

163 FERC ¶ 61,237  
UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Kevin J. McIntyre, Chairman;  
Cheryl A. LaFleur, Neil Chatterjee,  
Robert F. Powelson, and Richard Glick.

California Independent System  
Operator Corporation

Docket No. ER18-1344-000

ORDER ACCEPTING TARIFF AMENDMENTS

(Issued June 29, 2018)

1. On April 11, 2018, California Independent System Operator Corporation (CAISO) filed, pursuant to section 205 of the Federal Power Act (FPA),<sup>1</sup> proposed tariff amendments to improve the efficiency of its congestion revenue rights (CRR) auctions. In this order, the Commission accepts CAISO's proposed tariff amendments, effective July 1, 2018, as requested.

**I. Background**

**A. CAISO CRRs**

2. CAISO explains that CRRs are financial instruments meant to hedge congestion costs associated with supply delivery in the CAISO markets.<sup>2</sup> CAISO states that the primary purpose of CRRs is to facilitate long-term contracting by load-serving entities and suppliers by permitting them to hedge congestion costs incurred in the day-ahead market.<sup>3</sup> CAISO states that it settles CRRs based on the difference in the marginal cost

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<sup>1</sup> 16 U.S.C. § 824d (2012).

<sup>2</sup> CAISO April 11, 2018 Filing, Attachment C, Declaration of Guillermo Bautista Alderete, Director, Market Analysis and Forecasting at 5 (Bautista Alderete Declaration).

<sup>3</sup> CAISO Transmittal at 2. CAISO notes that the Commission has recognized that CRRs give market participants a level of financial protection against the risks associated with unpredictable congestion charges. *Id.* at 7 (citing *Cal. Indep. Sys. Operator Corp.*, 149 FERC ¶ 61,093, at P 2 (2014)).

of congestion component of the locational marginal price (LMP) between two pricing points – called a source and a sink – on the CAISO system as determined in the integrated forward market, multiplied by the MW quantity of the CRRs a market participant holds between two points. Market participants can hedge against the cost of congestion by acquiring CRRs through the CAISO-administered auction and allocation processes.<sup>4</sup>

3. CAISO states that it releases CRRs to load-serving entities at no cost to those entities through an allocation process.<sup>5</sup> CAISO states that it also conducts CRR auctions that allow all market participants to obtain CRRs based on cleared bids. CAISO states that the CRR allocation and auction processes occur annually and monthly. The annual processes begin with four allocation rounds, and conclude with an auction round. The monthly processes begin with two allocation rounds, followed by an auction round.<sup>6</sup> CAISO notes that once it releases CRRs, market participants can also trade them through secondary market transactions.

4. CAISO states that its CRR design provides for full funding of CRRs.<sup>7</sup> CAISO explains that it maintains a CRR balancing account, in which it collects day-ahead market congestion rent<sup>8</sup> and CRR auction revenues. To the extent funds in the CRR balancing account are insufficient to fully fund allocated and auctioned CRRs, CAISO allocates the shortfall to measured demand.<sup>9</sup> Similarly, CAISO allocates any excess funds in the CRR balancing account to measured demand.

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<sup>4</sup> *Id.* at 6-7.

<sup>5</sup> *Id.* at 7.

<sup>6</sup> *Id.* at 7 (citing CAISO Tariff §§ 36.8-36.11 and 36.13).

<sup>7</sup> *Id.* at 8.

<sup>8</sup> In its auction analysis, CAISO describes congestion rent as a by-product of using locational pricing to trade energy and stands for the market surplus collected by CAISO when congestion arises. This surplus is obtained from the basic principle of having demand paying higher prices than what is paid to supply due to using scarce transmission. CAISO Auction Analysis at 43.

<sup>9</sup> CAISO Transmittal at 8. CAISO's tariff defines measured demand as the metered CAISO Demand plus Real-Time Interchange Export Schedules, excluding that portion of Demand of Non-Generator Resources dispatched as Regulation through Regulation Energy Management.

5. CAISO states that for the annual and monthly CRR allocations and auctions, CAISO maintains a CRR model that is based on the most up-to-date direct current full network model.<sup>10</sup> In determining the available capacity to include in the CRR model used in each allocation and auction process, CAISO considers information regarding maintenance outages of transmission facilities that may significantly affect the CRR auction model.

**B. CAISO Analysis of Auction Revenue Shortfall**

6. CAISO asserts that with an efficient CRR auction, prices of auctioned CRRs should roughly reflect market participants' expectations of congestion exposure in the day-ahead market.<sup>11</sup> However, CAISO notes that this has not been the case in recent years. CAISO states that it has found as part of its analysis that, on average since 2014, CRRs purchased at auction paid out \$99.5 million per year more in CRR revenues from the day-ahead market than bidders paid for those CRRs in the auctions.<sup>12</sup> CAISO characterizes this disparity between CRR auction revenues and payouts to holders of auctioned CRRs as an auction revenue shortfall.<sup>13</sup>

7. CAISO launched a stakeholder process in 2017 to assess the issue of auction efficiency in its CRR market. CAISO has divided the process to improve CRR auction efficiency into four tracks. Track 0 focuses on enhancements that can be made through the business practice manual (i.e., that do not require tariff changes). Track 1A focuses on tariff changes that can be made in time for the annual allocation and auction process for 2019 CRRs, which begins in July 2018. Track 1B focuses on additional measures that could improve the efficiency of processes for the monthly CRR auctions in 2019. CAISO may file Track 1B changes with the Commission later in 2018. Track 2 focuses on potential comprehensive auction design changes.

8. CAISO conducted an analysis of the auction revenue shortfall during the stakeholder process.<sup>14</sup> CAISO's analysis found a misalignment between transmission outage reporting data and its auction model. Specifically, CAISO found that a lack of timely outage reporting data was a key driver of the auction revenue shortfall. CAISO

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<sup>10</sup> *Id.*

<sup>11</sup> *Id.* (citing Bautista Alderete Declaration at 7-8).

<sup>12</sup> *Id.* at 2.

<sup>13</sup> *Id.*

<sup>14</sup> CAISO Auction Analysis, <http://www.caiso.com/Documents/CRR Auction Analysis Report.pdf>.

found that key transmission outages that impacted congestion and transmission capacity in actual day-ahead conditions were sometimes not reflected in the CRR auction model.<sup>15</sup> According to CAISO, this led to the system being modeled as less constrained in the CRR auction model than it was in actual day-ahead conditions. CAISO argues that this misalignment between CRR auction revenues and payouts to CRR holders is a major driver of the auction revenue shortfall.<sup>16</sup>

9. CAISO also found in its analysis that the bulk of the auction revenue shortfall is associated with source and sink CRR pairs that do not align with typical supply delivery paths. CAISO defines a supply delivery source and sink pair as one that sources in a typical supply location and sinks at a load or export location.

10. CAISO states that non-delivery pairs accounted for 81 percent of the auction revenue shortfall. CAISO found that market participants purchased these non-delivery CRRs for 38 cents on the dollar at auction, while market participants purchased supply delivery CRR pairs for 74 cents on the dollar.<sup>17</sup> CAISO argues that while these non-delivery CRR pairs theoretically add value to the auction by producing counterflow,<sup>18</sup> this benefit must be balanced against the costs they impose on the market.<sup>19</sup> CAISO notes that CRRs that source and sink at generator locations (which CAISO considers a non-delivery pair) accounted for \$186 million dollars in total auction revenue shortfalls between 2014 and 2017.<sup>20</sup>

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<sup>15</sup> CAISO explains that even a single constraint that is not modeled in the auction can lead to a significant auction revenue shortfall. CAISO provides an example where an un-modeled constraint caused \$1.25 million of auction revenue shortfall in a single day. Bautista Alderete Declaration at 14-15.

<sup>16</sup> CAISO Transmittal at 12.

<sup>17</sup> *Id.* at 14 (citing Bautista Alderete Declaration at 19).

<sup>18</sup> “Counterflow” occurs when a source-sink pair is in the opposite direction of congestion on the transmission system. When performing a simultaneous feasibility test, CAISO models CRRs as power flows, so counterflow offsets prevailing flow, thereby increasing the MW quantity that can be carried between prevailing flow source-sink CRR pairs. Counterflow therefore enables more CRRs to be sold at auction than would be otherwise possible.

<sup>19</sup> CAISO Transmittal at 14.

<sup>20</sup> *Id.*

11. CAISO states that its analysis shows that non-delivery pair bids are not, in the aggregate, providing competitive or counterflow value. CAISO found that when it removed non-delivery pairs from its 2018 Season 3 auction, cleared bids for supply delivery CRR pairs increased from 5,000 MW to 22,000 MW.<sup>21</sup> CAISO argues that bids for non-delivery pairs also prevent CRRs that sink at load aggregation points from clearing. CAISO notes that when non-delivery CRR pairs were removed, its analysis showed an increase in cleared bids at these points of 3,800 MW.<sup>22</sup>

12. CAISO's analysis further found that that removing non-delivery CRR pairs from its 2018 Season 3 auction decreased auction revenues from \$20.12 million to \$5.32 million.<sup>23</sup> CAISO states that the auction revenue shortfall also decreased from \$10.25 million to \$5.71 million. However, CAISO cautions that it cannot empirically estimate the impact on prices in a meaningful way because it is unable to simulate how market participants would bid in response to the removal of non-delivery CRR pairs.

13. CAISO argues that it is reasonable to expect auction participants that currently bid for non-delivery pair CRRs to change their behavior and bid for delivery pair CRRs. CAISO states that if, as asserted by some stakeholders, a portion of the non-delivery pair CRRs are used to hedge supply portfolios, market participants will seek delivery CRRs to obtain hedges needed for supply delivery.<sup>24</sup> CAISO argues that the redirection of bidding from the non-delivery CRR pairs to the supply delivery CRRs pairs will improve liquidity and increase competition for the supply delivery CRR pairs. This should raise prices and further reduce the auction revenue shortfall relative to the amount estimated by its empirical analysis.

## **II. CAISO's Filing**

14. CAISO's filing has two parts, which it states are severable.<sup>25</sup> The first is an outage reporting proposal, which would create an additional annual outage reporting deadline to be aligned with the annual CRRs allocation and auction process to improve the CRR model used in the annual process. The second is a path restriction proposal,

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<sup>21</sup> *Id.*

<sup>22</sup> *Id.* at 14-15.

<sup>23</sup> *Id.* at 15.

<sup>24</sup> *Id.*

<sup>25</sup> *Id.* at 4.

which would limit allowable source and sink pairs in the auction to align CRRs with their primary purpose of hedging congestion associated with supply delivery.

**A. Annual Outage Reporting Proposal**

15. With respect to the outage reporting proposal, CAISO proposes to require Participating Transmission Owners (TOs) to submit all known and planned transmission maintenance outages potentially affecting the CRR model for the following year by July 1, earlier in the year than the current requirement of October 15.<sup>26</sup> Because the CRR allocation and auction model is finalized prior to October 15, CAISO currently cannot include this outage data in the allocation and auction model. Specifically, Participating TOs must identify the facility and report (1) the nature of the planned outage; (2) the preferred start and finish date for the outage; and (3) the earliest and latest starting and completion dates as well as the actual duration of the outage once it commences.<sup>27</sup>

16. CAISO clarifies that Participating TOs only need to report outages that are known by July 1, so Participating TOs do not have to report a comprehensive list of outages by that time. CAISO states that its requirement would not prevent a Participating TO from revising its outage plan after July 1 or scheduling new maintenance outages that were not anticipated at the time the plan was submitted. CAISO also proposes to define the types of outages that must be reported for CRR modeling purposes.<sup>28</sup> CAISO states that Participating TOs must report outages that involve system configuration changes that affect power flow in the CRR model, extend beyond a 24-hour period, and take place at facilities that are: (1) rated at above 200 kV; (2) part of any defined flow limit as described in a CRR operating procedure; or (3) were out of service in the last three years for which CAISO determined a special flow limit was needed for real-time operation.

**B. Path Restriction Proposal**

17. With respect to the path restriction proposal, CAISO proposes to limit the allowable source and sink pairs eligible for nomination in the CRR auction to only those pairs that are associated with supply delivery and to exclude nominations for non-delivery CRR pairs. Specifically, under this proposal, the only eligible source and sink pairs would be: (1) from a generator bus to either a load aggregation point (LAP), a trading hub, or an intertie (scheduling point); (2) from a trading hub to either a load aggregation point or an intertie; and (3) from an intertie to either a load aggregation point

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<sup>26</sup> *Id.* at 16

<sup>27</sup> *Id.* at 17.

<sup>28</sup> *Id.* at 24.

or a trading hub, as shown in the table below. All other source and sink pairs would be ineligible for bids in the CRR auction.

18. CAISO anticipates that this change will increase competition and boost auction for the remaining CRR pairs.<sup>29</sup> CAISO also states that its proposal will decrease possibilities for participants to profit from differences between the CRR model and actual day-ahead conditions. CAISO further argues that removing these non-delivery pair CRR would comport with its analysis that shows that non-delivery pair CRRs account for the vast majority of the auction revenue shortfall. In addition, CAISO states its analysis shows that its proposed restrictions will free additional delivery pair capacity through the auction.<sup>30</sup>

19. CAISO also states that it believes that there will continue to be ample opportunities for participants to acquire CRRs to hedge delivery of supply with the reduced set of CRRs.<sup>31</sup> CAISO acknowledges that there is a potential for an entity to use non-delivery pair CRRs to hedge during a generator outage by connecting secondary generation to the primary generator location through a supply-to-supply pair CRR. However, CAISO estimates that this sort of hedge only accounts for 0.97 percent of overall CRR volume cleared between 2014 through 2017.<sup>32</sup> CAISO states that the elimination of this hedging opportunity is justified by the potential beneficial effects of its proposal. Also, CAISO notes that entities will still be able to acquire hedging for the secondary generator by purchasing a CRR with a delivery pair reflecting a direct path from the secondary generation to load.<sup>33</sup>

20. CAISO states that because it proposes to limit the source and sink combinations allowed in the CRR auction, CAISO must also enhance the CRR system to include an option to sell an existing CRR.<sup>34</sup> CAISO states that, today, participants desiring to sell CRRs in the CRR auction must do so by purchasing counterflow positions, which financially unwind the CRRs they hold. CAISO states that with the limitations proposed in this filing, market participants will not have the ability to bid at all counterflow locations. Therefore, CAISO proposes further tariff revisions to allow a market

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<sup>29</sup> *Id.* at 15.

<sup>30</sup> *Id.*

<sup>31</sup> *Id.* at 25-26.

<sup>32</sup> *Id.* at 25.

<sup>33</sup> *Id.* at 25-26.

<sup>34</sup> *Id.* at 20.

participant that acquires CRRs through the allocation or auction process to sell those CRRs back into a subsequent CRR auction.

### **III. Notice of Filing and Responsive Pleadings**

21. Notice of CAISO's filing was published in the Federal Register, 83 Fed. Reg. 17,167 (2018) with interventions and protests due on or before May 2, 2018. Exelon Corporation; Calpine Corporation (Calpine); GridLiance West Transco LLC; NRG Power Marketing LLC and GenOn Energy Management, LLC; Alliance for Retail Energy Markets; Boston Energy Trading and Marketing LLC; California Public Utilities Commission; Vitol Inc.; Bonneville Power Administration; Southern California Edison Company (SoCal Edison); The City of Santa Clara, California, doing business as Silicon Valley Power (SVP); Western Power Trading Forum (WPTF); California Municipal Utilities Association (CMUA); Load Serving Entities for CRR Auctions (LSEs for CRR Auctions);<sup>35</sup> Powerex Corporation (Powerex); American Public Power Association (APPA); the City and County of San Francisco; Northern California Power Agency (NCPA); Valley Electric Association, Inc. (Valley Electric); Department of Market Monitoring of the California Independent System Operator Corporation (DMM); California Department of Water Resources State Water Project; XO Energy, LLC (XO Energy); Pacific Gas and Electric (PG&E); Modesto Irrigation District; Financial Marketers Coalition (FMC); and the Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California (Six Cities) filed timely motions to intervene. SESCO CALISO (SESCO); DC Energy, LLC; Mercuria Energy America, Inc.; and Appian Way Energy Partners filed untimely motions to intervene.

22. SoCal Edison; DC Energy, LLC and Vitol Inc. (DC Energy/Vitol); WPTF; Six Cities; CMUA; LSEs for CRR Auctions; Powerex; APPA; SVP; NCPA; Calpine; DMM; FMC; NRG Companies;<sup>36</sup> XO Energy; and PG&E filed timely comments and/or protests. On May 3, 2018, SESCO filed an untimely protest. On May 4, 2018, DC Energy/Vitol filed an errata to their protest. On May 10, 2018, Appian Way Partners and Mercuria Energy America, Inc. (Appian/Mercuria) filed an untimely motion to intervene and protest.

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<sup>35</sup> LSEs for CRR Auctions is comprised of the following entities: 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.

<sup>36</sup> For purposes of this filing, the NRG Companies are NRG Power Marketing LLC and Boston Energy Trading and Marketing LLC.

23. On May 18, 2018, CAISO filed a motion for leave to answer and answer to the protests and comments. On May 24, 2018, DC Energy/Vitol filed a motion for leave to answer and answer to CAISO's Answer. On May 25, 2018, Six Cities, CMUA, and the City and County of San Francisco (Joint Reply Commenters) submitted reply comments.

**A. Protests and Comments**

**1. Annual Outage Reporting Requirements**

24. Several entities submitted comments in support of the new annual outage reporting requirements. WPTF states that the Commission should approve CAISO's proposal to improve transmission outage reporting and CAISO's incorporation of transmission outage information into the CRR models. WPTF argues that this requirement will increase CRR modeling accuracy, which in turn will reduce revenue shortfalls.<sup>37</sup> LSEs for CRR Auctions argue that more timely reporting by the Participating TOs will ensure that significant outages are included in the auction model, eliminating a key driver of the auction revenue shortfall.<sup>38</sup> SVP also argues that improved outage reporting may reduce the ability of market participants to take advantage of differences in the CRR auction model and the Day-Ahead Market model.<sup>39</sup> DC Energy, Powerex, CMUA, FMC, NRG Companies, XO Energy, NCPA, and Calpine all also express support for CAISO's outage reporting proposal.<sup>40</sup>

25. DMM supports CAISO's proposed outage reporting requirement as an incremental improvement, but contends that CAISO has not demonstrated whether the circumstances that drove late reported outages in the past would be captured by the proposal. DMM notes that CAISO will continue to be unable to model unreported outages, as well as any outages that do not meet CAISO's criteria for inclusion in the CRR model.<sup>41</sup>

26. PG&E opposes CAISO's proposal to require earlier reporting of transmission outages. PG&E states that "[u]nless the outage is quite significant, the specific details necessary for PG&E to submit the transmission outages to the CAISO are not known 12-

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<sup>37</sup> WPTF Protest at 2.

<sup>38</sup> LSEs for CRR Auctions Protest at 7.

<sup>39</sup> SVP Comments at 7.

<sup>40</sup> DC Energy Protest at 43; Powerex Comments at 6; CMUA Comment at 4; FMC Protest at 5; NRG Companies Protest at 5; XO Energy Protest at 2-3; Calpine Protest at 4.

<sup>41</sup> DMM Comments at 13-15.

15 months in advance.”<sup>42</sup> PG&E argues that CAISO’s CRR model uses a *pro rata* de-rate method to capture outages which more significantly compromises the accuracy of the CRR model than the failure to include the outages, and it is unclear which is a larger driver of CRR auction revenue inadequacy.<sup>43</sup> PG&E states it has requested outage information submitted in October be integrated in the CAISO model for the November auction.<sup>44</sup>

27. SoCal Edison argues that CAISO’s outage reporting proposal is not reasonable. SoCal Edison states that the new requirement may reduce the flexibility for the Participating TO to schedule planned transmission outages in accordance with system conditions and personnel and equipment availability.<sup>45</sup>

## 2. Limiting Allowable Source and Sink Pairs in the CRR Auction

28. Several commenters support CAISO’s path restriction proposal. CMUA argues that limiting auctioned CRRs to source and sink pairs that are used to hedge congestion costs supports CAISO’s contention that the primary purpose of CRRs is to allow market participants to hedge congestion charges associated with supply delivery.<sup>46</sup> CMUA further argues that allowing non-delivery source and sink CRR pairs harms market efficiency and is inconsistent with the purpose of the auction.<sup>47</sup> Six Cities support CAISO’s proposal arguing that it has the potential to save ratepayers hundreds of millions of dollars and should be implemented as soon as possible.<sup>48</sup> APPA argues that there is no evidence that the payment of revenue from load to the market participants holding non-delivery CRR pairs improves the operation of the markets or creates consumer benefits.<sup>49</sup> NCPA believes the proposed limit on source and sink pairs available in the CRR auction will improve auction efficiency without adverse impact on

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<sup>42</sup> PG&E Comments at 9.

<sup>43</sup> *Id.* at 10.

<sup>44</sup> *Id.*

<sup>45</sup> SoCal Edison Protest at 8.

<sup>46</sup> CMUA Comments at 4-5 (citing CAISO Transmittal at 18).

<sup>47</sup> *Id.* at 5.

<sup>48</sup> Six Cities Comments at 5.

<sup>49</sup> APPA Comments at 5

liquidity.<sup>50</sup> SVP supports the proposal as an important and necessary tariff modification.<sup>51</sup> Powerex states that the pair restrictions will significantly increase the efficiency of the CRR framework and align the CRR auction process with the core purposes of CRRs as hedging instruments.<sup>52</sup>

29. DMM supports CAISO's path restriction proposal because it is likely to reduce the large losses DMM asserts are being borne by transmission ratepayers. However, DMM believes that the reduction in losses will likely be significantly less than the 81 percent figure cited by CAISO because the percentage of auction revenue shortfalls from non-delivery CRR pairs has been trending downward since 2015.<sup>53</sup> DMM argues that CAISO's proposed limits on allowable source-sink CRR pairs in the auction do not limit open access because the spot LMP market provides the open access needed to facilitate long-term financial contracting. According to DMM, the purpose of the CRR auction is to facilitate the trading of contracts to hedge forward contract basis risk and thus reduce the cost of forward contracting in LMP markets, and basis risk is a separate concept from open access.<sup>54</sup>

30. PG&E supports the path restriction proposal.<sup>55</sup> However, PG&E states that the proposal does not solve the fundamental market design flaws and can be circumvented. PG&E also supports CAISO's proposal to develop a system to allow entities to sell CRRs back to CAISO.

**a. Open Access and Undue Discrimination**

31. DC Energy/Vitol argue that CAISO's path restriction proposal violates open access principles. DC Energy/Vitol argue that CAISO's proposal restricts CRR bidding to only those paths currently used by load serving entities.<sup>56</sup> DC Energy/Vitol argue that this enshrines the incumbent use of the transmission system in clear violation of Order

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<sup>50</sup> NCPA Comments at 5.

<sup>51</sup> SVP Comments at 7.

<sup>52</sup> Powerex Comments at 6.

<sup>53</sup> DMM Comments at 9-11 (citing CAISO Transmittal at 13).

<sup>54</sup> *Id.* at 15-17.

<sup>55</sup> PG&E Comments at 8.

<sup>56</sup> DC Energy/Vitol Protest at 10.

No. 888's open access requirements.<sup>57</sup> DC Energy/Vitol argue that the purpose of CRRs extends beyond providing hedges to incumbent load serving entities and includes allowing other market participants to make new investments and other long-term power supply arrangements. They state that CAISO would replace the financial equivalent of the maximum feasible use of the transmission system with a point-to-point service on a limited path set. DC Energy/Vitol further argue that savvy market participants use non-delivery CRRs to reduce hedging costs, and that CAISO's proposal will restrict this ability for market participants.<sup>58</sup>

32. DC Energy/Vitol argue that CAISO's proposal limits the sale of transmission capacity to a favored class of market participants, i.e., incumbent load-serving entities. DC Energy/Vitol state that FPA section 217 provides that if transmission rights not used to meet a service obligation are made available, they should be made available to non-load serving entities in a manner that is "just, reasonable, and not unduly discriminatory or preferential."<sup>59</sup> DC Energy/Vitol argue that CAISO's proposal forecloses legitimate hedging opportunities such as the ability for a market participant to use a generator to generator hedge in cases where one unit is available and another is not.<sup>60</sup> DC Energy/Vitol state that CAISO's proposal makes this hedging more difficult and increases transaction costs.<sup>61</sup>

33. DC Energy/Vitol argue that CAISO's proposal could cause non-load serving entity market participants to pay unjust and unreasonable amounts for hedging, putting them at a competitive disadvantage to load serving entities.<sup>62</sup> DC Energy/Vitol also argue that CAISO's proposal could restrict the capacity available through the auction process. DC

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<sup>57</sup> *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. and Regs. ¶ 31,036 (1996) ("Order No. 888"), *order on reh'g*, Order No. 888-A, 62 FR 12274 (May 14, 1997), FERC Stats. and 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).

<sup>58</sup> DC Energy/Vitol Protest at 12.

<sup>59</sup> *Id.* at 31 (citing 16 USC § 824q(d) (2018)).

<sup>60</sup> *Id.* at 32.

<sup>61</sup> *Id.* at 34.

<sup>62</sup> *Id.* at 38.

Energy/Vitol argue that this would cause excess CRR revenue to accumulate in the CAISO balancing account and be distributed back to incumbent load serving entities.<sup>63</sup> DC Energy/Vitol argue that this further demonstrates that CAISO's proposal is unduly discriminatory. XO Energy also contends the proposal will erode open access, undermine competition, and is unduly discriminatory in favor of incumbent load-serving entities.<sup>64</sup>

34. WPTF also argues that CAISO's proposal is unduly discriminatory and inconsistent with Commission policy encouraging open access.<sup>65</sup> WPTF states that CAISO's proposed CRR path restrictions are based on a faulty premise that non-delivery CRR pairs are inconsistent with the underlying policy driving CRRs and financial transmission rights (FTRs)<sup>66</sup> in general.<sup>67</sup> WPTF states that CAISO's proposal would limit market access currently used by certain parties in order to ensure payouts to other CRR holders are as high as possible.<sup>68</sup>

35. WPTF argues that market participants use both delivery and non-delivery pair CRRs to aid in forward contracting in the bilateral market. WPTF states that, according to the principles of open access, all participants should be able to hedge their congestion risk, and that non-load serving entities face different types of congestion risk.<sup>69</sup> WPTF cites the Commission's finding in *PJM Interconnection*, which states that congestion rights "were designed to serve as the financial equivalent of firm transmission service and play a key role in ensuring open access to firm transmission service by providing a

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<sup>63</sup> *Id.* at 39.

<sup>64</sup> XO Protest at 3-4.

<sup>65</sup> WPTF Protest at 13.

<sup>66</sup> FTRs are the equivalent financial product to CRRs in other Regional Transmission Organization or Independent System Operators (RTOs/ISOs). Similar to CRRs, they are valued at the difference in the marginal cost of congestion between a source and sink pair.

<sup>67</sup> WPTF Protest at 15.

<sup>68</sup> *Id.* at 16.

<sup>69</sup> *Id.* at 14.

congestion hedging function.”<sup>70</sup> WPTF argues that reducing the ability for market participants to construct hedges with non-delivery pair CRRs would diminish market efficiency and ultimately increase costs across all market participants, including ratepayers.

36. Appian/Mercuria state that CAISO’s proposal to limit the allowable source and sink pairs essentially removes point to point transmission service in CAISO because it only permits CRRs that sink at load aggregation points.<sup>71</sup> They argue that this is inconsistent with open access.

**b. CRR Auction Revenue Shortfall**

37. WPTF argues that CAISO fails to provide substantial evidence that non-delivery pair CRRs are uncompetitive, and that limiting paths will resolve its auction revenue shortfall.<sup>72</sup> WPTF notes that with the exception of the generator-to-generator pair CRRs, CAISO fails to demonstrate whether any of the other “non-delivery” pair CRR path subsets contribute to the auction revenue shortfall. WPTF argues that CAISO’s data shows that some of the more important CRR pairs CAISO proposes to ban contribute to an auction revenue surplus.<sup>73</sup>

38. WPTF states that CAISO also errs in its assessment that removing non-delivery CRRs will reduce net shortfalls. According to WPTF, CAISO’s conclusions are based on the incorrect assumptions that (1) bidders would rebid on other CRRs that were still available, and that (2) those bids would result in CRR price increases.<sup>74</sup>

39. FMC argues that the auction revenue shortfall represents “rational economic behavior on the part of the market participants and does not represent a fundamental flaw in CRR auction process which must be remedied.”<sup>75</sup> FMC states CAISO has acknowledged that CRRs are a risky financial instrument. FMC argues a rational economic bidder will consider the perceived risk of loss, the time-consuming complex

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<sup>70</sup> WPTF Protest at 13 (citing *PJM Interconnection, L.L.C.*, 158 FERC ¶ 61,093, at P 27 (2017) (*PJM Interconnection*), *aff’d per curiam sub nom. N.J. Board of Pub. Utils. v. FERC*, No. 17-1101 (D.C. Cir. Jun. 12, 2018)).

<sup>71</sup> Appian/Mercuria Protest at 5-6.

<sup>72</sup> WPTF Protest at 9.

<sup>73</sup> *Id.* at 10.

<sup>74</sup> *Id.* at 18.

<sup>75</sup> FMC Protest at 16.

nature of participating in the market, and the lack of transparency or data at the time of purchase. FMC explains that any changes which negatively impact the ability of the market and market participants to make more precise judgments of relative value will lead to less accurate and robust forward price curves and will carry negative implications for affected projects and load.<sup>76</sup> FMC also points to the structural factors that result in low demand for or low valuation of CRRs, such as regulatory barriers preventing utility participation. XO Energy agrees with FMC that CAISO has failed to demonstrate its proposal is just and reasonable and not unduly discriminatory or preferential.<sup>77</sup>

40. DC Energy/Vitol argue that CAISO's proposal undermines and reduces competition on remaining delivery path CRRs.<sup>78</sup> They argue that eliminating non-delivery path CRRs will increase, not decrease, auction revenue shortfalls.<sup>79</sup> They present an analysis based on Season 3 2018 CRR auction data that CAISO uses in demonstrating that the non-delivery CRR pairs do not have a counterflow effect. DC Energy/Vitol argue that removing competitively awarded flow will reduce overall competition.<sup>80</sup> DC Energy/Vitol argue that non-delivery and delivery CRR pairs compete for the same capacity and that by removing non-delivery CRR pairs, CAISO's proposal reduces competition for CRR capacity. DC Energy/Vitol argue that this will reduce auction revenues and prices for CRRs. DC Energy/Vitol argue that CAISO's proposal will make the auction revenue shortfall worse.

41. DC Energy/Vitol also argue that CAISO's proposal will increase potential market power opportunities on certain paths. In support, they calculate the Herfindahl-Hirschman Index (HHI) on three constraints under the scenario of CAISO's rerun of the Season 3 2018 CRR auction.<sup>81</sup> They show that the HHI increases and the competitiveness decreases when the non-delivery pairs are removed from CAISO's CRR auction.

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<sup>76</sup> *Id.* at 20-21.

<sup>77</sup> XO Protest at 3.

<sup>78</sup> DC Energy/Vitol Protest at 17.

<sup>79</sup> *Id.* at 18.

<sup>80</sup> *Id.* at 17.

<sup>81</sup> *Id.* at 32-33

42. Several protesters argue that CAISO's proposal is premature and that CAISO should address flaws in its transmission modeling first.<sup>82</sup> WPTF contends that it is unjust and unreasonable to eliminate CRR paths when CAISO's analysis found that inadequate transmission outage information was the primary driver for revenue shortfalls.<sup>83</sup>

43. WPTF also argues that CAISO's assessment treats physical-delivery pair CRRs as legitimate hedging activity and non-physical delivery pair CRRs as not legitimate. WPTF states that the Commission has affirmed that all congestion hedges are important, not just congestion hedges associated with physical delivery paths.<sup>84</sup>

44. NRG Companies state that CAISO's analyses concerning auction efficiency are meaningless in light of the changes contemplated under Track 0 of the stakeholder process.<sup>85</sup> NRG Companies contend that other RTOs/ISOs administer efficient auctions without the pair limitations CAISO proposes.<sup>86</sup> Conversely, NRG Companies assert CAISO's proposal eliminates many CRR pairs useful for hedging.<sup>87</sup> NRG Companies argue that CAISO's proposal removes 93.8 percent of the CRR pairs that account for 80 percent of the auction revenue shortfall, but assert that CAISO could achieve a greater efficiency gain by eliminating a random selection of pairs.<sup>88</sup> Finally, NRG Companies argue that CAISO's proposal is targeted to eliminate speculation and has little or nothing to do with auction efficiency.<sup>89</sup> NRG Companies contend that CAISO's implicit assumption that there is something illegitimate about speculative trading in CRRs finds no support in Commission precedent. To the contrary, NRG Companies state that the Commission has expressly recognized that FTRs, like CRRs, "provide a financial tool

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<sup>82</sup> *E.g.*, Calpine Protest at 9-13.

<sup>83</sup> WPTF Protest at 8.

<sup>84</sup> *Id.* at 17 (citing *PJM Interconnection*, 158 FERC ¶ 61,093).

<sup>85</sup> NRG Companies Protest at 7.

<sup>86</sup> *Id.* at 8.

<sup>87</sup> *Id.* at 10.

<sup>88</sup> *Id.* at 8-9.

<sup>89</sup> *Id.* at 6.

to hedge price risk, or to speculatively profit from price differences, associated with congestion between two locations.”<sup>90</sup>

45. Calpine objects to CAISO’s proposal to eliminate non-delivery source/sink pairs from the CRR auction. Calpine notes that CAISO has an on-going stakeholder process to further address the CRR auction revenue shortfall. According to Calpine, the option under consideration in the stakeholder process, the partial-funding option, has the same objective as, and overlaps with, the proposal to eliminate non-delivery source/sink pair CRRs. Calpine asserts that the Commission should not evaluate the effects of either of these proposals in isolation because the factual record would not be complete without considering the overlapping impacts of the two proposals.<sup>91</sup> Further, Calpine argues that CAISO has only presented evidence supporting the elimination of generation-to-generation pair CRRs; therefore, CAISO’s proposal to eliminate other non-delivery CRR pairs is unsupported. Specifically, Calpine asserts that CAISO has not offered any justification for eliminating trading hub-to-trading hub CRR pairs. Calpine claims that there is no evidence in CAISO’s analysis that trading hub-to-trading hub CRR pairs are non-competitive, illiquid, or steeply discounted in the auction.<sup>92</sup> Calpine further argues that trading hub-to-trading hub CRR pairs serve a myriad of economic purposes and are distinct from generator-to-generator CRR pairs which CAISO has asserted are primarily used for speculative investments.<sup>93</sup>

46. LSEs for CRR Auctions also object to CAISO’s proposal to eliminate non-delivery source/sink pairs from the CRR auction. They contend that the market should determine which source and sink CRR pairs are of value, rather than CAISO, and eliminating CRR pairs deprives the market of price discovery and hedging opportunities.<sup>94</sup> LSEs for CRR Auctions argue that generator-to-generator pair CRRs have hedging value, and provide an example of a dispatchable resource backing up a renewable resource at a different point on the grid.<sup>95</sup> LSEs for CRR Auctions state that the restriction on non-delivery pair CRRs will eliminate many CRR pairs that create

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<sup>90</sup> *Id.* at 9-10 (citing *Saracen Energy Midwest, LP*, 156 FERC ¶ 61,122, at P 5 (2016) and *Deutsche Bank Energy Trading, LLC*, 140 FERC ¶ 61,178, App. A, Enforcement Staff Report and Recommendation, at 1 n.3 (2012)).

<sup>91</sup> Calpine Protest at 9-13.

<sup>92</sup> *Id.* at 14.

<sup>93</sup> *Id.* at 15.

<sup>94</sup> LSEs for CRR Auctions Protest at 8-14.

<sup>95</sup> *Id.* at 9.

revenue surpluses.<sup>96</sup> LSEs for CRR Auctions argue the correct solution is to aggressively pursue resolution of the modeling problems. LSEs for CRR Auctions contend they are more vulnerable to market costs than other LSEs. Finally, LSEs for CRR Auctions state that it would be unjust and unreasonable for the Commission to approve CAISO's proposed non-delivery pair proposal in light of other planned or future changes to the CAISO CRR framework, and they request that the Commission approve the outage scheduling changes first and require a report after six months of operation to judge the necessity of bid-pair restrictions.

47. SESCO protests CAISO's proposal to limit source and sink pairs in the CRR auction.<sup>97</sup> SESCO contends that eliminating source and sink pair CRRs runs counter to auction efficiency because it curtails the broader use of CRRs to hedge congestion. SESCO prefers a more narrowly tailored approach to the problem, such as eliminating electrically equivalent source-sink pairs or imposing a fee on CRRs purchased at auction. SESCO believes that CAISO's proposal will lead to higher prices, but will not make the markets more efficient.

## **B. Answers**

### **1. Annual Outage Reporting Requirements**

48. In its answer, CAISO claims that SoCal Edison's opposition to its outage reporting proposal is based on a misunderstanding. CAISO states its proposal would not reduce flexibility because it only requires reporting of known and planned outage in the July 1 report and would not prevent participating TOs from later scheduling outages. CAISO further argues that its outage proposal will improve the *status quo* with no appreciable cost, so it is just and reasonable.<sup>98</sup>

### **2. Limiting Allowable Source and Sink Pairs in the CRR Auction**

49. CAISO defends its path restriction proposal to limit non-delivery pair CRRs stating that it represents a reasonable balancing of interests.<sup>99</sup> CAISO argues the Commission should not delay a ruling in anticipation of later filings and that its filing

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<sup>96</sup> *Id.* at 9-12.

<sup>97</sup> SESCO Protest at 4-7.

<sup>98</sup> CAISO Answer at 57-59.

<sup>99</sup> *Id.* at 7.

is just and reasonable as required by the FPA.<sup>100</sup> CAISO states that improvements in modeling will not fully address the auction revenue shortfall. CAISO states improved modeling will never fully align the CRR model used for annual or monthly auctions and the day-ahead model because the day-ahead model must reflect the most up-to-date information.<sup>101</sup>

50. CAISO also contends its proposal is consistent with the Commission's open access principles and not unduly discriminatory because the CRR paths are still compatible with serving load and point-to-point service since they source and sink at places market participants move power.<sup>102</sup> CAISO argues that its CRR pair limitations will make the auction more competitive by increasing competition among a smaller number of possible paths.<sup>103</sup>

51. CAISO disputes commenters' counterfactual analyses based on Season 3 2018 auction data. CAISO states that it used the data to demonstrate that the non-delivery pair CRRs were not helpful as counterflow for the delivery pair CRRs. However, CAISO cautions that any analysis of existing data is not useful to predict future behavior because the bidding behavior of market participants will change in response to the bidding on CRR paths. CAISO argues that the redirected bids would increase both prices and revenues cleared in the auction.<sup>104</sup>

52. CAISO states that it is irrelevant that in some years certain non-delivery pair CRRs produce an auction revenue surplus. CAISO states that it is only relevant that in the aggregate, these auction pair CRRs produce auction revenue shortfalls. CAISO argues that the Commission should take into account the clear evidence that the non-delivery pair CRRs produce an auction revenue shortfall.<sup>105</sup>

53. Finally, CAISO noted two typographic errors in its filing.<sup>106</sup> CAISO states it omitted the words "cannot be" from section 34.6.3.2 of its tariff. It also submitted "an Operator shall all known submit CRR transmission" outages in tariff section 34.6.3.1

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<sup>100</sup> *Id.* at 5.

<sup>101</sup> *Id.* at 50.

<sup>102</sup> *Id.* at 11-19.

<sup>103</sup> *Id.* at 20.

<sup>104</sup> *Id.* at 29-30.

<sup>105</sup> *Id.* at 37-38.

<sup>106</sup> *Id.* at 60-62.

when it intended the phrase to state “an Operator shall submit all known CRR Transmission Maintenance” outages.

54. In their reply to CAISO’s answer, DC Energy/Vitol state that CAISO continues to misapprehend how bids for non-delivery path CRRs complement and compete with bids for delivery path CRRs. They explain that non-delivery path CRRs compete for capacity over the same network flow constraints and elements as delivery path CRRs. As a result, both non-delivery and delivery path CRR bids affect the value of specific grid elements and flow gates and facilitate the reconfiguration of the transmission network to reflect its maximum feasible value.<sup>107</sup> They also argue that CAISO wrongly assumes market participants know and can anticipate more about differences in the CRR model and day-ahead market than they possibly can.<sup>108</sup> DC Energy/Vitol clarify that their analysis is not based on the assumption that auction bidding behavior would remain static after the removal of the non-delivery path CRRs.<sup>109</sup> In response to CAISO’s answer that non-delivery pair CRRs are not helpful as counterflow, DC Energy/Vitol state that CAISO appears to conflate auction revenue shortfall with a lack of convergence or with mispricing.<sup>110</sup>

55. Joint Reply Commenters argue that CAISO’s proposal does not violate the Commission’s open access transmission policy and related comparability standard. Joint Reply Commenters argue that transmission service under the *pro forma* Open Access Transmission Tariff (OATT) requires specification of a point of receipt and a point of delivery which is consistent with CAISO’s proposal to limit CRRs to delivery pair paths.<sup>111</sup> Joint Reply Commenters cite the different priorities of transmission service in the *pro forma* OATT as evidence that not all uses of the transmission system must be treated the same.<sup>112</sup> Joint Reply Commenters argue that CAISO’s proposal relieves the current state of undue discrimination whereby CRR related uplift costs are allocated to measured demand, which constitute a subset of CRR holders.<sup>113</sup> Joint Reply Commenters claim that Electric Quarterly Report (EQR) data shows that more than 70

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<sup>107</sup> DC Energy/Vitol Answer at 2-3.

<sup>108</sup> *Id.* at 5-6.

<sup>109</sup> *Id.* at 6-8.

<sup>110</sup> *Id.* at 8-9.

<sup>111</sup> Joint Reply Commenters Answer at 3-5.

<sup>112</sup> *Id.* at 5-6.

<sup>113</sup> *Id.* at 7-8.

percent of CAISO-auctioned CRR holders are entities who trade no physical energy in California and account for nearly eighty-three percent of the CRR revenue shortfalls.<sup>114</sup> Joint Reply Commenters reason that because open access involves the delivery of physical energy from a source to load, eliminating the non-delivery CRR source and sink pairs will not diminish open access.<sup>115</sup> Joint Reply Commenters argue the source/sink pair CRR limitations should be implemented without delay.<sup>116</sup> Joint Reply Commenters contend that market processes that rely on uplift payments paid by a subset of market participants indicate a market that is not functioning efficiently.<sup>117</sup>

#### **IV. Discussion**

##### **A. Procedural Matters**

56. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2017), the timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding. Pursuant to Rule 214(d) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214(d) (2017), the Commission will grant SESCO's and Appian/Mercuria's late-filed motions to intervene given their interest in the proceeding, the early stage of the proceeding, and the absence of undue prejudice or delay.

57. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2017), prohibits an answer to a protest unless otherwise ordered by the decisional authority. We accept the answers filed by CAISO, DC Energy/Vitol, and Joint Reply Commenters because they have provided information that assisted us in our decision-making process.

##### **B. Substantive Matters**

58. As discussed below, we find that CAISO's filing is just and reasonable and not unduly discriminatory or preferential. In response to CAISO's proposal, many commenters have raised alternative proposals to address the auction revenue shortfall. These include possible improvements to CRR modeling, as well as alternative structures for CAISO's CRR auction. The question before the Commission is whether CAISO's filing is just and reasonable, not whether CAISO's filing is more or less just and

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<sup>114</sup> *Id.* at 9.

<sup>115</sup> *Id.* at 10.

<sup>116</sup> *Id.* at 10-12.

<sup>117</sup> *Id.* at 13-14.

reasonable than protestors' proposed alternatives.<sup>118</sup> We note that CAISO has an ongoing stakeholder process, which is the appropriate forum for market participants to discuss any further changes to CAISO's CRR auction process.

59. We accept CAISO's typographic changes raised in its Answer. We agree that these changes are ministerial and non-substantive and do not require a standalone filing. CAISO is directed to make a compliance filing within 15 days of the date of this order to reflect these changes.

**1. Annual Outage Reporting Requirements for the Annual CRR Release Process**

60. We find that CAISO's proposed amendments concerning the annual outage reporting requirements for the annual CRR release process are just and reasonable and not unduly discriminatory or preferential, and therefore we accept them effective July 1, 2018, as requested. We find that CAISO's proposed amendments will allow CAISO to improve its CRR auction model to more closely align it with the day-ahead models. CAISO has demonstrated that with more accurate information on transmission outages the model will alleviate some of the auction revenue shortfall and make the expected payouts to CRR holders more predictable and less volatile. We agree with CAISO that this will increase transparency and will improve liquidity by encouraging more robust participation in the CRR auction. Improved modeling will also reduce the overselling of CRR capacity relative to actual conditions, which will make it less likely that CAISO will need to use uplift from ratepayers or auction revenues to fully fund the CRRs from the CRR balancing account.

61. PG&E and SoCal Edison argue that such reporting is unreasonably early, and SoCal Edison also claims this requirement may reduce the flexibility for Participating TOs to schedule outages in accordance with personnel/equipment availability. We are not persuaded that Participating TOs will lose outage scheduling flexibility. Participating TOs may still change their outage plans or plan new outages after the July 1 date. We find that Participating TOs will be provided with sufficient flexibility to manage their outages without additional costs to ratepayers. With respect to PG&E's assertion that CAISO's approach to outage modeling might be a larger driver of revenue inadequacy than outage reporting, while this may be true, this does not make the outage reporting proposal unjust and unreasonable. As we find above, CAISO has demonstrated that requiring an earlier deadline will improve the accuracy of the CRR auction model, which in turn will alleviate some of the auction revenue shortfall.

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<sup>118</sup> See, e.g., *City of Bethany v. FERC*, 727 F.2d 1131, 1136 (D.C. Cir. 1984) (when determining whether a proposed rate was "just and reasonable," as required by the FPA, the Commission properly did not consider "whether a proposed rate schedule is more or less reasonable than alternative rate designs").

## 2. Limiting Allowable Source and Sink Pairs in the CRR Auction

62. We find that CAISO's proposed amendments limiting the allowed source and sink pairs to delivery pairs in the CRR auction are just and reasonable and not unduly discriminatory or preferential, and therefore we accept them effective July 1, 2018, as requested. CAISO's analysis demonstrates that market participants purchased CRRs at auction at an average annual cost of \$99.5 million less than the eventual payout to CRR holders.<sup>119</sup> CAISO further found that CRR pairs using non-delivery sources and sinks accounted for 81 percent of the auction revenue shortfalls.<sup>120</sup> CAISO's proposal will help alleviate the persistent auction revenue shortfall by removing non-delivery source and sink pair CRRs that CAISO has demonstrated significantly contribute to the shortfall. CAISO's proposal should result in a CRR market that reduces the auction revenue shortfall, while still providing hedging opportunities. As CAISO explains, the primary purpose of its CRR market is to enable market participants to hedge congestion charges associated with supply delivery.<sup>121</sup> CAISO's proposed framework provides all market participants an opportunity to obtain hedges for congestion costs associated with supply delivery transactions.

63. A number of protestors challenge CAISO's proposal as unduly discriminatory and a repudiation of open access principles, as not enhancing market efficiency, or as premature in light of other CAISO initiatives. We will address each in turn.

64. Several commenters argue that CAISO's proposal violates the Commission's open access principles by eliminating valuable hedging opportunities. We disagree. As CAISO notes, the Commission's open access principles were 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."<sup>122</sup> The Commission's precedent holds that CRRs (or equivalent FTRs in other RTOs) "play a key role in ensuring open access to firm transmission service by providing a congestion hedging function."<sup>123</sup> Under CAISO's proposal, CRRs would continue to play this role: the source-sink pairs allowed by CAISO's tariff proposal continue to allow CRRs to function as a financial equivalent of firm transmission service by permitting hedging of the delivery of power between generation and load. Further, CAISO's analysis demonstrates

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<sup>119</sup> CAISO Transmittal at 10.

<sup>120</sup> *Id.* at 13.

<sup>121</sup> *Id.* at 18.

<sup>122</sup> Order No. 888, FERC Stats. & Regs. ¶ 31,036 at 31,634.

<sup>123</sup> *See PJM Interconnection*, 158 FERC ¶ 61,093 at P 27.

that, in removing non-delivery pair CRRs from the auction, more capacity will be available to hedge the delivery of power to load.<sup>124</sup> So, CAISO's proposal would enhance this core function of the CRR auction.

65. WPTF argues that CAISO's proposal is unduly discriminatory because it would restrict hedges to only those beneficial to the incumbent load serving entities. WPTF further states that CAISO wrongly denies parties the benefits of using non-delivery pair CRRs as hedges.<sup>125</sup> Other protestors contend that doing away with non-delivery pair CRRs will result in an inability to hedge many transactions or that it will raise prices for CRRs and deprive market participants of efficient and useful hedges. However, CAISO's proposal makes available source and sink pair CRRs associated with the supply and delivery of power, not just those that benefit incumbent load serving entities. Under CAISO's proposal any non-incumbent load serving entity seeking to hedge the delivery of power may still bid on CRRs to do so. Further, generators that wish to hedge delivery to a trading hub or to export power may still do so. On the other hand, the proposal to remove the non-delivery pairs applies equally to all auction participants, including incumbent load serving entities. We note that load serving entities are also restricted to choose from a limited set of source-sink pairs in the current allocation process.<sup>126</sup> We acknowledge that non-delivery pairs can be used in constructing useful hedges, and that market participants would not be able to hedge substitute generation for outages or intermittent resources on generation to generation non-delivery pairs as easily. However, CAISO has analyzed the auctioned CRRs and found that these types of hedging transactions represent only 1.66 percent of generator-to-generator pairs and less than one percent of all CRR capacity. We find that, on balance, the potential loss in market functionality is acceptable given the scope of the auction revenue shortfall CAISO is attempting to remedy.

66. DC Energy/Vitol argue that CAISO's proposal deprives market participants of the full use of the transmission system. DC Energy/Vitol argue the proposal would replace the financial equivalent of the maximum feasible use of the transmission system with point-to-point service on a limited set of paths.<sup>127</sup> Conversely, Appian/Mercuria argues that the proposal is tantamount to doing away with point-to-point transmission service,

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<sup>124</sup> CAISO Answer at 34.

<sup>125</sup> WPTF Protest, Wolfe Affidavit at 15-16.

<sup>126</sup> Opinion on Congestion Revenue Rights Auction Efficiency, CAISO Market Surveillance Committee, at 7.

<sup>127</sup> DC Energy/Vitol Protest at 10.

leaving only network transmission service.<sup>128</sup> DC Energy/Vitol and WPTF further argue that CAISO's proposal will decrease competitiveness because non-delivery pair CRRs compete with delivery pair CRRs for capacity.<sup>129</sup> We disagree. Under the simultaneous feasibility test, all transmission capacity over which it is feasible to schedule energy flows in the day-ahead market remains available.<sup>130</sup> Thus, CAISO's proposal will not deprive market participants of the full use of the transmission system in the CRR auction. We agree with commenters that some non-delivery pair CRRs compete with supply delivery pair CRRs in the auction against the capacity of the same transmission elements and flow gates. CAISO's study demonstrates that removing non-delivery pair CRRs from the auction increased the MW quantity of supply delivery pairs that could clear in the auction from 5,000 MW to 22,000 MW. Hence, limiting the nodes available does not simply reduce the total transmission system capability; rather, in this instance it increases the transmission system capability that is available for supply delivery pair CRRs. While the set of CRRs that clear in the auction may be different under CAISO's proposal, this does not diminish the transmission system capability that is made available in the auction. Further, as CAISO notes, some non-delivery pair CRRs are frequently sold between points that are not seen as congested in the CRR auction model and do not bid against supply delivery pair CRRs for capacity. Thus, these non-delivery pair CRRs are not providing liquidity along transmission constraints.

67. WPTF states that CAISO's proposal presumes that incumbent load serving entities deserve to receive a maximum amount of congestion rent at the expense of the auction.<sup>131</sup> We disagree. Our decision to accept CAISO's proposal is not based on a principle that all congestion costs must be returned to load. We find CAISO's filing to be a just and reasonable means to balance mitigating the auction revenue shortfall by facilitating the parties' ability to hedge potential future congestion charges.

68. DC Energy/Vitol further argue CAISO's proposal is inconsistent with FPA section 217 by not making transmission rights available to non-load serving entities in an unduly discriminatory manner through the design and implementation of the auction for residual CRRs. We disagree that CAISO's proposal will result in an auction whose design and implementation are unduly discriminatory. Section 217 states that the Commission may permit transmission rights not allocated to load serving entities to be made available to other entities in a manner the Commission determines to be just and

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<sup>128</sup> Appian/Mercuria Protest at 6; DC Energy/Vitol Protest at 10.

<sup>129</sup> WPTF Protest, Wolfe Affidavit at 20-34.

<sup>130</sup> CAISO Answer at 18.

<sup>131</sup> WPTF Protest, Wolfe Affidavit at 11.

reasonable and not unduly discriminatory or preferential.<sup>132</sup> All market participants, including both load-serving entities and non-load-serving entities may participate in the auction of non-allocated CRRs on the same terms. All market participants will have equal access to opportunities to purchase non-allocated CRR pairs. We therefore find CAISO's proposal just and reasonable and not unduly discriminatory or preferential.

69. We reject the protests alleging that CAISO's proposal fails to target auction inefficiency and is instead focused on eliminating speculation in the CRR markets. NRG protests that CAISO's proposal would eliminate a disproportionately small amount of the auction revenue shortfall since it targets 93.8 percent of source-sink pairs that produce 80 percent of the revenue shortfall.<sup>133</sup> We disagree with NRG that the number of pairs relative to revenue is an appropriate metric for determining the impact of CAISO's proposal because CRR pairs have different MW quantities and different directions of flow. We also disagree with NRG that Commission orders stating that speculators purchase CRR-equivalent instruments in other markets are precedent for rejecting CAISO's proposal.<sup>134</sup> All market participants, including those participating as speculators, will still be able to purchase CRRs under CAISO's proposal.

70. WPTF argues that CAISO fails to consider the value of CRRs outside of congestion rents, such as their value in enhancing energy market liquidity, price transparency, and market efficiency generally.<sup>135</sup> However, CAISO's analysis found a substantial difference between CRR auction revenues and payouts to CRR holders. We believe that CAISO's proposal aims to bring these auction prices more in line with payouts to CRR holders. CAISO's proposal therefore intends to enhance the benefits described by WPTF.

71. DC Energy/Vitol argue that CAISO's proposal will not be beneficial to market participants because it will reduce the amount of CRRs clearing in the auction while increasing rather than decreasing the auction revenue shortfall. DC Energy/Vitol uses an empirical analysis that removes bids on the non-delivery pair CRRs from the auction and then assumes that the result will be the shape of the auction when CAISO's path restriction is enforced. CAISO replied that this analysis does not provide a meaningful

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<sup>132</sup> 16 U.S.C. § 824q (2012).

<sup>133</sup> NRG Companies Protest at 9.

<sup>134</sup> *Id.* at 9-10 (citing *Saracen Energy Midwest, LP*, 156 FERC ¶ 61,122, at P 5 (2016) and *Deutsche Bank Energy Trading, LLC*, 140 FERC ¶ 61,178, App. A, Enforcement Staff Report and Recommendation, at 1 n.3 (2012)).

<sup>135</sup> WPTF Protest, Wolfe Affidavit at 6-11.

comparison with the status quo.<sup>136</sup> DC Energy/Vitol state in their answer that their analysis does not assume that bidding behavior will not change, but rather argues that any change in behavior will be insufficient to overcome the deficiencies found in their empirical analysis. However, because DC Energy/Vitol's empirical analysis simply removes non-delivery pairs and is rooted in the unrealistic assumption that market participants cannot compete efficiently or reconstruct effective counterflow transactions if the non-delivery pairs were removed from the auction, we do not find their empirical analysis to be a fair and accurate way to identify baseline deficiencies with CAISO's proposal. We find it more likely that some percentage of these auction participants would bid on the remaining supply delivery paths, because some auction participants who have been using non-delivery pairs to construct hedges may use delivery pairs as a substitute for the non-delivery CRR pairs. We agree with CAISO that the redirection of bidding from the non-delivery CRR pairs to the supply delivery CRR pairs may increase liquidity and prices for the supply delivery CRR pairs.

72. We find that DC Energy/Vitol's HHI analysis is unpersuasive for similar reasons. They assume that bids for non-delivery CRR pairs would not be replaced by new bids for delivery CRR pairs and that the market concentration along certain constraints would increase. As noted above, we believe it is more likely that these bids would be partially replaced by delivery CRR pairs.

73. Some protestors claim that CAISO is eliminating CRR pairs that provide needed counterflow.<sup>137</sup> However, as part of its analysis, CAISO compared Season 3 2018 actual auction results to an auction run without non-delivery CRR pairs to evaluate how their removal affected counterflow.<sup>138</sup> CAISO's analysis led it to conclude that non-delivery pair paths did not enable more delivery pairs to clear in the auction.<sup>139</sup> CAISO also emphasized that counterflow CRRs will continue to be available, including through transactions from generators to interties and through the utilization of trading hubs and load aggregation points on the system.<sup>140</sup> CAISO's analysis appears to be reasonable, and there is no evidence in the record that refutes it.

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<sup>136</sup> CAISO Answer at 35.

<sup>137</sup> See WPTF Protest, Wolfe Affidavit at 16-17.

<sup>138</sup> CAISO Transmittal at 14.

<sup>139</sup> CAISO Answer at 29-30.

<sup>140</sup> *Id.* at 48.

74. Calpine, WPTF, and LSEs for CRR Auctions contend that some non-delivery CRR pairs, such as trading hub to trading hub CRR pairs, produce more revenue and are more beneficial than other non-delivery CRR pairs.<sup>141</sup> DC Energy/Vitol argue that CAISO draws an arbitrary line by restricting non-delivery CRR pairs.<sup>142</sup> We disagree that CAISO's proposal is arbitrary. CAISO's analysis showed that about 80 percent of auction revenue shortfalls are the result of non-delivery CRRs.<sup>143</sup> While some sub-categories of these non-delivery CRR pairs may contribute to the auction revenue shortfall more than others, we find that CAISO has presented a just and reasonable method for limiting CRR auction transactions and thus the auction revenue shortfall. As noted above, the primary purpose of its CRR market is to enable market participants to hedge congestion charges associated with supply delivery.<sup>144</sup> CAISO's proposed framework ensures that all market participants have an opportunity to obtain hedges for congestion costs associated with supply delivery transactions.

75. FMC argues that the auction revenue shortfall represents rational economic behavior on the part of the market participants and does not represent a fundamental flaw in the CRR auction process which must be remedied.<sup>145</sup> DC Energy/Vitol state that CAISO appears to conflate auction revenue shortfall with a lack of convergence or with mispricing.<sup>146</sup> We agree that it may be rational for a market participant purchasing CRRs to demand an adequate risk premium. Nonetheless, CAISO has demonstrated that its proposed revised CRR auction model that includes better transmission outage reporting and source and sink pairs that correspond to supply delivery paths will improve market transparency and will lead to more accurate congestion costs reflected in the auction. This in turn will increase auction efficiency and reduce the auction revenue shortfall while preserving the ability of market participants to acquire hedges. We also believe that the proposal will increase auction efficiency by increasing liquidity on delivery path CRRs, driving up auction prices to the expected value of the CRRs.

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<sup>141</sup> Calpine Protest at 13-16; WPTF Protest at 10; LSEs for CRR Auctions Protest at 8-12.

<sup>142</sup> DC Energy/Vitol Protest at 10.

<sup>143</sup> CAISO Answer at 28.

<sup>144</sup> CAISO Transmittal at 18.

<sup>145</sup> FMC Protest at 16.

<sup>146</sup> DC Energy/Vitol Answer at 8-9.

76. Finally, some commenters request that the Commission reject CAISO's path restriction proposal and see if other changes, including improved modeling and CAISO's outage reporting proposal, will solve the problems.<sup>147</sup> WPTF also argues that CAISO's stakeholder process Track 1B may result in a filing under section 205 of the FPA that could render this proposal moot.<sup>148</sup> However, the existence of other proposals and possible solutions to CAISO's CRR auction revenue shortfall problem does not render the instant proposal unjust and unreasonable. We find that CAISO has demonstrated that its path restriction proposal is just and reasonable through the evidence and analysis it has provided.

The Commission orders:

(A) CAISO's proposed tariff amendments are hereby accepted, effective July 1, 2018, as requested, as discussed in the body of this order.

(B) CAISO is directed to make a compliance filing containing their typographical corrections within 15 days of the date of this order.

By the Commission.

( S E A L )

Nathaniel J. Davis, Sr.,  
Deputy Secretary.

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<sup>147</sup> FMC Protest at 10; WPTF Protest at 8-9; Appian Way Protest at 4.

<sup>148</sup> WPTF Protest at 19.