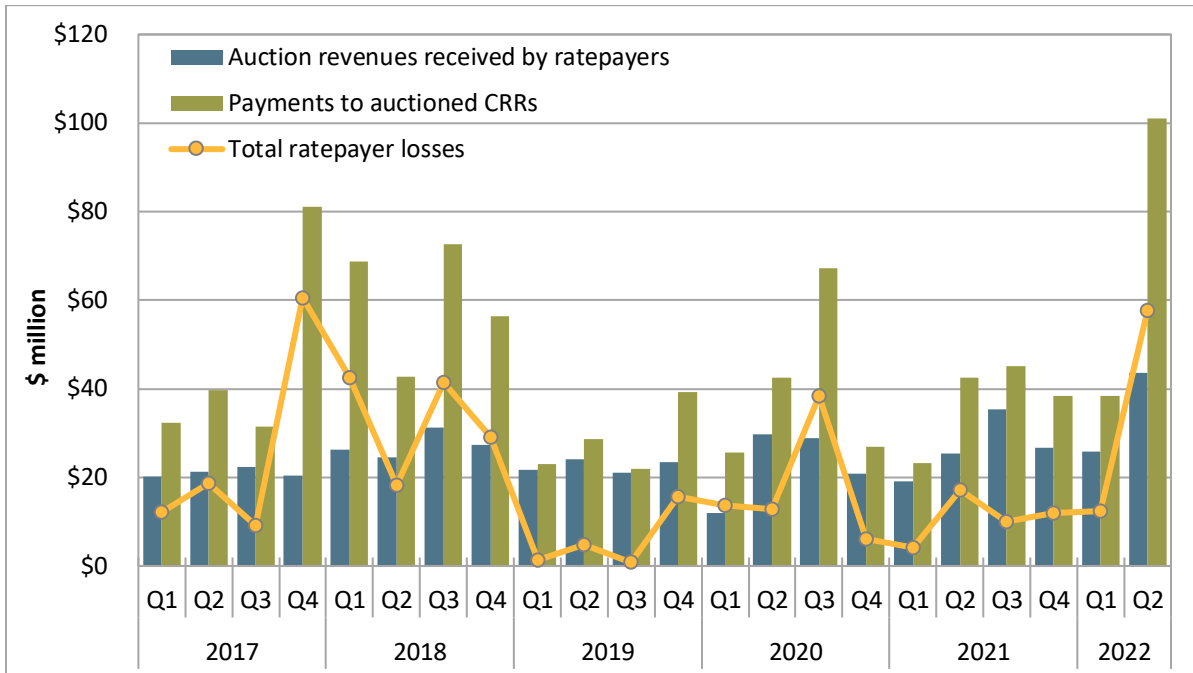
Profits from the congestion revenue right auction received by non-load-serving entities are calculated by summing revenue paid out to congestion revenue rights and then subtracting the price for congestion revenue rights paid in the auction. While this represents a profit to entities purchasing rights in the auction, this represents a loss to transmission ratepayers. If the ISO did not auction off congestion revenue rights, all congestion revenues would be returned to load serving entities who pay for the whole cost of the transmission system through the transmission assess charge (TAC).

As shown in Figure 2, transmission ratepayers lost about \$70 million during the first half of 2022 as payments to buyers of auctioned congestion revenue rights continued to exceed auction revenues. This figure also shows that second quarter losses at \$57.6 million are higher than any other quarter since the ISO instituted significant changes to the auction starting in the 2019 settlement year.

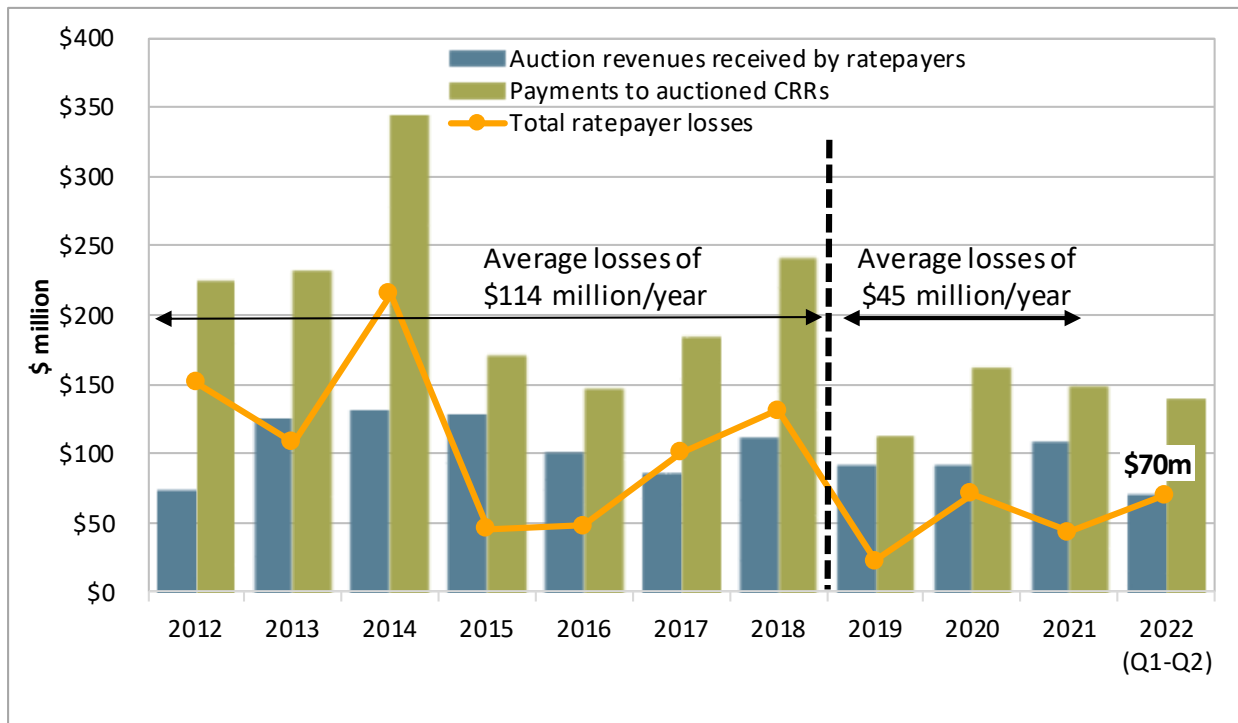
The increase in losses in 2022 was driven in part by higher day-ahead congestion. In the second quarter, day-ahead market congestion rent totaled \$269 million, representing an increase of 174 percent, relative to the second quarter of 2021. Auction losses during the second quarter totaled about 21 percent of day-ahead congestion rent, up from 17 percent of congestion rent in the second quarter of 2021.

As shown in Figure 3, changes made to the auction beginning in 2019 have reduced losses from an average of \$114 million per year from 2012-2018 to an average of \$45 million in 2019-2021. The impact of Track 1A changes -- which limit the types of congestion revenue rights that can be sold in the auction -- cannot be directly quantified. However, based on current settlement records, DMM estimates that changes in the settlement of congestion revenue rights made under Track 1B reduced payments to non-load-serving entities by about \$71 million in the first half of 2022.

**Figure 2. Auction revenues and payments to non-load-serving entities (quarterly)**



**Figure 3. Auction revenues and payments to non-load-serving entities (annual)**



Most of the \$70 million in losses from sales of congestion revenue rights by the ISO in the first half of 2022 continue to reflect profits made by purely financial entities and marketers.

- Financial entities received net revenue of nearly \$39 million in the first half of 2022, significantly up from \$15 million during the same time period last year.
- Marketers received net revenues of nearly \$22 million from auctioned rights in 2022, up significantly from \$3.4 million total in the first and second quarter of 2021.
- Physical generation entities received about \$8.7 million in net revenue from auctioned rights in 2022, which is four times higher when compared to the first half of 2021.

DMM continues to recommend that the ISO take steps to discontinue auctioning congestion revenue rights on behalf of ratepayers. The auction consistently continues to cause significant losses for transmission ratepayers each year. If the ISO believes it is highly beneficial to actively facilitate hedging of congestion costs by suppliers, DMM recommends that the ISO modify the congestion revenue rights auction into a market for financial hedges based on the clearing of bids from willing buyers and sellers.