

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

**California Independent System) Docket No. ER18-1344-000
Operator Corporation)**

**MOTION FOR LEAVE TO FILE ANSWER AND ANSWER OF THE
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION TO
COMMENTS AND PROTESTS**

The California Independent System Operator Corporation (CAISO)¹
answers comments and protests filed in this proceeding² in response to the
CAISO's April 11, 2018 tariff amendment (April 11 Tariff Amendment). The April

¹ Capitalized terms not otherwise defined herein have the meanings set forth in appendix A to the CAISO tariff.

² The following entities filed motions to intervene in the proceeding: the Alliance for Retail Energy Markets; American Public Power Association (APPA); Appian Way Energy Partners, LLC (Appian Way); Arizona Electric Power Cooperative; Bonneville Power Administration; Boston Energy Trading and Marketing LLC (Boston Energy); California Department of Water Resources State Water Project; California Municipal Utilities Association (CMUA); California Public Utilities Commission; Calpine Corporation (Calpine); Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California (collectively, Six Cities); City and County of San Francisco; City of Santa Clara, California d/b/a Silicon Valley Power (SVP); DC Energy, LLC (DC Energy); Department of Market Monitoring of the CAISO (DMM); Exelon Corporation; Financial Marketers Coalition (FMC); GridLiance West Transco LLC; Just Energy Solutions Inc.; Mercuria Energy America, Inc. (Mercuria Energy); Modesto Irrigation District; Northern California Power Agency (NCPA); NRG Power Marketing LLC (NRG) and GenOn Energy Management, LLC; Pacific Gas and Electric Company (PG&E); Powerex Corp. (Powerex); SESCO CALISO LLC (SESCO CALISO); Shell Energy North America (US), L.P.; Southern California Edison Company (SCE); Valley Electric Association, Inc.; Vitol Inc. (Vitol); Western Power Trading Forum (WPTF); and XO Energy, LLC (XO Energy). In addition, Alliance for Retail Energy Markets, APPA, Arizona Electric Power Cooperative, CMUA, DMM, Just Energy Solutions Inc., NCPA, PG&E, Powerex, Shell Energy North America (US), L.P., Six Cities, SVP, and Valley Electric Association, Inc. filed comments. Appian Way and Mercuria Energy, Calpine, DC Energy and Vitol, SCE, and SESCO CALISO filed protests. Protests were also filed by the Alliance for Retail Energy Markets, Arizona Electric Power Cooperative, Just Energy Solutions Inc., Shell Energy North America (US), L.P., and Valley Electric Association, Inc., calling themselves the "Load Serving Entities in Support of Market Efficiency and the CRR Auction" (LSEs for CRR Auctions). NRG Companies (comprised of NRG and Boston Energy) filed comments and a protest; and FMC, WPTF, and XO Energy filed comments in support in part and protests in part.

11 Tariff Amendment implements revisions to improve the efficiency of the CAISO's congestion revenue rights (CRR) auctions.

Many commenters support the CAISO's proposals in whole or in part.³ However, some commenters also argue that the Commission should reject the proposals in the April 11 Tariff Amendment in whole or in part. For the reasons set forth below, the Commission should accept the April 11 Tariff Amendment as filed without condition or modification.⁴

I. Executive Summary

The CAISO's markets provide load-serving entities with the ability to serve end-use customers reliably and efficiently, while also providing a range of market participants with open access to the transmission grid to foster competition in wholesale sales and delivery of electric power. Those objectives, by necessity, involve a balancing of the interests of load-serving entities and other market participants to ensure customer charges remain just and reasonable and not unduly discriminatory or preferential. The CAISO ensures open, non-discriminatory access to the CAISO transmission grid by allowing customers that pay for the grid through the transmission access charge to schedule transactions in the day-ahead market and releasing CRRs that provide a hedge to congestion costs associated with day-ahead congestion. The CAISO's markets, including its

³ APPA at 4; Calpine at 4-5; CMUA at 4-5; DC Energy/Vitol at 3, 43-46; DMM at 3, 7-9, 15-16; FMC at 5-10; NCPA at 5-6; LSEs for CRR Auctions at 7; NRG Companies at 5-6; PG&E at 8; Powerex at 6-7; Six Cities at 3; SVP at 7; WPTF at 7; XO Energy at 2.

⁴ The CAISO files this answer pursuant to Rules 212 and 213 of the Commission's Rules of Practice and Procedure, 18 C.F.R., §§ 385.212, 385.213. For the reasons explained below, the CAISO respectfully requests a one-day extension of time to submit its response to the comments and requests waiver of Rule 213(a)(2), 18 C.F.R. § 385.213(a)(2), to permit it to answer the protests filed in the proceeding.

rules for the release of CRRs, are designed to maintain this balance. However, the CAISO has identified inefficiencies in the CRR auctions that threaten to upset that balance and expose customers to excessive costs resulting from CRR auction revenue shortfalls. The CRR auction enhancements proposed in the April 11 Tariff Amendment will improve the CAISO's ability to maintain the proper balance going forward.

The proposal to limit allowable source and sink pairs in the CRR auction will allow market participants to continue to obtain hedges for source and sink pairs associated with the delivery of power from a supply source to load. What the proposal no longer will allow is the ability to bid for CRRs that have a high payout relative to their auction price but are likely unrelated to supply delivery. Contrary to the claims of some commenters, this proposal is fully consistent with the Commission's open access principles as set forth in Order No. 888 and later orders because market participants will retain ample opportunities to hedge congestion costs resulting from the delivery of power. Commenters who argue that open access requires that the CAISO continue to auction CRR source-sink pairs that are primarily associated with financial speculation are wrong. These commenters contend that the congestion payments they receive for "non-delivery" CRR source-sink pairs allow them to hedge supply delivery risk, but these claims are inconsistent with the evidence. As the CAISO noted in the April 11 Tariff Amendment, over 80 percent of the windfall profits from auctioned CRRs are from non-delivery source and sink pairs.⁵ Open access does not

⁵ April 11 Tariff Amendment Transmittal Letter at 13-14.

require selling CRRs at a large discount relative to what they are worth (*i.e.*, at a significant cost to rate payers). The CAISO's studies show that the prospect that financial positions in the CRR auctions at non-delivery source/sink pairs might result in more efficient market outcomes is significantly outweighed by the significant differences between the price for the CRRs paid in the auction at these locations relative to the payments they receive in the day-ahead market.

The existence of a large supply of eligible bid locations in the auction is resulting in a disperse set of non-delivery CRR locations greater than any number of coinciding bids market participants can possibly submit. This results in insufficient competition and inappropriate pricing. Thus, the enhancements proposed in the April 11 Tariff Amendment will increase auction revenues for a given quantity of CRR's sold in the auction. This will decrease the difference between the auction revenues and the payments to the CRRs, decreasing auction revenue shortfall. In addition, non-delivery pairs often have flows in the day-ahead market on constraints that are not modeled in the CRR auction but are then subsequently modeled in the day-ahead market. This results in inflated payouts relative to their auction price. Finally, non-delivery pair CRRs can receive inflated CRR payouts relative to their auction price because CRRs are not paid-out based on auction flows on constraints, but rather on day-ahead market flows on constraints. Consequently, non-delivery pairs CRRs can earn inflated CRR payouts when lines are not modeled consistently as in or out of service between the CRR auction and day-ahead market. Thus, the Track 1A measures will also eliminate these high payouts to non-delivery pair CRRs,

decrease the difference between the auction revenues and the payments to the CRRs, and decrease auction revenue shortfall. The record in this case supports the CAISO's proposal to limit allowable source and sink pairs in the CRR auction.

The CAISO's proposal to require that transmission owners report by July 1 each year known transmission outages planned for the upcoming year that affect CRR revenue adequacy also furthers the interests of all market participants. This requirement will impose little additional burdens on transmission owners, as they will remain free to schedule additional needed outages after the July deadline, while improving the modeling of system capacity in the annual CRR allocation and auction process, thereby addressing another driver of CRR auction revenue shortfalls that result in excessive costs to customers. Because outages will still occur after the CRR auction is run, however, improving the modeling of outages in the CRR release process alone will not address the issues identified by the CAISO's analyses.

The Commission should accept the CAISO's proposed changes in the instant filing, referred to as the Track 1A changes, and not delay a ruling in anticipation of subsequent changes the CAISO is considering in a pending stakeholder process, referred to as the Track 1B changes. The Track 1A changes are specifically tailored to increase the CAISO's auction efficiency and Track 1B changes do not obviate the need for these crucial changes. The CAISO filed the Track 1A changes when it did in order ensure it had measures in place that would address the auction efficiency issues for CRRs to be released for the 2019 year. Commission action on the Track 1A items by June 11, 2018,

will enable the CAISO and market participants to plan for the 2019 annual CRR auction to be held later this year, starting in late October. These changes require software and system changes and will require that market participants change their processes and practices for the 2019 auctions.

Future enhancements may include other incremental measures the CAISO can implement for the 2019 CRR allocation and auction and more comprehensive design changes the CAISO would implement in future years. Track 1B of the CRR auction efficiency initiative as currently contemplated is focusing on measures more specifically targeted towards revenue adequacy and the CAISO plans to bring Track 1B policy recommendations to the Board of Governors for approval in June 2018 and will submit any related filings to the Commission shortly thereafter. While the Track 1B also contribute to auction efficiency they do not obviate the need for Track 1A changes. Delaying a ruling on Track 1A until Track 1B is submitted would risk the CAISO not having any measures in place to address auction efficiency issues for the 2019 year. For all these reasons, the Commission should accept the CAISO's filing April 11 Tariff Amendment without delay, condition, or modification.

II. Motion for Leave to File Answer

Pursuant to Rules 212 and 213 of the Commission's Rules of Practice and Procedure,⁶ the CAISO respectfully requests a one-day extension of time to submit its response to the comments and requests waiver of Rule 213(a)(2), 18 C.F.R. § 385.213(a)(2), to permit it to answer the protests filed in the proceeding.

⁶ 18 C.F.R. §§ 385.212, 385.213.

Good cause for the waiver exists because the answer will aid the Commission in understanding the issues in the proceeding, provide additional information to assist the Commission in the decision-making process, and help to ensure a complete and accurate record in the case.⁷ A one day extension of time is justified because the comments and protests contained numerous inaccuracies and because a number of parties made late filings in this proceeding. Appian Way and Mercuria Energy filed their protest on May 10, 2018, more than a week after comments were due on May 2, 2018. In addition, DC Energy and Vitol filed an errata on May 4, 2018, correcting various errors in their lengthy protest and supporting affidavits. Granting the CAISO one additional day to answer allows the CAISO to better address the inaccuracies raised in comments and protests, thus providing the Commission with a more complete and accurate record on which to consider the CAISO's April 11 Tariff Amendment.

III. Answer

A. The Proposed CRR Auction Enhancements Represent a Reasonable Balancing of the Interests of Load Serving Entities and Other Market Participants

A number of commenters oppose the proposal to limit allowable source and sink pairs in the CRR auction, arguing that the Commission should require the CAISO to continue to allow market participants to bid for any potential combination of CRR sources and sinks in order for the CRR auctions to remain

⁷ See, e.g., *Equitrans, L.P.*, 134 FERC ¶ 61,250 at P 6 (2011); *Cal. Indep. Sys. Operator Corp.*, 132 FERC ¶ 61,023 at P 16 (2010); *Xcel Energy Servs., Inc.*, 124 FERC ¶ 61,011 at P 20 (2008).

just and reasonable.⁸ These arguments attempt to inflate the benefits of certain types of CRR bids without considering the balance of interests that is at the heart of the CAISO's rules for the release of CRRs. The CAISO constructed its CRR release processes to balance the need of providing load-serving entities with adequate access to financial transmission rights to support the delivery of energy to end-use customers with the benefits of providing other users of the CAISO grid fair and open access to the grid, consistent with the Commission's open access policies. To maintain this balance, the released CRRs must not impose excessive costs on load serving entities and ultimately end-use customers. The CAISO's proposals in this proceeding do not deviate from these principles. Rather, they reinforce these principles while addressing an issue that results in imposing significant costs on load serving entities.

In regions that do not have organized wholesale markets, the need to provide load-serving entities with rights to support the delivery of energy to end-use customers is satisfied through physical transmission rights, either network service or point-to-point transmission service. In independent system operator (ISO) and regional transmission organization (RTO) regions with nodal energy markets, however, consistent with Section 217 (b)(2) of the Federal Power Act ("FPA"), the Commission recognizes that financial transmission rights such as CRRs address the same need to support the delivery of power to the end-use customers of load serving entities. For example in its rule on *Long-Term Firm*

⁸ See, e.g., WPTF at 2 (claiming that the CAISO's proposal "to impede CRR biddable path flexibility simply limit market participant flexibility").

Transmission Rights in Organized Electricity Markets, the first guideline for long-term financial transmission rights that satisfy Section 217 of the FPA, the Commission states that the purpose of long-term rights is “to allow a load serving entity to obtain a long-term firm transmission right for purposes of hedging congestion charges associated with delivery of power from a long-term power supply arrangement to its load.”⁹ Consistent with these principles, the CAISO’s CRR allocation and auction processes must allow load-serving entities to obtain these hedges under reasonable terms and conditions.

The CAISO and its stakeholders designed CRRs to provide participants the ability to hedge against exposure to the cost of congestion in the CAISO’s day-ahead market, and provided load serving entities priority to such hedges through the allocation process. However, the CAISO and stakeholders did not stop there because it is necessary to allow other entities to purchase financial transmission rights through the auction process so they too can hedge their exposure to day-ahead congestion costs based on their long-term procurement contracts and investment decisions.¹⁰ In an ever-evolving market such as the CAISO’s, providing access to appropriate hedges is crucial to encourage new entry and a competitive market. For example, the ability to obtain hedges for new supply resources with power purchase agreements to serve load, facilitates

⁹ *Long-Term Firm Transmission Rights in Organized Electricity Markets*, Order No. 681, 116 FERC ¶ 61,077 at P 116 (2006).

¹⁰ In this way, CRRs are the financial equivalent of firm transmission. In the next section of this Answer, the CAISO explains how auctioning only CRR delivery pairs as part of the overall CAISO market structure is consistent with making available the physical transmission rights required by Order No. 888 and the Commission’s open access requirements.

new entry. Ensuring that such hedges are available is important, as nodal markets create new congestion costs that can be quite dynamic and at times volatile. Continuing to auction CRRs for delivery source-sink pairs achieves this objective.¹¹

The CAISO is well aware of, and does not dispute, the role CRRs play in providing opportunities for a range of market participants other than load-serving entities to promote a competitive and liquid environment in the CAISO's markets. However, contrary to the claims of some protestors, open access does not require that the CAISO make available financial instruments that go beyond the objective of providing congestion hedges for physical transactions that reflect actual and feasible use of the transmission grid in the day-ahead market.

The CAISO's analyses show that load-serving entities are incurring very high costs due to CRR auction revenue shortfalls. Given the significant ratepayer losses under the current rules, it is entirely reasonable for the CAISO to recalibrate its CRR release processes in a manner expected to reduce such shortfalls. Recognizing the interests of other market participants to obtain congestion hedges does not mean that all market participants should be entitled to speculate with CRRs at any nodal pair on the network, particularly where such speculation has been shown to impose high costs on load serving entities.

¹¹ The need to make congestion hedges available to market participants other than load-serving entities is one reason why the CAISO is concerned about proposals to eliminate the current CRR auction in its entirety and replace it with a system of voluntary counter-parties.

B. The Proposed Limitation on CRR Source and Sink Pairs That Can Be Purchased in the Auction Is Consistent with the Commission's Open Access Principles

Some commenters argue that the CAISO's proposal to limit allowable source and sink pairs in the CRR auction is contrary to the Commission's open access requirements.¹² The Commission should reject these arguments and accept the CAISO's proposal. The Commission's open access principles do not require unlimited and unfettered access to congestion rights for purposes of developing costly speculative instruments. Open access principles exist to ensure market participants have equal and fair access to using the transmission grid for purposes of delivering power. The Commission clearly articulated the primary objective of open access in the very first sentence of the Preamble to Order No. 888 where it stated: "Today the Commission issues three final, interrelated rules designed to remove impediments to competition in the wholesale bulk power marketplace and *to bring more efficient, lower cost power to the Nation's electricity consumers.*"¹³ Although the Commission's open access requirements have evolved over the years, nothing has altered this fundamental and clearly articulated objective of open access.

¹² See, e.g., the comments of DC Energy/Vitol and Appian Way/Mercuria Energy.

¹³ *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities*, Order No. 888, 61 FR 21540 at 21541 (May 10, 1996), FERC Stats. & Regs. ¶ 31,036 (1996) (emphasis added) ("Order No. 888"), *order on reh'g*, Order No. 888-A, 62 FR 12274 (May 14, 1997), FERC Stats. & Regs. ¶ 31,048, *order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶ 61,046 (1998), *aff'd in relevant part sub nom. Transmission Access Policy Study Group v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom. N.Y. v. FERC*, 535 U.S. 1 (2002).

Order No. 888 requires transmission providers to offer transmission services that either allow for delivery of power to network load or that allow for the delivery of power between specified points of receipt and points of delivery: “The Final Rule requires public utilities to file a single open access tariff that offers both network, load-based service and point-to-point, contract-based service.”¹⁴ The CAISO’s nodal market structure provides customers with comparable open access service by allowing market participants to deliver power over the regional transmission grid via the day-ahead and real-time markets.¹⁵ The CAISO’s CRR allocation and auction processes, as revised by the April 11 Tariff Amendment, are only one component of the open access made available through the CAISO’s markets which allows market participants to hedge the congestion costs associated with delivering power to load or to specified points of delivery. The CAISO proposes to limit eligible auction locations to those related to delivery of power because those are precisely the types of CRRs needed to hedge the physical delivery of electricity financially to customers in the CAISO’s footprint.

DC Energy/Vitol argue that the proposed modifications to the source and sink pairs available through the CRR auctions would prevent the CAISO from offering financial transmission rights comparable to network service required by

¹⁴ “The Final Rule requires public utilities to file a single open access tariff that offers both network, load-based service and point-to-point, contract-based service.” Order No. 888 at 21541.

¹⁵ Scheduling coordinators pay for the embedded costs of the CAISO controlled grid through the transmission access charge. These charges are comparable to service charges customers pay for transmission service under the *pro forma* open access transmission tariff.

Order No. 888.¹⁶ Appian Way/Mercuria Energy, on the other hand, argue that the CAISO's proposal "essentially, proposes to do away" with point-to-point transmission service in the CAISO.¹⁷ Both arguments are incorrect. The argument that the CAISO would no longer offer CRRs comparable to Order No. 888 network service is based on an inaccurate analogy. First, as noted above, it is the CAISO's overall market structure that provides open access service comparable to the services under Order No. 888, not just CRRs alone. Nevertheless, if one were to attempt to analogize OATT service to CRRs alone, the analogy to network service to CRRs is flawed. Network service under the Commission's *pro forma* open access transmission tariff is for the purpose of making service available to network load. As such, network service is more analogous to the CAISO's allocation of CRRs to load-serving entities. Just as any network load is eligible for network service under the *pro forma* open access transmission tariff, any entity that assumes load-serving obligations is eligible to receive CRRs through the CAISO's CRR allocation process. That CRR allocation process is unchanged by the CAISO's proposal.

DC Energy/Vitol argue that the CAISO's proposal is contrary to open access because it would restrict access "to only those transmission paths currently used by load-serving entities."¹⁸ This also is incorrect. The proposal does not restrict bids to those paths currently used by existing load-serving entities. Rather, all market participants, including generators and marketers, will

¹⁶ DC Energy/Vitol at 6-10.

¹⁷ Appian Way/Mercuria Energy at 6.

¹⁸ DC Energy/Vitol at 10.

be able to choose CRRs that hedge transactions at any of the load-aggregation points, trading hubs, or interties for exports, the point of receipt locations on the CAISO system and at any new source/sink combinations (which may consist of paths not currently used) so long as they are the eligible path combinations. CRR auction participants would also have access to more CRR paths than participants have in the CRR allocation process. The CRR auction will also allow CRRs that sink at trading hubs and ties that are not available in the allocation.

Auctioned CRRs are more analogous to point-to-point transmission service required under Order No. 888. If the Commission were to analogize the CAISO's CRRs to OATT service at all, the auctioned delivery CRR source-sink pairs that remain under the CAISO's proposal serve the same purpose as point-to-point transmission, facilitating the delivery of power supply (points of delivery) to load (points of receipt). Point-to-point transmission service under the Commission's *pro forma* open access transmission tariff is "scheduled between specified Points of Receipt and Delivery."¹⁹ As the Commission has recognized, "[s]ource and sink information for point-to-point transmission service describes the location of the generators and the ultimate load in an electric system sense."²⁰

The delivery CRRs that are allowable source and sink pairs under the CAISO's proposal are comparable to point-to-point transmission service under Order No. 888 in that they hedge the costs of congestion associated with

¹⁹ *Pro Forma OATT*, Section 1.14 (Definition of Firm Point-to-Point Transmission Service).

²⁰ *Order on OASIS-Related Issues*, 83 FERC ¶ 61,360, at 62,453 n.14 (1998).

transactions between a point of delivery (such as a generator or intertie location) and a point of receipt (the ultimate load or trading hub). Conversely, the non-delivery CRRs, which would no longer be allowable, involve source and sink pairs that do not correspond to point-to-point transmission service between points of delivery and points of receipt. Delivery CRRs are also consistent with the Commission's regulations governing long-term firm transmission rights, which indicate that such rights "should specify a source (injection node or nodes) and sink (withdrawal node or nodes)."²¹

Appian Way/Mercuria Energy argue that the CAISO "misunderstands how competitive market participants use CRRs as Point to Point transmission service to manage congestion risk."²² Critically, however, they fail to explain how CRRs that do not go from supply/injection nodes to load/withdrawal nodes are equivalent to firm point-to-point service. As explained above, the non-delivery pairs are not analogous to firm point-to-point service under the *pro forma* open access transmission tariff.

DC Energy/Vitol contend that the removal of supply-to-supply type CRR positions in the auction will impede open access because allowing "granular CRRs" between all network locations without regard to delivery and non-delivery paths supports the "fullest possible use of the transmission system."²³ First, the suggestion that the CAISO's proposal alters the granularity of CRRs is incorrect. CRRs remain available for the same locations, including individual pricing

²¹ 18 C.F.R § 42.1(d)(1); see *also* Order No. 681 at P 108.

²² Appian Way/Mercuria Energy at 12.

²³ DC Energy/Vitol at 7.

locations for supply, intertie point locations, aggregated trading hubs and load aggregated points. The CAISO's proposal will instead allow CRR auction bids only for certain combinations of these granular locations.

Furthermore, although allowing market participants to bid for CRRs between all network locations without regard to delivery and non-delivery paths provides them the opportunity to obtain CRRs at a greater number of locations, it could also result in the CAISO issuing CRRs that would never correspond to feasible energy flows that can be scheduled in the CAISO's day-ahead market. As DC Energy/Vitol witness Dr. Stevens acknowledges, restricting CRRs to delivery pairs results in limiting the amount of CRRs the CAISO issues because the CRRs would be limited by the most limiting constraint between the CRR's injection and withdrawal point.²⁴ However, there is nothing wrong with such an outcome because this is exactly what happens in the day-ahead market, which limits power flows to the most binding constraint between supply and load. Allowing CRRs only on delivery paths will allow auction participants to purchase CRRs corresponding to all of the available transmission capacity that the day-ahead markets can use to schedule power deliveries.

The CAISO understands that having access to a larger number of source and sink pairs in the CRR auction can result in the release of more CRRs that may provide greater payouts to successful bidders. Allowing market participants to obtain CRRs that do not go from supply to load in order to facilitate such payouts should not come at the expense of load serving entities and ultimately

²⁴ DC Energy/Vitol, Stevens Aff. at 6.

ratepayers. Although, DC Energy/Vitol show that the CAISO proposal will limit the number and locations at which they can obtain CRRs, they have not demonstrated how having only the option to bid for CRRs at delivery-based source and sink pairs impedes them from having full access to CRRs used for supply delivery hedges.

Certain commenters suggest that the speculative activity associated with non-delivery CRRs affords a benefit to the market, in that it provides the opportunity to spread the risk of congestion and alternatives.²⁵ These are purely hypothetical arguments unsupported by concrete evidence showing how this actually materializes as a benefit. In contrast, the CAISO's analyses show that even if such speculative behavior with non-delivery CRRs is present in the marketplace, any benefits of such bidding behavior are significantly outweighed by the low price at which such instruments are sold at auction relative to the payouts they receive. In other words, the CAISO's studies show that non-delivery CRRs produce a persistent gap between auction revenues and CRR payouts based on day-ahead congestion prices.²⁶ This is evidence that any speculative behavior with non-delivery CRRs in the current market has not resulted in better pricing of transmission constraints in the CRR auction to help the CRR auction prices for such constraints converge to their price in the day-ahead market.

²⁵ See, e.g., NRG Companies at 10-11.

²⁶ See, e.g., CRR Auction Analysis Report at 49. The CRR Auction Analysis Report was attached as Appendix I to the Bautista Alderete Declaration in the April 11 Tariff Amendment, and is also available at <http://www.caiso.com/Documents/CRRAuctionAnalysisReport.pdf>.

Open access does not require selling CRRs through the auction at a large discount relative to their worth. Order No. 888 and the Commission's open access policies also do not require the CAISO to offer CRRs that are designed to create flows on constraints that the CRR buyer knows will not be enforced or modeled in the auction; or as will be described in more detail below, create larger flows on binding constraints in the day-ahead market than they have in the auction.

WPTF suggests that, under the CAISO's proposal, low demand for certain CRR paths is being used to justify "not making that capacity available in the auction."²⁷ This claim is inaccurate. Under the CAISO's proposal, all transmission capacity for which it is feasible to schedule energy flows in the day-ahead market remains available.

As part of their "open access" arguments, DC Energy/Vitol argue that the CAISO's proposal is inconsistent with section 217 of the FPA, claiming that, under section 217(d), "if transmission rights not used to meet a service obligation are made available, they should be made available to non-load-serving entities."²⁸ This mischaracterizes the statute. Section 217(d) does not mandate such a release of financial transmission rights; rather, it simply enables the Commission to require that such rights be made available to other entities. Indeed, in Order No. 681, the Commission found that:

The overall thrust of new section 217 of the FPA, read in its entirety, is the protection of transmission rights used to satisfy

²⁷ WPTF, Wolfe Testimony at 26.

²⁸ DC Energy/Vitol at 31.

native load service obligations. . . . we believe that section 217 of the FPA provides a general “due” preference for load serving entities to obtain long-term firm transmission service.²⁹

Nothing in the statute suggests that the Commission must make financial rights available for financial speculation rather than hedging congestion costs associated with the physical use of the grid, particularly where such speculation may impose excessive costs on the customers of load-serving entities. The CAISO is not aware of any Commission order directing ISOs and RTOs to make available financial transmission rights that are not used to meet a service obligation.

DC Energy/Vitol also argues that the CAISO’s proposal is somehow inconsistent with the Commission’s recent finding in Order No. 841 that an electric storage resource’s wholesale energy purchases should take place at the applicable nodal price, and not a zonal price.³⁰ This argument is meritless. The CAISO proposal maintains the availability of source-sink CRRs and will provide market participants with ample opportunities to obtain hedges for congestion associated with any transaction involving electric storage. Where such storage is modeled as supply, CRR auction participants will be able to obtain CRRs from the supply node to an eligible sink location.

²⁹ Order No. 681 at P 320 (footnotes omitted).

³⁰ DC Energy/Vitol at 28, *citing Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 841, 162 FERC ¶ 61,127 at P 296 (2018).

C. Limiting the Source and Sink Pairs to Delivery CRRs is Consistent with the “Competitiveness” of the CRR Auction

Commenters and protestors offer misleading arguments based on the role of the “competitiveness” of the CRR auction and the issues the CAISO seeks to address in this proceeding.³¹ The CAISO’s proposal is not intended to address any concern about the ability of the bidders in the CRR auction to exercise traditional market power. Rather, the CAISO seeks to address the fact that, due to the numerous source/sink options currently available in the auction, market participants can be the sole bidder for many non-delivery CRR source-sink pairs, consequently purchasing these CRRs for discounted prices and potentially receiving large payouts for them that ultimately impose excessive costs on load serving entities.

DC Energy/Vitol’s assertion of the “competitiveness” of the CRR auction based on their Herfindahl-Hirschman Index (“HHI”) analysis of the CRR auctions is both misleading and irrelevant.³² DC Energy/Vitol’s witness Dr. Stevens claims that their HHI analysis shows that excluding source/sink combinations that are unrelated to delivery paths will decrease competitiveness as related to the bidders in the CRR auctions.³³ The CAISO agrees that the constraints Dr. Stevens chooses in his analysis are competitive. The purpose of the CAISO’s proposed change is to increase the competitiveness of non-competitive locations for which there is only one bidder. Dr. Stevens has not analyzed every

³¹ See, e.g., WPTF at 9-10.

³² DC Energy/Vitol, Stevens Aff. at 31-33.

³³ *Id.*

constraint. There are many constraints that are likely not competitive and some that are not even enforced in the auction so they cannot be competitive. For those constraints do not bind in the auction, the number of participants or how much each participant contributes to the flow is also irrelevant because there is no value associated with the constraint since transmission is not scarce. The CRR is sold at a low price, but then the constraints may bind in the day-ahead market.

Many of the issues the CAISO has identified in the CRR auctions result from the fact that there are currently an extremely large number of potential source and sink pairs at which parties can bid, the bulk of which do not correspond to physical supply deliveries. Regardless of how many market participants there are in the market, making available such large permutations of non-delivery based CRRs results in the inevitable release of CRRs at locations that are unrelated to the transactions participants take in the day-ahead market. Under these circumstances, CRR source/sink pairs are likely auctioned at a low price relative to subsequent payouts of congestion revenue for these CRRs in the day-ahead market.

DC Energy/Vitol also argue that, “[t]he most efficient hedge for a relevant network constraint often would not qualify as a delivery path under the CAISO’s proposals.”³⁴ A review of their comments, however, reveals that the types of “efficient hedges” they refer to are essentially shorthand for a CRR with little or no value in hedging physical transactions that can likely be purchased at low

³⁴ *Id.* at 11.

price relative to the expected payout. This happens because of two conditions: (1) these CRRs often benefit from flows in the day-ahead market on constraints that are not modeled in the CRR auction but are then subsequently modeled in the day-ahead market, or (2) these CRRs can receive inflated CRR payouts relative to their auction price because CRRs are not payed-out based on auction flows on constraints but rather on day-ahead market flows on constraints. Consequently, non-delivery pairs CRRs can earn inflated CRR payouts on constraints impacted by outages. This is described in more detail below. In either event, these non-delivery pairs are not directly tied to physical delivery of supply. Removing such CRR source-sink pairs will not prevent the hedging of congestion costs.

Although the CAISO strives to align the CRR model to the day-ahead market model, the two will always be misaligned to some degree because they are created at different times. Therefore, while a constraint may not be modeled in the CRR auction it may be modeled in the day-ahead market, causing CRRs to payout more than would be anticipated under the auction CRR model. The costs of such payouts are borne by load serving entities. Non-delivery pair CRRs can target these opportunities at very low cost in the auction because they can submit bids involving paths that do not flow over a constraint enforced in the auction.

Finally, as explained by Dr. Scott Harvey of the CAISO's Market Surveillance Committee, CRRs over non-delivery paths can earn inflated CRR payouts because CRRs are not paid-out based on auction flows on constraints

but rather on day-ahead market flows on constraints.³⁵ Because shift factors (referred to as “Power Transfer Distribution Factors” in the affidavit of DC Energy/Vitol witness Stevens) are different when a particular line is in or out of service, non-delivery pair CRRs can earn inflated payments on constraints impacted by transmission outages.

This results in auction participants being able to purchase non-delivery path CRRs that the auction model will model as having a low contribution to flows over a given constraint, hence selling at a low price, but will have much higher flows on the constraint when the CAISO subsequently models a line as out of service in the day-ahead market. This results in non-delivery pair CRRs receiving higher payouts in the day-ahead market than it would receive based on the conditions modeled in the auction.

In his examples, Dr. Harvey shows a situation in which a line is modeled as in-service in the CRR auction but modeled as out in the day-ahead market. Under these conditions he illustrates a delivery path CRR selling for \$36/MWh in the auction and having a payout of \$35/MWh. He also illustrates how under the exact same conditions, a non-delivery path CRR would sell for \$9/MWh in the CRR auction and have a payout of \$27.50/MWh for the same constraint. The ratio of payout to purchase price is more than four times greater than for the delivery path CRR. Dr. Harvey explains this occurs because non-delivery path CRRs can avoid constraints that are priced into the CRR auction but then receive

³⁵ See *CRR Revenue Adequacy, Auction Values, and Settlement Rules*, April 4, 2018, at: <http://www.caiso.com/Documents/Presentation-CongestionRevenueRightsAuctionEfficiency-HarveyApr52018.pdf>

payouts based on these constraints if there are outages. In Dr. Harvey's also illustrates how a similar situation can also occur when an outage *is* modeled in the auction, but is *not* modeled in the day-ahead market for the entire term of the CRR. In this case, a counterflow CRR would have to pay much less in the CRR auction than it would have to pay based on day-ahead market congestion.

These examples illustrate that providing the opportunity for such non-delivery pairs, inevitably increases auction inefficiencies, which in turn increase the cost of service for load serving entities.

Eliminating non-delivery pairs will reduce these opportunities and will increase the number of bids on CRR delivery source/sink pairs, raising prices in CRR auctions and increasing the efficiency of the CRR auction. Even if the CRRs were fully revenue adequate based on the revenue collected in the day-ahead market, increasing the auction efficiency and ensuring CRRs are valued correctly contributes to the CAISO's ability to reduce load serving entities' costs of serving end-use customers on the CAISO grid. The CAISO includes auction revenues in the overall balancing account used to fund CRR payouts. If CRRs are totally funded through the day-ahead market congestion revenue alone, load serving entities are allocated the surplus in the balancing account, thereby reducing their overall cost of serving load. Therefore, selling CRRs at a discount in the CRR auction reduces the CAISO's ability to decrease the overall cost of serving load on its system.

Commenters also argue that the CRR auction is a “forward price curve” in the CAISO’s markets.³⁶ It appears as though these commenters attempt to argue that the CRR auction prices provide the benefit of identifying sensitivities in the system because the CRR auction is analogous to a much larger forward energy market in advance of the day-ahead and real-time markets. Although the CAISO does not dispute that parties may use such prices for such purposes, protestors of the CAISO’s proposal overlook the very important fact that the current CRR auction is not producing a reliable forward price to consider. Well-functioning CRR auctions should reflect market participants’ expectations of congestion price exposure in the day-ahead market. Although, day-ahead prices reflect numerous factors not considered in the CRR auction, such as demand conditions and the variable costs of generation resources, the CAISO would expect auction participants are considering the congestion exposure they expect to face in the day-ahead market. However, The CAISO studies indicate that including non-delivery CRR pairs appears to cause CRR auction prices to diverge from day-ahead market prices further because market participants are not necessarily hedging expected prices but may instead be speculation, designed to profit on the differences between the CRR auction and day-ahead market models. The CAISO’s proposal to restrict eligible locations in the CRR auction to those that align with delivery of power will in fact produce better forward prices than the current auctions are producing. Paradoxically, the same

³⁶ See FMC at 21 (“CRRs are essentially the only forward price curve in the CAISO market, and as such, they set the relative value of project locations on the CAISO grid.”).

protestors that claim that CRR auction prices serve as “forward price curves” also believe that the current prices are the right prices even though they have been shown to be chronically undervalued relative to the day-ahead market. The CRR auction prices should convergence towards the day-ahead market prices, and hard data on the performance of the market shows that this is not happening.

DC Energy/Vitol argue that “[g]ranular CRRs and the resulting market-based forward prices for each constraint in the transmission network are vital for efficiently pinpointing the best locations for new generation or transmission upgrades.”³⁷ This is inaccurate. The CAISO does not use auctioned CRRs to determine where to develop transmission upgrades. Rather, day-ahead market congestion costs are inputs into the studies used in the CAISO transmission planning process to identify economic needs for new transmission facilities. Such congestion costs occur whether or not particular CRRs are released in the CRR allocation and auction process. CRRs serve the very different function of providing a hedge for such congestion costs.

DC Energy/Vitol argue that the CAISO’s proposal will require some market participants to replace one non-delivery CRR with multiple allowed CRRs. This, they contend, would increase transaction costs.³⁸ The CAISO notes that, while there are fees associated with bids, the fees are so miniscule that they will not add any significant transaction costs on market participants.³⁹ In fact, if transactional costs were so high, the current CAISO auctions would not observe

³⁷ DC Energy/Vitol at 27.

³⁸ DC Energy/Vitol at 34.

³⁹ *Tariff section 11.22.6.*

the thousands of bids currently offered in the market. In addition, the costs related to increasing the number of transactions rise only with respect to *limiting market participants' opportunity for pure speculation*. For example, a hypothetical market participant may make 100 bids at 100 different locations under the current CRR auction rules. The CAISO's analyses suggest that, on average, however, the vast majority of those bids are for speculation rather than to hedge congestion costs for physical supply transactions. Even if additional CRRs were needed to hedge certain physical transactions, in the aggregate, far fewer CRR bids will be submitted. As such, removing purely speculative opportunities will not impose a burden on participants who are generally seeking to hedge congestion related to physical delivery.

D. The Record in This Proceeding Supports the Proposed Tariff Revisions

Some commenters attempt to create the appearance of factual disputes relating to eliminating delivery source/sink pairs from the CRR auction processes. As explained below, the analyses and testimony that those commenters offer have fundamental flaws. The Commission has an ample factual record, including the declaration from Dr. Bautista Alderete, the opinion of the Market Surveillance Committee, the CAISO's additional analyses provided with the April 11 Tariff Amendment, and material provided by some intervenors, to support the acceptance of the proposed CRR auction enhancements.

1. The Analyses Undertaken by the CAISO Demonstrate That These Proposals Are Reasonable

The majority of the CAISO's analyses took the form of a detailed evaluation of actual CRR auction results. For example, Dr. Bautista Alderete notes that in 2017, the net auction revenue shortfall for CRRs was \$100 million, suggesting a revenue shortfall of 42 cents per every dollar paid out for auctioned CRRs.⁴⁰ Over the course of the entire study period, CRRs were purchased at auction for an average of 63 cents on the dollar, and market participants purchased CRRs at auction for a total average cost of \$99.5 million per year less than the amount that was eventually paid out on those CRRs.⁴¹ Moreover, about 80 percent of the CAISO's auction revenue shortfalls were the result of non-delivery CRRs.⁴² These analyses, along with others referenced in the CAISO's transmittal letter and the declaration of Dr. Bautista Alderete, are sufficient on their own to support the CAISO's proposal to remove non-delivery source/sink pairs from the CRR auction processes.

Some protestors focus on the CAISO's analysis of 2018 Season 3 in which the CAISO re-ran the CRR auction previously conducted but without non-delivery pairs. Protestors argue that the CAISO's analysis shows that the CAISO's proposal will have various adverse consequences such as a reduction in competition on allowable CRR source-sink pairs.⁴³ These arguments

⁴⁰ Declaration of Guillermo Bautista Alderete, Director, Market Analysis and Forecasting at 10 (Bautista Alderete Declaration). The Bautista Alderete Declaration was included as Attachment C to the April 11 Tariff Amendment.

⁴¹ April 11 Tariff Amendment Transmittal Letter at 11.

⁴² Bautista Alderete Declaration at 12.

⁴³ See, e.g., DC Energy/Vitol at 21-25.

mischaracterize the CAISO's analyses. The CAISO was clear that the 2018 Season 3 re-run was not intended to be an absolute prediction of future results because it did not include the effects of future changes in bidding behavior. Importantly, it was instead a counter-factual exercise that highlights the impact non-delivery CRR pairs have had in prior auctions. The CAISO acknowledged in its transmittal letter that "the after-the-fact simulated auction could not reflect the actual conditions that will exist if market participants are unable to submit non-delivery CRR bids[,]"⁴⁴ and the 2018 Season 3 re-run did not include any attempt to change bids to reflect the change in auction rules because attempts to simulate future behavior would be futile.⁴⁵

The purpose of the CAISO's counter-factual comparison was to address stakeholder questions about the aggregate quantity of delivery path CRRs or CRRs sinking at load aggregation points that are enabled by non-delivery path CRRs. The concern was that perhaps non-delivery pairs were enabling more delivery-pair CRRs in aggregate to clear. It was an important question to answer because it would be problematic if market participants did not have access to the delivery CRRs needed to serve load. The CAISO understood that, from a theoretical standpoint, it would be unreasonable to believe that the 65 gigawatts ("GW") of non-delivery path CRRs observed in the actual 2018 Season 3 auction were providing counter-flow to clear any meaningful amount of delivery path CRR

⁴⁴ April 11 Tariff Amendment Transmittal Letter at 15.

⁴⁵ See, e.g., *PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,139 at P 95 (2018) ("We are not persuaded by studies presented by protestors . . . as we find that the studies rely significantly on assumptions about market participants' future behavior. Therefore, the results are speculative and not a reliable predictor of market participant behavior.").

capacity. This is because any counter-flows cleared become direct revenue transfers in the day-ahead market from counter-flow party to prevailing-flow party and the CAISO previously observed in its comprehensive analysis that in the aggregate, there exists a large revenue deficiency.

The CAISO's counter-factual analysis sought to determine whether non-delivery CRRs in the aggregate enabled more delivery path CRRs to clear in the auction. By comparing the counter-factual auction results (without the effects of non-delivery pair bids) to the actual auction results (with the effects of non-delivery pair bids), the analysis showed that delivery pairs in the aggregate did not decrease in the absence of the non-delivery pairs, which led the CAISO to conclude that the non-delivery pairs did not enable more delivery pairs to clear in the auction. This observation would remain accurate whether the results show a 5 GW difference (as shown in the analysis), a 3.7 GW difference (as purported by Dr. Stevens),⁴⁶ or even a zero MW difference.

Protesters suggest that possibly fewer delivery path CRRs clear without non-delivery path CRR bids based on what they suggest are "glaring data issues" with the CAISO's analysis⁴⁷. There are no such "glaring data issues" because the CAISO did not rush its analysis. There are two clarifications the CAISO would make based on Dr. Stevens' comments.

First, Dr. Stevens notes that 13,168 MW of CRRs sinking at load aggregation points were awarded in the simulated auction and 18,325 MW of

⁴⁶ DC Energy/Vitol, Stevens Aff. at 11-12.

⁴⁷ *Id.*

delivery-pair CRRs were awarded in the actual auction.⁴⁸ The CAISO clarifies that in its simulation, the CAISO did not include CRRs sinking at “participating load” locations. If participating load is included, its results would change as follows:

1. In its draft final proposal, the CAISO reported 12,700 MW of CRRs that were sinking at load aggregation points were awarded in the simulated auction.⁴⁹ This value should be 13,168 MW, as observed by Dr. Stevens, which includes the participating load.⁵⁰
2. In its draft final proposal, the CAISO reported 8,900 MW of CRRs sinking at load aggregation points awarded in the actual auction.⁵¹ This value should be 9,207 MW.
3. In its draft final proposal, the CAISO reported 17,000 MW of delivery-pair CRRs awarded in the actual auction.⁵² This value should be 17,331 MW.

These corrections are notable and the CAISO appreciates Dr. Stevens’ observations, but they do not affect the CAISO’s conclusion that the non-delivery pair CRRs did not facilitate a greater number of delivery CRRs. A large difference still remains between Dr. Stevens’ observed 18,325 MW and the CAISO’s 17,331 MW. This difference is likely to be due to the fact Dr. Stevens

⁴⁸ *Id.*

⁴⁹ Draft Final Proposal Addendum at 31. The Draft Final Proposal Addendum was provided as Attachment D to the April 11 Tariff Amendment. It also available at <http://www.caiso.com/Documents/DraftFinalProposalAddendum-CongestionRevenueRightsAuctionEfficiency-Track1.pdf> .

⁵⁰ See DC Energy/Vitol, Stevens Aff. at 11. When “participating load” sink locations are not included in the summation, the CAISO finds 12,746 MW.

⁵¹ Draft Final Proposal Addendum at 31.

⁵² *Id.*

incorrectly including CRRs that sink at “station power” locations and CRRs sourcing at “price point” locations in his summations, both of which would be invalid under the proposal. “Station power” locations are invalid sink locations because they are exactly adjacent, and therefore equivalent, to generator locations. “Price point” locations were created for and used to accommodate allocated CRRs for existing transmission contracts holders.⁵³

Accounting for the observations above that include participating load, the CAISO finds 17,331 MW of delivery pair CRRs were released in the actual auction instead of its previously reported 17,000 MWs. This is consistent with the CAISO’s prior finding that no-fewer delivery pairs are released than the actual auction in which the non-delivery pairs were included, and also further confirms the CAISO’s conclusion that non-delivery CRRs did not facilitate a greater number of delivery pair CRRs.

Given that the same underlying network capacity is made available, if close to the same quantity of delivery path CRRs needed to hedge supply delivery obligations clears the auction with or without the non-delivery path CRR bids, it is unreasonable to continue to offer non-delivery CRR pairs in the auction at the expense of an enormous potential future payout obligation to be borne by load serving entities (under these circumstances, 65 GW).

Second, Dr. Stevens raises an issue with the CAISO’s analysis. Dr. Stevens notes that, for a select set of binding constraints, CAISO’s 2018 Season

⁵³ The CAISO presented sourcing at pricing points as invalid throughout the stakeholder process. See page 7 of the CAISO presentation on its draft final proposal on February 13, 2018 stakeholder meeting. <http://www.aiso.com/Documents/Presentation-CongestionRevenueRightsAuctionEfficiency-DraftFinalProposalTrack1.pdf>

3 simulation cleared bids for more underlying network capacity for which bids cleared in the actual auction. Dr. Stevens concludes that the CAISO must have “adjusted the set of capacity assumptions on the network elements associated with these constraints or altered the network topology in re-doing its Hypothetical Auction analysis”⁵⁴ The CAISO made no such adjustments, but there was a software limitation that inadvertently led to higher flows on some constraints than actually enforced in the simulated auction. When the CAISO first ran the simulation, unbeknownst to the CAISO, the software had a limitation that impacted only the **2018 season 3 simulated auction in the on-peak time-of-use period**. The CAISO conducts its analyses in a study environment that is separate from its production systems. The CAISO used the same input constraint definitions and the same input model for both the actual auction and the simulated auction. However, the software version used in its study environment only supported solutions with up to 199 **binding** constraints inconsistent with its production software, which can support solutions with many more **binding** constraints. The CAISO observed 199 binding constraints in the solution for the on-peak time-of-use period for the 2018 Season 3 simulated auction, which indicated that this particular period may have been impacted. While this finding is consistent with Dr. Stevens’ observation, it is not consistent with his purported cause. The CAISO did not adjust the set of capacity assumptions on the network elements or alter the network topology in running its simulated counter-factual auction. The CAISO reiterates that only the on-peak

⁵⁴ DC Energy/Vitol, Stevens Aff. at 23.

time-of-use period in the 2018 Season 3 simulated auction was impacted by this software limitation, and no other analysis was affected.

After finding and correcting this software limitation, the CAISO re-ran the simulated counter-factual auction for the on-peak time-of-use period for 2018 Season 3, which resulted in the following changes to its previously reported findings:

1. While 9,207 MW of CRRs sinking at load aggregation points clear in the actual auction, 9,801 MW of CRRs sinking at load aggregation points clear in the simulation when non-delivery path bids are removed (rather than the previously reported 12,700 MW clearing in the simulation). This still indicates that non-delivery path bids did not enable more CRR to clear to load aggregation points.
2. While 17,331 MW of delivery path CRRs clear in the actual auction, 18,488 MW of delivery path CRRs clear when non-delivery path bids are removed (rather than the previously reported 22,036 MW clearing in the simulation). This still indicates that non-delivery path bids did not enable more delivery path CRRs to clear.
3. When the CAISO removed non-delivery pair bids, net auction revenues increased from \$113/MW to \$174/MW.

These re-run analyses continue to indicate that allowing non-delivery path bids CRRs prevented more CRRs sinking at load aggregation points to clear the auction. Moreover, in aggregate, non-delivery path transactions did not place

meaningful competitive flows on constraints for which they compete with delivery pair transactions.

2. Protestors' Analyses of the 2018 Season 3 Simulation and Related Conclusions of Potential Outcomes are Fundamentally Flawed

Dr. Stevens' analysis of the outcomes of the CAISO's 2018 Season 3 simulation versus the actual 2018 Season 3 auction is flawed because he does not consider the fact that bidding behavior will change when the pool of available CRR source-sink pairs is limited. Based on Dr. Stevens' analysis of the CAISO's simulation and actual auction results, DC Energy/Vitol assert that removing non-delivery related CRRs will increase auction revenue shortfalls.⁵⁵ This conclusion is not supported by the studies used in Dr. Stevens' analysis because the actual outcome with actual bids would reflect different bidding behavior that would also impact the outcomes of the auction.

Similarly, pointing to the results of the CAISO's simulation, DC Energy/Vitol argue that for 2018 Season 3 removal of non-delivery paths causes CRR prices to increase from \$113 to \$147 but auction revenue decreased because cleared volume decreased by 75% while prices only increased by 30%.⁵⁶ Although the CAISO does not dispute that its simulation yielded that result, is not an appropriate conclusion for similar reasons outlined above. The inability to model the changed bidding behavior prohibits one from drawing any

⁵⁵ DC Energy/Vitol at 18.

⁵⁶ *Id.* at 17-18.

conclusions on what auction revenue might look had the CAISO reran the auction with the new bids in place.

The CAISO recognized this limitation in its own simulation and indicated that the simulation should be used with caution because changes in future bidding behavior cannot be calculated with certainty.⁵⁷ The simulation can only be used to examine the impact non-delivery pair bids had on actual past auction results. Therefore, it is fundamentally flawed to conclude “potential outcomes”⁵⁸ based on an auction re-run without non-delivery pairs that does not include the changed behavior.

It is reasonable to infer, however, that market participants **will** change their bidding based on the proposed source/sink pair changes.⁵⁹ Market participants will likely react in a rational manner to the changes in the CRR rules. If non-delivery pairs are eliminated, it would stand to reason that market participants would then bid on the allowable source and sink pairs to hedge actual delivery congestion. Those participants who do not adjust their bidding behavior would be limited to those whose aim was only auction speculation. This would mean that bids redirected to the eligible source and sink pairs would likely increase both prices and revenues cleared in the auction.

DC Energy/Vitol witness Dr. Stevens attempts to use the simulated auction results to support the claim that changing the market design **will not**

⁵⁷ April 11 Tariff Amendment Transmittal Letter at 15.

⁵⁸ DC Energy/Vitol, Stevens Aff. at 10.

⁵⁹ See *id.* at 15-16.

result in higher auction revenues, liquidity, and competition.⁶⁰ In contrast, the CAISO used the 2018 Season 3 simulation as the basis of a counter-factual analysis to show the specific impact non-delivery path CRRs had on past auctions. Bidding behavior changes would not however, impact the CAISO's conclusions because its purpose was to identify the impact non-delivery pair bidding had on delivery pair CRRs.

Dr. Stevens claims that an expectation of bidding behavior change is “illogical and speculative.”⁶¹ This is misguided. It is both reasonable and rational economic behavior for market participants to continue to seek CRRs under the new rules. Market participants that currently use non-delivery pairs to create hedges for supply delivery will shift bidding to delivery pairs in order to acquire CRRs to mitigate basis risk. Given the high volatility in energy prices in markets based on locational marginal pricing, the CAISO fully expects load-serving entities, generator owners, and marketers to continue to seek CRRs to mitigate basis risk. Likewise, the CAISO anticipates that profit-seeking companies will continue to seek profitable speculative positions under the proposed market design.

For these reasons, the CAISO continues to approach the simulated auction results with caution because they do not simulate a change in bidding behavior.⁶² While the results successfully serve as a counter-factual to

⁶⁰ See, e.g., *id.* at 27 (“[T]he removal of such bids in historical auction re-runs has shown that overall auction revenues declined dramatically.”) (footnote omitted).

⁶¹ *Id.* at 28.

⁶² Bautista Alderete Declaration at 24-25.

determine non-delivery pair paths' impact on previous delivery pair paths clearing and average auction prices in the past, the CAISO understands that the auction revenues, liquidity, and competition found in the simulated auction results cannot represent absolute future results.

The Commission should therefore reject Dr. Stevens' analysis and simulations as fundamentally unsound because they wrongly assume that market participants' CRR auction bidding behavior would remain static after the removal of non-delivery pairs.

3. Protestor Assertions that the CAISO fails to Recognize that Non-Delivery Pairs Offer Market Efficiencies are Unfounded

WPTF claims that some non-delivery CRR pairs proposed to be eliminated have generated an auction revenue surplus, arguing that this shows that the CAISO has misstated the effect of net revenue shortfall of certain CRRs.⁶³ This argument relies on a selective presentation of the CAISO's findings. Ms. Wolfe presents data that certain non-delivery pairs generated auction revenue surplus. It is irrelevant that certain selected pairs may, in some years, generate revenues. What is relevant and most important is that, in the aggregate, non-delivery pairs, especially generator-to-generator pairs, contribute to large auction revenue shortfalls. As Dr. Bautista noted, about 56 percent of all auction revenue shortfalls were the result of CRRs from generator-to-generator locations.⁶⁴ The CAISO does not need to show that every non-delivery pair contributed to auction revenue shortfalls to support the reasonableness its

⁶³ WPTF at 10, Wolfe Testimony at 38-41.

⁶⁴ Bautista Alderete Declaration at 19.

proposal that it restrict non-delivery pairs overall. Instead, the Commission should take into account the clear evidence that non-delivery pairs contribute to large auction revenue shortfalls.

The CAISO also need not show that delivery pairs never contributed to auction revenue shortfalls. Rather, it is sufficient to show the connection between non-delivery pairs and revenue shortfalls. During the study period, non-delivery CRRs resulted in an overall \$280 million shortfall, accounting for over 80 percent of all CRR auction revenue shortfall.⁶⁵ It is evident that non-delivery CRRs and auction revenue shortfalls are connected. As Dr. Bautista Alderete points out, non-delivery CRRs have accounted for over 80 percent of the total auction revenue shortfall. Market participants purchased these CRRs for 38 cents on the dollar, while market participants with CRRs with delivery sources and sinks were purchased for 74 cents on the dollar.⁶⁶

Moreover, contrary to what DC Energy/Vitol suggests,⁶⁷ the CAISO is not drawing some arbitrary line between delivery and non-delivery paths. Instead, the CAISO has developed market rule enhancements that follow logically from the studies showing the link between non-delivery CRRs and significant auction revenue shortfalls as well as from considering the CRR source-sink pairs that are needed to hedge flows that can be feasibly scheduled in the day-ahead markets. As explained in section III.B of this Answer above, the CRR source-sink pairs

⁶⁵ *Id.* \$186 million of this CRR auction shortfall is attributable to generation-to-generation CRRs. April 11 Tariff Amendment Transmittal Letter at 14.

⁶⁶ Bautista Alderete Declaration at 20.

⁶⁷ DC Energy/Vitol at 10-11.

available for bids in the auction under the CAISO's proposal are analogous to point-to-point transmission service required under Order No. 888.

DC Energy/Vitol witness Dr. Stevens suggests that “[t]he vast majority of bids that pinpoint constraints do not arbitrage modeling differences; instead, they converge forward congestion prices incrementally toward day-ahead congestion prices, ensuring more efficient, not less efficient prices in the CAISO's CRR market.”⁶⁸ Dr. Stevens does not provide any data analysis supporting such inference. In contrast, the CAISO provides data on the actual performance of the CAISO markets negating his assertion. Historical data clearly shows that the CRR auction prices are not converging to the day-ahead market prices. Instead, it is more apparent that non-delivery bids target specific differences between the models used in the CRR auction and day-ahead market, persistently undervaluing constraints in the CRR auctions. The CAISO data clearly shows that non-delivery path CRRs have been sold for 38 cents on the dollar over the periods of the CAISO's analysis.

In other cases, protestors disregard actual data based on actual historical outcomes provided by the CAISO to advocate for the *status quo*. For example, DC Energy/Vitol witness Dr. Shanker argues that generator-to-generator CRRs may be used for suppliers to hedge a specific condition where a resource may take an outage.⁶⁹ The CAISO provided statistics showing that this scenario represents, at best, no more than 1.6% of all the non-delivery CRRs in the

⁶⁸ DC Energy/Vitol, Stevens Aff. at 30.

⁶⁹ DC Energy/Vitol, Shanker Aff. at 26.

CAISO auctions. Protestors disregard this factual data. Dr. Shanker then describes other instances where non-delivery CRRs may be used.⁷⁰ Protestors claim that the CAISO has no data to see these trades,⁷¹ but protestors themselves fail to introduce data that supports their purported uses of non-delivery CRRs. If protestors have data or contracts supporting their purported uses of non-delivery CRRs, they have failed to introduce it to the market operator to substantiate their claims throughout the CAISO's stakeholder process, and more importantly, to the Commission and all parties in this proceeding. It is incorrect to claim that when no more than 1.6% of non-delivery pairs are potentially being used for hedging purposes, the remaining 98.4% of non-delivery CRRs are collaterally justified.

Certain protestors suggest that CRR auction revenue deficiencies are primarily driven by risk premiums internalized by the market. For example, Dr. Stevens asserts that a risk premium in the CAISO market is related to minimal transparency regarding future outage scenarios and the fact that the CAISO has dealt with large and unexpected delivery issues.⁷² DC Energy/Vitol suggest a risk premium could be addressed by enforcing more outages and increasing the accuracy and consistency between CRR auction models and actual day-ahead conditions.⁷³ While the CAISO acknowledges that CRR auction pricing may reflect some risk premium, it is unreasonable to believe that risk premiums on

⁷⁰ See *id.*

⁷¹ See, e.g., *id.* at 27-28.

⁷² DC Energy/Vitol, Stevens Aff. at 31.

⁷³ DC Energy/Vitol at 26-27.

CRRs should be 37 cents on the dollar, as they have on average sold for 63 cents per dollar from 2014-2017.⁷⁴ Such a large disparity between CRR auction prices and congestion revenues realized in the day-ahead market cannot be attributed primarily to risk premiums.

4. Contrary to Protestors' Assertions, There is No Evidence that the CAISO's Proposal will Adversely Affect any Market Participants Portfolio

Dr. Stevens introduced Calpine-specific information from the actual and simulated auctions to highlight what he characterizes as a significant negative effect on the portfolios of individual participants. Dr. Stevens argues that there will be a significant reduction in CRRs awarded to Calpine at an aggregated increased cost of \$215,520.⁷⁵ Dr. Stevens implies that Calpine faces reduced hedging opportunities without the help of non-delivery counter-flow. The table Dr. Stevens provides appears to show twice as many CRRs as actually bid for, with half of the records showing 0 MW awarded in the simulated auction.⁷⁶

As a preliminary matter, as discussed above, evaluating simulated auction revenues and prices is improper because the simulated results do not account for changes in bidding behavior. Beyond this improper assumption, there are important clarifications to make regarding the specific information Dr. Stevens introduces.

Dr. Stevens' presentation of the data is misleading because he has broken each CRR pair into two separate records giving the appearance that half of

⁷⁴ April 11 Tariff Amendment Transmittal Letter at 11.

⁷⁵ DC Energy/Vitol, Stevens Aff. at 19.

⁷⁶ *Id.* at 21, Table 1.

Calpine's portfolio did not clear in the simulation. The simplified table presenting the same data provided below shows the impact on Calpine ***if it and all other market participants do not change their bidding behavior***, which as discussed above is an unreasonable assumption.

Contrary to Dr. Stevens' assertion, Calpine does not experience wide-spread declines in awarded capacity. As shown in Table A below, over 75% of the aggregate reduction in CRR awards is attributable to only one of Calpine's CRRs in southern California (See the on-peak CRR from LEBECS_2_UNITS to SP15 trading hub).⁷⁷ The rest of Calpine's CRRs survive with much smaller reductions, ranging from 0% to 33%.⁷⁸ Some receive higher awards.

Dr. Stevens' argument that Calpine would suffer an aggregated increase cost of \$215,520 is misleading.⁷⁹ This suggests that Calpine will ultimately ***pay more money*** for fewer CRRs. But the majority of Calpine's awards in both the actual auction and simulated auction are cleared at negative prices. In the aggregate, in both the actual auction and simulated auction, the CAISO pays Calpine to take the awarded CRRs rather than Calpine paying the CAISO for awarded CRRs. In addition, the observed "aggregated increased cost" is not a negative result. As Dr. Stevens shows, supply delivery hedges are sold at higher prices in the simulated auction. Indeed, the currently low clearing prices are one of the issues the CAISO intends address with this filing.

⁷⁷ 383.696 MW of the total 498.439 MW reduction is attributable to one CRR.

⁷⁸ The actual auction clears 83,666 MW while the simulated auction clears 22,036 MW, a reduction of 74%. Calpine's other CRRs each receive haircuts ranging from 0% to 33%.

⁷⁹ DC Energy/Vitol, Stevens Aff. at 19.

Finally, in Table B the CAISO provides Calpine's corrected awards produced from a simulation lacking the software issues identified in Section III.D.1 of this Answer. The results in Table B show an improvement to Calpine's situation and do not change the CAISO's conclusions.

Table A CRRs awarded to Calpine in the actual auction and the previously reported simulated auction

TIME-OF-USE	SOURCE	SINK	ACTUAL AUCTION AWARD (MW)	SIMULATED AUCTION AWARD (MW)
OFF	POD_ADLIN_1_UNITS-APND	TH_NP15_GEN-APND	12.873	0
OFF	POD_GEYS11_7_UNIT11-APND	TH_NP15_GEN-APND	35.916	23.762
OFF	POD_GEYS12_7_UNIT12-APND	TH_NP15_GEN-APND	39	34.009
OFF	POD_GEYS13_7_UNIT13-APND	TH_NP15_GEN-APND	43.876	37.076
OFF	POD_GEYS14_7_UNIT14-APND	TH_NP15_GEN-APND	38	33.009
OFF	POD_GEYS16_7_UNIT16-APND	TH_NP15_GEN-APND	37	32.009
OFF	POD_GEYS17_7_UNIT17-APND	TH_NP15_GEN-APND	47	39.618
OFF	POD_GEYS18_7_UNIT18-APND	TH_NP15_GEN-APND	36.367	35.376
OFF	POD_GEYS20_7_UNIT20-APND	TH_NP15_GEN-APND	30.959	27.197
OFF	POD_GYS5X6_7_UNITS-APND	TH_NP15_GEN-APND	12.056	21.033
OFF	POD_GYS7X8_7_UNITS-APND	TH_NP15_GEN-APND	40.003	33.604
OFF	POD_SANTFG_7_UNITS-APND	TH_NP15_GEN-APND	49.876	42.515
OFF	POD_SMUDGO_7_UNIT 1-APND	TH_NP15_GEN-APND	28.917	24.477
ON	POD_ADLIN_1_UNITS-APND	TH_NP15_GEN-APND	0.587	0
ON	POD_DELTA_2_PL1X4-APND	TH_NP15_GEN-APND	425.474	401.523
ON	POD_GEYS11_7_UNIT11-APND	TH_NP15_GEN-APND	41.679	39.779
ON	POD_GEYS12_7_UNIT12-APND	TH_NP15_GEN-APND	38.65	37.805
ON	POD_GEYS13_7_UNIT13-APND	TH_NP15_GEN-APND	44	44
ON	POD_GEYS14_7_UNIT14-APND	TH_NP15_GEN-APND	38	37.863
ON	POD_GEYS16_7_UNIT16-APND	TH_NP15_GEN-APND	37	36.863
ON	POD_GEYS17_7_UNIT17-APND	TH_NP15_GEN-APND	47	46.794
ON	POD_GEYS18_7_UNIT18-APND	TH_NP15_GEN-APND	37	37
ON	POD_GEYS20_7_UNIT20-APND	TH_NP15_GEN-APND	31	31
ON	POD_GYS5X6_7_UNITS-APND	TH_NP15_GEN-APND	0	19.102
ON	POD_GYS7X8_7_UNITS-APND	TH_NP15_GEN-APND	33.992	28.105
ON	POD_LEBECS_2_UNITS-APND	TH_SP15_GEN-APND	383.696	0

ON	POD_LMEC_1_PL1X3-APND	TH_NP15_GEN-APND	318.349	286.943
ON	POD_SANTFG_7_UNITS-APND	TH_NP15_GEN-APND	50	50
ON	POD_SMUDGO_7_UNIT 1-APND	TH_NP15_GEN-APND	29	28.369
Total			2,007.27	1,508.831

Table B CRRs awarded to Calpine in the actual auction and the simulated auction with software correction

TIME-OF-USE	SOURCE	SINK	ACTUAL AUCTION AWARD (MW)	SIMULATED AUCTION AWARD (MW)
OFF	POD_ADLIN_1_UNITS-APND	TH_NP15_GEN-APND	12.873	0
OFF	POD_GEYS11_7_UNIT11-APND	TH_NP15_GEN-APND	35.916	23.762
OFF	POD_GEYS12_7_UNIT12-APND	TH_NP15_GEN-APND	39	34.009
OFF	POD_GEYS13_7_UNIT13-APND	TH_NP15_GEN-APND	43.876	37.076
OFF	POD_GEYS14_7_UNIT14-APND	TH_NP15_GEN-APND	38	33.009
OFF	POD_GEYS16_7_UNIT16-APND	TH_NP15_GEN-APND	37	32.009
OFF	POD_GEYS17_7_UNIT17-APND	TH_NP15_GEN-APND	47	39.618
OFF	POD_GEYS18_7_UNIT18-APND	TH_NP15_GEN-APND	36.367	35.376
OFF	POD_GEYS20_7_UNIT20-APND	TH_NP15_GEN-APND	30.959	27.197
OFF	POD_GYS5X6_7_UNITS-APND	TH_NP15_GEN-APND	12.056	21.033
OFF	POD_GYS7X8_7_UNITS-APND	TH_NP15_GEN-APND	40.003	33.604
OFF	POD_SANTFG_7_UNITS-APND	TH_NP15_GEN-APND	49.876	42.515
OFF	POD_SMUDGO_7_UNIT 1-APND	TH_NP15_GEN-APND	28.917	24.477
ON	POD_ADLIN_1_UNITS-APND	TH_NP15_GEN-APND	0.587	0
ON	POD_DELTA_2_PL1X4-APND	TH_NP15_GEN-APND	425.474	393.57
ON	POD_GEYS11_7_UNIT11-APND	TH_NP15_GEN-APND	41.679	32.567
ON	POD_GEYS12_7_UNIT12-APND	TH_NP15_GEN-APND	38.65	38.27
ON	POD_GEYS13_7_UNIT13-APND	TH_NP15_GEN-APND	44	44
ON	POD_GEYS14_7_UNIT14-APND	TH_NP15_GEN-APND	38	38
ON	POD_GEYS16_7_UNIT16-APND	TH_NP15_GEN-APND	37	37
ON	POD_GEYS17_7_UNIT17-APND	TH_NP15_GEN-APND	47	47
ON	POD_GEYS18_7_UNIT18-APND	TH_NP15_GEN-APND	37	37
ON	POD_GEYS20_7_UNIT20-APND	TH_NP15_GEN-APND	31	31
ON	POD_GYS5X6_7_UNITS-APND	TH_NP15_GEN-APND	0	25.615
ON	POD_GYS7X8_7_UNITS-APND	TH_NP15_GEN-APND	33.992	28.045
ON	POD_LEBECS_2_UNITS-APND	TH_SP15_GEN-APND	383.696	292.683
ON	POD_LMEC_1_PL1X3-APND	TH_NP15_GEN-APND	318.349	280.136
ON	POD_SANTFG_7_UNITS-APND	TH_NP15_GEN-APND	50	50
ON	POD_SMUDGO_7_UNIT 1-APND	TH_NP15_GEN-APND	29	28.398

Total	2,007.27	1,786.97
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DC Energy/Vitol's suggestion that the CAISO's 2018 Season 3 simulation data also shows that actual CRR auction revenue shortfall will increase rather than decrease is based on a fundamental misunderstanding of how shortfalls are determined. DC Energy/Vitol state that: "the CAISO's Hypothetical 2018 Summer Auction generated less total revenue while entitling collective CRR holders to the same total congestion revenue, **greatly increasing rather than decreasing auction revenue shortfall.**"⁸⁰ In the emphasized portion of the sentence, DC Energy/Vitol conclude that the auction revenue shortfall will increase with the proposal because less auction revenues will be collected but the same CRR payouts will be observed. This statement is incorrect.

First, as discussed above, evaluating simulated auction revenues is improper because the simulated results do not account for changes in bidding behavior. Also, revenue shortfalls are determined based on the actual payouts coming from the day-ahead market congestion revenue. Dr. Stevens relies on the 2018 Season 3 simulation for his conclusions. To date, the applicable day-ahead market in Season 3 of 2018 has not yet materialized. One cannot determine the actual auction revenue shortfall for Season 3 until after September 30, 2018, once the CAISO has settled all days of Season 3. Dr. Stevens also does not present any estimate of expected day-ahead payouts. Therefore, the

⁸⁰ DC Energy/Vitol at 20 (emphasis added) (footnote omitted).

Commission should disregard any statements on expected payout shortfalls of Season 3.

One can, however conclude that CRR shortfalls are likely to decrease with the CAISO's proposed changes based on simple logic. Under the CAISO's proposal, 65,000 MW of non-delivery pair CRRs will no longer clear the auction. It would be illogical to conclude that the 65,000 MW of non-delivery CRRs are self-funded. That is, it is inconceivable that the CRR payouts among these non-delivery CRRs will net to \$0, thereby having no effect on auction revenue shortfall. The Season 3 simulation shows that there will be 65,000 MW fewer CRRs to settle, which translate to CRR payouts for substantially less CRR awarded capacity and lower auction revenue shortfall.

5. There is No Evidence That the Removal of Non-Delivery CRR Pairs will Degrade Auction Efficiency Benefits provided by their Counterflow

Any suggestions that non-delivery pairs contribute to auction efficiency because they provide counterflow capacity and increase competition are misguided. To the contrary, when there are modeling differences between the CRR auction and the day-ahead market, the ability to bid in non-delivery paths in the CRR auction gives rise to the opportunity to speculative behavior that is ultimately rewarded at a high payout for CRRs procured at low or no cost. The ability to bid on delivery paths provides market participants the ability to target

such differences more surgically and strategically. The CAISO studies show that this has been for 38 cents on the dollar.⁸¹

Contrary to the claims of DC Energy/Vitol, there still will be CRRs that serve as counter-flow CRRs in the auction. For example, generator to intertie CRRs will remain. These can provide counter-flow to intertie to trading hub and intertie to load aggregation CRRs. There will also be a level of counter-flows among delivery CRRs that will naturally happen due to the inherent meshed nature of the transmission network. For instance, utilization of trading hubs and load aggregation points naturally places counter-flows across the meshed system.

In fact, counter-flow CRRs will continue to be awarded under the proposed rules. Closer observation of the information introduced by Dr. Stevens shows that 66% of capacity awarded to Calpine in the simulated auction are negatively priced which, as Dr. Stevens puts it, are “a key attribute of counter-flow positions.”⁸² While this point is particularly pronounced in the Calpine situation, the overall auction results show that the percentage of counter-flow CRRs clearing in the simulated auction is approximately the same percentage of counter-flow CRRs that clear in the actual auction. In the simulated auction, 7,349 MW of CRRs out of the 22,036 MW of CRRs, or 33.3%, are negatively priced. In the actual auction, 27,498 MW out of 83,666 MW of CRRs, or 32.9%, are negatively priced. Finally, after resolving the software issues identified in

⁸¹ Bautista Alderete Declaration at 20.

⁸² DC Energy/Vitol, Stevens Aff. at 34.

Section III.D.1, the CAISO finds that 5,294 MW of CRRs out of the 18,488 MW of CRRs, or 28.6%, are negatively priced. The corrected results still show a healthy amount of counter-flow CRRs.

E. The Commission Should Not Defer Approval of the Proposed CRR Auction Enhancements Based on an Expectation that CRR Auction Revenue Shortfalls Will Be Addressed By Other Improvements that the CAISO Has Implemented or Is Considering

The CAISO acknowledges that it is exploring other measures to address the CRR revenue shortfall issue. For example, as part of Track 0 of the CRR auction efficiency policy phase (which can be pursued under the CAISO's existing tariff authority), the CAISO is developing and implementing CRR release modeling improvements. The CAISO also continues to evaluate additional potential enhancements to its CRR auction design via Track 1B. However, these efforts should not preclude the Commission from approving the measures proposed in its April 11 Tariff Amendment. A number of commenters support approval of the CAISO's proposal while other CRR changes are considered in the ongoing stakeholder process.⁸³ Notably, the Department of Market Monitoring, which has raised concerns that the proposed measures will not address all issues with the CRR auction design, "supports the measures as incremental improvements that are likely to help partially address" CRR auction revenue deficiencies.⁸⁴ Acceptance of the April 11 Tariff Amendment should not

⁸³ Some commenters support this stance. See, e.g., Six Cities at 5 ("[T]he Commission should not defer approval of the Track 1A tariff revisions submitted in this docket pending the outcome of the broader stakeholder initiative.").

⁸⁴ DMM at 2.

be denied or delayed solely because the CAISO is working on additional improvements to its CRR processes.

Some commenters request that the Commission reject the proposal relating to limiting sources and sinks, and instead wait and to see if the outage reporting proposal by itself will solve CRR market inefficiencies.⁸⁵ The improved modeling of outages alone will not address CRR auction revenue shortfall issues. Models, no matter how much they are enhanced by the proposed outage reporting requirements and the improvements being developed through Track 0. Improved modeling will never fully align the models used for the CRR auctions with those employed for the day-ahead market because the day-ahead market model by necessity must reflect the most up-to-date information. Forcing the day-ahead model to mirror the CRR auction model, as DC Energy/Vitol suggests,⁸⁶ would undermine the essential need to model the day-ahead market on the best available data on conditions to maintain system reliability. To preserve the status quo, protestors suggest that the CAISO instead should adjust the DAM model to align it better with the CRR auctions. This is a fatal flaw in their arguments.

One fundamental feature of CRRs is that, due to their financial nature (in contrast to physical rights), they should not interfere with the actual operation and use of the transmission system. The CAISO cannot change its modeling practices in the forward market to affect its reliable scheduling of the grid through

⁸⁵ See, e.g., FMC at 10.

⁸⁶ DC Energy/Vitol, Shaker Aff. at 42-43.

its day-ahead markets. Even if the CAISO were to make the unrealistic assumption that the CRR auction model perfectly reflects information on outages, as suggested by Dr. Shanker, the availability of source/sink pairs for non-delivery transactions would still encourage bidding on CRRs for purely speculative purposes, inconsistent with the purpose of CRRs to hedge constraints related to physical delivery. The CAISO seeks to align CRR pairs with delivery, and taking into account every potential outage would not assist in this goal. Furthermore, outages do not always span the entire period that a CRR auction spans. In this event, even if the CASIO models the outage in the auction, there will be differences between the auction model and the day-ahead market models.

Appian Way/Mercuria Energy are wrong in suggesting that removing nomograms from day-ahead market operations would address CRR auction deficiencies.⁸⁷ It is true that the CAISO is increasing the representation of modeled contingencies approximately six-fold in the CRR monthly auctions as well as revisiting the CAISO's historical practice of relying on short-term nomograms to model outages in the day-ahead market. However, the Commission should dismiss the suggestion that the CAISO's day-ahead market engineers should no longer rely on nomograms to model outages. The CAISO's system operators must be able to use all available tools to operate its system reliability. Security constraints, such as nomograms, are an integral part of the day-ahead market operations. Although reevaluation of when and how best to use nomograms is prudent, suggesting that this reliability tool should be

⁸⁷ Appian Way/Mercuria Energy at 3-4.

eliminated in order to preserve opportunities for financial speculation is a severe case of misplaced priorities.

DC Energy/Vitol imply that by knowing outage information necessary to run the CRR auctions and modelling them in the CRR auction, the day-ahead market will align, and there would there would be no need for any other measure. Practicalities in the implementation of an actual market, however, impose inherent limitations in achieving perfect modelling between CRR auctions and day-ahead markets.⁸⁸ Advocating that a perfect alignment between the CRR auction and day-ahead market can be achieved ignores the realities of markets. The CAISO acknowledges that receiving timely outage submissions should improve modelling, along with the other steps the CAISO has been pursuing. But even with timely outage submissions, issues with granularity in modelling and timing of events impacting the day-ahead market are bound to exist. For this precise reason, the CAISO's also proposes to remove non-delivery CRR paths.

The Commission should also dismiss arguments that potential solutions in Track 1B would obviate the need for the Track 1A changes. As a preliminary matter, the CAISO filed Track 1A when it do in order to obtain an order from the Commission prior to July 1, which is the time by which operators must submit transmission outages under the CAISO proposal, and prior to the CAISO conducting its annual CRR auction, to which the restrictions to non-delivery pair CRRs would first apply. On the other hand, Track 1B, as currently contemplated,

⁸⁸ This was explained in the CRR Auction Analysis Report. CRR Auction Analysis Report at 202-203.

involves changes to the way CRRs are settled and therefore, the CAISO and market participants can wait for a Commission order at a later time so long as it comes before the CAISO conducts the annual auction. Moreover, because Track 1B is likely to consist of a settlement solution, it can be implemented later.

Based on the current trajectory of the possible changes coming out of Track 1B, the proposed changes in Track 1A are still necessary to address the auction inefficiencies identified in this proceeding. As currently contemplated, the market rules under the Track 1B proposal would reduce payments to CRRs to not exceed day-ahead market congestion revenue, thus eliminating CRR revenue inadequacy. This would also reduce the CRR auction revenue shortfall, but it does not ensure the auction revenue shortfall is eliminated or even that it does not remain a significant amount. Track 1A changes are still necessary to ensure the auctioned CRRs are valued correctly based on the expected payouts of such CRRs so that they are not sold at a discount.

As discussed in the April 11 Tariff Amendment, auction revenue shortfall is the difference between auction revenue and the payments to the CRRs sold in the auction.⁸⁹ Track 1A directly addresses auction revenue shortfall by eliminating non-delivery pairs. Non-delivery pairs have historically had the greatest shortfall between revenue received in the auction and payments to the CRRs. Thus, eliminating non-delivery pairs will decrease this difference and reduce auction revenue shortfall.

⁸⁹ April 11 Tariff Amendment Transmittal Letter at 2 n.2.

CRR revenue inadequacy is the difference between day-ahead market congestion revenues and payments to all CRRs. Track 1B would eliminate CRR revenue inadequacy by reducing payments to CRRs to not exceed day-ahead market congestion revenue. Reducing payments to CRRs also limits the auction revenue shortfall by decreasing payments to auction CRRs, thus reducing the difference between payments to auctioned CRRs and the auction revenue. However, eliminating CRR revenue inadequacy does not ensure the auction revenue shortfall is removed, or even that it does not remain a significant amount. Even if payments to CRRs do not exceed day-ahead market congestion revenues they can still exceed the auction revenues.

Track 1A directly addresses auction revenue shortfall by eliminating non-delivery pairs. Non-delivery pairs historically have had the greatest shortfall between revenue received in the auction and payments to the CRRs for a given amount of transmission capacity corresponding to an auctioned CRR. Thus, eliminating non-delivery pairs will decrease this difference and reduce auction revenue shortfall.

Also, as currently contemplated, the Track 1B measures reduce the payments to CRRs that occur because of constraints in the day-ahead market not modeled in the CRR auction or differences in the modeling between the CRR auction and the day-ahead market due to outages. Although Track 1B would reduce the payments to CRRs, the reduced number of CRR node pair combinations by limiting CRRs to delivery paths and outage reporting requirements in Track 1A are still needed to improve the efficiency of the CRR

auction. Reducing the number of CRR node pair combinations and increased modeling of the outages in the annual CRR auction will enhance the ability to price and value congestion on anticipated paths. This will contribute to the CAISO's ability to not sell CRRs at a discount.

Contrary to the suggestion of WPTF, the Track 1B proposals cannot substitute for the CAISO's proposals in the April 11 Tariff Amendment⁹⁰ As SVP properly notes, “[t]he issues being addressed in the instant proceeding are distinct from those CAISO is focusing on in its Track 1B process.”⁹¹ The Track 1B proposals address different factors that contribute to auction revenue shortfalls. Those proposals are intended to reduce excess day-ahead market payments for CRRs, while ensuring the full funding of CRRs. These differ from the Track 1A proposals, which will increase auction revenues per megawatt of CRR by improving competition relating to bids in the CRR auctions. The two separate tracks are intended to address different aspects of CRR auction revenue shortfall and are not anticipated to significantly overlap in scope.

SCE alleges that the CAISO is pursuing a “piecemeal” approach that is insufficient to address CRR issues.⁹² Other commenters suggest that the CAISO's proposals are not “narrowly tailored” to address the identified issues.⁹³ Both views are mistaken. The Track 1A enhancements are concrete proposals intended to improve the efficiency of CRR auctions, and are justified on their

⁹⁰ WPTF at 19.

⁹¹ SVP at 7.

⁹² SCE at 2.

⁹³ FMC at 13-15.

own. That the CAISO is in the process of pursuing additional, complementary CRR auction design improvements through the stakeholder process does not affect the reasoning behind Track 1A enhancements. Nothing in the FPA prevents the CAISO from proposing incremental improvements to its tariff. Rather, as long as the changes are just and reasonable, the FPA dictates that the Commission accept such changes. The CAISO's proposed changes are consistent with its long-standing practice of developing market design improvements over time, while continuing to explore potential future enhancements with stakeholder input.

F. The Proposed Outage Scheduling Requirements Will Improve Modeling of Outages in the CRR Auctions without Imposing Undue Hardships on Transmission Owners

The parties protesting the CAISO's outage reporting proposal, and some parties that offer comments expressing support, evince two key misunderstandings of the CAISO's outage reporting proposal: (1) what the proposed tariff amendments would require; and (2) the foreseeable benefits the proposal would yield. In bringing additional clarity on these two points, the CAISO eliminates any reason to find that the outage proposal—an independent, distinct, and severable element of the April 11 Tariff Amendment—is not just and reasonable.

1. Direct Opposition to the CAISO Outage Proposal Is Based on Deep Misconstructions of the Proposal

SCE and PG&E are the only two parties that oppose the CAISO outage reporting proposal. SCE opposes the proposal on two bases. First, SCE views the proposal as reducing transmission owners' flexibility to schedule planned

transmission outages.⁹⁴ Second, SCE opposes because the need for planned transmission outages may not be evident by July 1.⁹⁵ PG&E opposes the proposal on this latter basis, claiming that the specific details for PG&E to submit transmission outages to the CAISO typically are not known 12-15 months in advance.⁹⁶ As a result, PG&E asserts that the proposal will decrease the number of outages the CAISO is likely to receive because of the reality of the timing associated with the scheduling of transmission outages.⁹⁷

The concerns bear no relation to the CAISO proposal. The CAISO's proposed revision to section 9.3.6.1 simply would require that by July 1 of each year, a transmission owner must let the CAISO know of any transmission outages the transmission owner plans to take in the following year. As made clear in the April 11 Tariff Amendment, this requirement applies only to outages known and planned by the date the transmission owner provides its newly-required July 1 outage report.⁹⁸ The outage scheduling proposal would not prevent transmission owners from scheduling outages after July 1. It simply helps provide the CAISO better information about planned transmission outages to help it develop a CRR full network model for its annual CRR process that will more closely match the day-ahead market that will be the basis of settling those CRRs.

⁹⁴ SCE at 7-8.

⁹⁵ *Id.*

⁹⁶ PG&E at 9-10.

⁹⁷ *Id.*

⁹⁸ April 11 Tariff Amendment Transmittal Letter at 17-18.

Given the modest new obligations the CAISO proposal would place on transmission owners, the CAISO's proposal could not reduce transmission owner flexibility in planning transmission outages. The CAISO proposal says nothing about how transmission owners should engage in outage planning. It merely requires that, however those planning procedures function, the transmission owner must inform the CAISO by July 1 of any outages planned (at that point in time) to be taken in the following year. Similarly, the criticism that transmission owners may not know about an outage until after July 1 is spurious. If the need for an outage is not apparent until after July 1, then it was not known and planned for on July 1 and is outside the ambit of the proposed revisions to section 9.3.6.1.

2. Debate Over the Likely Magnitude of Benefit from the CAISO Proposal Does Not Raise a Meaningful Question Regarding the Proposal's Justness and Reasonableness

Aside from the misguided concerns PG&E and SCE raise, the other commentary on the CAISO outage proposal involves debate over the degree to which the CAISO proposal will benefit the CRR process.

Some parties suggest the CAISO outage proposal may yield only minimal benefits. The CMUA "urges the Commission to approve these relatively minor changes as just and reasonable" but expresses concern "that gaps between forward models on which the CRR auction is run and actual conditions will remain" and that "it is unclear whether the enhanced outage reporting requirement will have a significant impact on CRR auction efficiency"⁹⁹

⁹⁹ CMUA at 2, 4.

Similarly, DMM supports the CAISO outage proposal but asserts that the rule change is “unlikely to reduce ratepayer losses as much as CAISO’s filing implies”¹⁰⁰ because, among other factors, the tariff amendment would not address forced outages or other outages not reported by the July 1 deadline.¹⁰¹

Other parties, in particular those actively opposed to the proposed source/sink pair limitations, argue that the new annual outage report is such a profound change to the CRR process it obviates the need for any other CRR enhancements. FMC states its view that with an earlier annual outage plan, the CAISO will “be able to resolve many of the problems . . . identified as the source of its efficiency concerns, and will render CAISO’s source/sink reduction pair proposal unnecessary.”¹⁰² FMC points out that in some months the CRR auction would have had a revenue surplus with better information.¹⁰³ DC Energy/Vitol provide a similar perspective, arguing that the CAISO filing and DC Energy/Vitol’s “analysis suggest that outage reporting and modeling improvements alone can eliminate auction revenue shortfalls in the CAISO’s CRR market.”¹⁰⁴

In response both to the parties who damn the outage proposal with faint praise and those who romanticize its possibilities, the CAISO has a clear-eyed view of the potential its proposal holds. Discrepancies between the CRR full network model used in the annual CRR process as compared to the model used

¹⁰⁰ DMM at 13.

¹⁰¹ *Id.* at 14-15.

¹⁰² FMC at 5.

¹⁰³ *Id.* at 7

¹⁰⁴ DC Energy/Vitol at 45.

for the day-ahead market that settles those CRRs undoubtedly will remain. Forced outages, cancellation of planned outages, and maintenance outages planned after July 1 will be unavoidable. Those foreseeable events will limit the benefit of the July 1 annual outage report. The CAISO outage proposal represents a targeted new requirement that will address one of several issues with the overall CRR process identified in the April 11 Tariff Amendment. As in the relationship between Track 1A and Track 1B, the July 1 outage plan and the source/sink restrictions (the two elements of Track 1A) are complementary but neither on their own are intended to, nor could they, represent a comprehensive solution to the identified shortcomings of the current CRR process.

Regardless of where on the spectrum the Commission believes the benefits of the outage proposal lie, the key question becomes whether the proposal will improve upon the *status quo* a little, a lot, or something between. Considering that compliance with the new outage reporting obligation will impose no appreciable costs or burdens on transmission owners, there is no basis for the Commission to conclude that the outage proposal is not just and reasonable.

3. Typographical Correction in Revisions to Section 36.4.3.2 and 36.4.3.1

The April 11 Tariff Amendment proposes to add additional criteria that must be met for a transmission outage to qualify as a CRR Transmission Maintenance Outage. The current tariff defines a CRR Transmission Maintenance Outage as a transmission outage that meets at least one of the following three conditions: (a) it affects a transmission line rated above 200 kV; (b) the transmission element on outage is part of a flow limit defined in a CAISO

operating procedure; or (c) the transmission element on outage was out of service at some point in the last three years and its outage required the CAISO to determine a special flow limit in real-time operations.

The April 11 Tariff Amendment proposes additionally to require the outage to: (1) affect power flow in the CRR direct current full network model; and (2) be an outage that cannot be initiated and completed in a 24-hour period. Narrowing the scope of the definition is important because outages deemed a CRR Transmission Maintenance Outage have more stringent outage reporting requirements under the CAISO tariff. This includes the proposed amendments to section 9.3.6.1, which would require submission by July 1 of an annual outage plan.

The tariff language included with the April 11 Tariff Amendment contains a typographical error that omits two key words – “cannot be” – from the second of the two new criteria. As filed, the requirement states: “initiated and completed within a twenty-four (24) hour period.” This construction does not specify if the outage needs to be less than a 24-hour outage to be a CRR Transmission Maintenance Outage or, alternatively, it needs to be longer than a 24-hour outage to be subjected to the heightened outage reporting requirements. Clearly, the CAISO intent was the latter, as the CAISO would not have chosen to exempt long-term outages and only impose heightened reporting requirements on short-term outages. The full requirement should have stated: “cannot be initiated and completed within a twenty-four (24) hour period.”

Similarly, in Section 36.4.3.1, the CAISO included the clarification that it expects transmission operators will submit all known CRR Transmission Outages thirty days in advance of the first day of the month in which the operator expects to take the outage. The CAISO made a typographical error and instead of including the phrase “an Operator shall submit all known CRR transmission Maintenance” outages, it typed “an Operator shall all known submit CRR Transmission” outages.

If so ordered on compliance, the CAISO is prepared to correct these non-substantive ministerial errors. In the alternative, the CAISO will submit a standalone filing under section 205 of the FPA to address the issues.

IV. Conclusion

For the foregoing reasons, the Commission should accept the tariff revisions contained in the April 11 Tariff Amendment without condition or modification.

Respectfully submitted,

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Dated: May 18, 2018

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon all of the parties listed on the official service list for the above-referenced proceeding, pursuant to the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Washington, D.C. this 18th day of May, 2018.

/s/ Daniel Klein

Daniel Klein