130 FERC ¶ 61,122
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Chairman;
Marc Spitzer, Philip D. Moeller,
and John R. Norris.

California Independent System Operator Corporation — Docket Nos. ER10-300-000, ER06-615-000

# ORDER GRANTING MOTION FOR EXTENSION OF TIME AND ADDRESSING CONVERGENCE BIDDING DESIGN POLICY FILING

(Issued February 18, 2010)

1. In this order, the Commission addresses the California Independent System Operator Corporation's (CAISO) conceptual proposal that sets forth proposed market design elements for implementation of convergence bidding[1] in the CAISO market.[2] The purpose of the Conceptual Filing is to solicit the Commission's guidance so that the CAISO can either proceed to file tariff language based on the proposal, or modify the proposal as necessary. In this order, we approve in principle the majority of the proposed convergence bidding features, and provide guidance and seek additional details on other aspects of the proposal, as discussed below. In addition, the Commission grants the CAISO's motion for an extension of time to implement convergence bidding and denies requests for a technical conference to address any remaining convergence bidding issues.

2. Consistent with the nature of the CAISO's filing, the Commission's approval of the various elements of the convergence bidding proposal is in principle only. Our objective is to provide guidance, so that the CAISO can proceed with the timely

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[1] Convergence bidding, which is called virtual bidding in other RTOs and ISOs, is a market feature that involves the submission of bids to buy or sell electricity in the day-ahead market that will not ultimately be produced or consumed by the bidder in real-time. Virtual transactions allow a participant to buy (or sell) electricity in the day-ahead and to simultaneously assume an opposite obligation to sell (or buy) an identical amount of electricity in the real-time.

[2] CAISO November 20, 2009 Convergence Bidding Design Policy Filing in Docket No. ER10-300-000 (Conceptual Filing).

development of tariff language and software. Final acceptance of the concepts addressed in this order will occur only upon acceptance by the Commission of detailed tariff sheets filed pursuant to section 205 of the Federal Power Act (FPA).[3] We find that this order will benefit market participants by allowing the CAISO to refine the conceptual framework for convergence bidding in a manner that is acceptable to the Commission, and to reflect those refinements in the development of its software and the convergence bidding tariff language.

## I. **Background**

3. In an order issued December 19, 2001, the Commission directed the CAISO to propose a plan to implement a day-ahead market.[4] Between 2001 and 2004, the CAISO presented its proposal for its new market design. On June 17, 2004, the Commission required the CAISO to file within 180 days tariff language addressing the implementation of convergence bidding simultaneously with its day-ahead market, or a detailed explanation of why this should not be done.[5]

4. In a subsequent filing, the CAISO explained that convergence bidding could not easily be accommodated in the Market Redesign and Technology Upgrade (MRTU) design, and acknowledged that it had no plans to implement convergence bidding simultaneously with MRTU, but did not explain why simultaneous implementation was not feasible. Thus, in an order issued July 1, 2005, the Commission found that the CAISO had failed to comply with the directives of the June 2004 Order. The Commission directed the CAISO to submit a full explanation of the alleged infeasibility of simultaneous implementation, along with a date when implementation of convergence bidding would be feasible.[6]

5. In an order issued September 21, 2006, the Commission found that the compliance filings submitted by the CAISO in response to the July 2005 Order failed to provide any of the substantive information required by the Commission.[7] Further, the Commission

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[3] 16 U.S.C. § 825e (2006).

[4] *San Diego Gas & Elec. Co. v. Sellers of Energy and Ancillary Servs.*, 97 FERC ¶ 61,275, at 62,245 (2001).

[5] *Cal. Indep. Sys. Operator Corp.*, 107 FERC ¶ 61,274 (2004) (June 2004 Order).

[6] *Cal. Indep. Sys. Operator Corp.*, 112 FERC ¶ 61,013, at P 173-74 (2005) (July 2005 Order).

[7] *Cal. Indep. Sys. Operator Corp.*, 116 FERC ¶ 61,274, at P 448 (2006) (MRTU Order).

noted that the MRTU tariff amendment, as filed, did not include provisions to implement convergence bidding.[8] The Commission agreed with commenters regarding the benefits of convergence bidding, but expressed concern that requiring implementation of convergence bidding in MRTU Release 1 could further delay MRTU implementation. The Commission found that the harm of further delaying MRTU outweighed the potential benefits of including convergence bidding in Release 1.[9] Thus, the Commission directed the CAISO to file tariff language for the implementation of convergence bidding within 12 months after the effective date of MRTU Release 1.[10] On rehearing, the Commission clarified that the CAISO was required to implement convergence bidding within 12 months after the MRTU launch, and to file tariff sheets to implement convergence bidding no less than 60 days prior to the one-year anniversary of Day 1 of MRTU operation.[11] After several delays, the MRTU tariff became effective on March 31, 2009, with Day 1 of MRTU operation occurring on April 1, 2009.

6. On November 20, 2009, the CAISO submitted for Commission approval the instant Conceptual Filing, which sets forth the main features of the proposed convergence bidding design. Separately, the CAISO filed a motion requesting an extension of time to implement convergence bidding.[12]

## II. Notice, Intervention and Responsive Pleadings

7. Notice of the convergence bidding design policy was published in the *Federal Register*, 74 FR 64068 (2009), with motions to intervene, comments, and protests due on or before December 11, 2009. Timely motions to intervene, comments, and/or protests were filed by the following: (1) Calpine Corporation (Calpine); (2) Citigroup Energy Inc.; (3) NRG Power Marketing LLC, Cabrillo Power I LLC, Cabrillo Power II LLC, El Segundo Power LLC, and Long Beach Generation LLG (NRG); (4) M-S-R Public Power Agency; (5) Sacramento Municipal Utility District, (6) California Municipal Utilities Association; (7) Modesto Irrigation District; (8) the Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California (Six Cities); (9) Dynegy Morro

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[8] *Id.* P 430.

[9] *Id.* P 451.

[10] *Id.* P 452.

[11] *Cal. Indep. Sys. Operator Corp.*, 119 FERC ¶ 61,076, at P 117 (2007) (MRTU Rehearing Order).

[12] CAISO November 20, 2009 Motion for Extension of Time in Docket No. ER06-615-000 (Motion for Extension of Time).

Bay, LLC, Dynegy Moss Landing, LLC, Dynegy Oakland, LLC, and Dynegy South Bay, LLC (Dynegy); (10) Southern California Edison Company (SoCal Edison); (11) the Northern California Power Agency (NCPA); (12) the City of Santa Clara, California (SVP); (13) the California Energy Resources Scheduling Division of the California Department of Water Resources (CERS); (14) DC Energy, LLC (DC Energy); (15) the California Department of Water Resources State Water Project (SWP); (16) SESCO Enterprises, LLC, Jump Power, LLC, Silverado Energy LP, and JPTC, LLC (Financial Marketers); (17) Powerex Corp. (Powerex); (18) Pacific Gas and Electric Company (PG&E); (19) the Western Power Trading Forum (WPTF); and (20) J.P. Morgan Ventures Energy Corporation and BE CA LLC (J.P. Morgan). The California Public Utilities Commission (CPUC) filed a notice of intervention, but its comments were filed out-of-time. The Financial Marketers' protest includes a request for technical conference. Mirant Parties (Mirant) filed a motion to intervene out-of-time. The CAISO filed an answer.

8. On November 23, 2009, the Commission issued a notice extending the period of time for interested parties to submit answers to the CAISO's Motion for Extension of Time.[13] Answers to the CAISO's Motion for Extension of Time were filed by the following: (1) SoCal Edison; (2) PG&E; (3) Powerex; (4) WPTF; (5) Dynegy; and (6) Financial Marketers. The Financial Marketers' answer included a motion for leave to intervene out of time and a motion for technical conference. The CAISO filed an answer.

## III. Discussion

### A. Procedural Matters

9. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2009), the notice of intervention and 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) (2009), the Commission will grant the late-filed motions to intervene of Financial Marketers and Mirant, given their interest in the proceeding, the early stage of the proceeding, and the absence of undue prejudice or delay. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2009), prohibits an answer to a protest or answer unless otherwise ordered by the decisional authority. We are not persuaded to accept the CAISO's answers and will, therefore, reject them.

[13] November 23, 2009 Notice Extending Answer Period in Docket No. ER06-615-000.

### 1. Motion for Extension of Time

#### a. CAISO Motion

10. In the Motion for Extension of Time, the CAISO argues that good cause exists to grant the requested extension because the diversion of resources necessary to ensure successful MRTU startup by April 1, 2009 have made it impossible to meet the Commission's directive to implement convergence bidding within 12 months after MRTU start-up. The CAISO projects that it will not be able to implement convergence bidding until February 1, 2011.[14]

11. The CAISO states that from June 2006 through October 2008, it was engaged in extensive discussions with stakeholders on issues related to convergence bidding. According to the CAISO, convergence bidding development was suspended after October 2008 because the CAISO's "need to devote resources to the [MRTU] go-live effort consumed the organization's resources for several months before and after go-live."[15] The CAISO states that it resumed the stakeholder process on the policy elements of convergence bidding in July 2009, with the publication of a straw proposal. According to the CAISO, the proposal was discussed and refined over the course of a series of stakeholder meetings, including a joint meeting held by the Market Surveillance Committee. Stakeholders were given opportunities to provide verbal and written comments on the draft final proposal. The CAISO states that once all critical policy decisions had been made, the design proposal for the convergence bidding feature was presented to and approved by the CAISO Board at its October 29, 2009 meeting.[16]

12. The CAISO explains that it plans to submit the convergence bidding tariff language for Commission approval by the end of the first quarter of 2010, but notes that the critical factor affecting the CAISO's ability to implement convergence bidding by February 1, 2011 is the software development, testing, and simulation. The CAISO asserts that implementation of the convergence bidding feature will require extensive modifications to most of the new market software systems, and characterizes this effort as "one of the most complex market enhancements under development by the [CAISO] for the foreseeable future," due to the "broad cross-functional impacts" of the convergence bidding feature.[17] Specifically, the CAISO identifies a number of technical challenges

[14] CAISO Motion for Extension of Time at 1.

[15] *Id.* at 12.

[16] *Id.* at 15. The materials presented to the Board are available on the CAISO's website at: http://www.caiso.com/244e/244e8eae13040.html.

[17] *Id.* at 17.

that will make it difficult to accelerate the schedule for convergence bidding software development and testing, including the following: (1) impacts of virtual bids on network power flows; (2) burdens associated with implementing position limits; (3) the need to coordinate delivery schedules of various complex market features; (4) estimating the "right" duration of the market simulation period; (5) impacts on memory and storage space of potentially large numbers of virtual bids; (6) impacts of day-ahead convergence bidding on real-time nodal operations; (7) impacts of large numbers of virtual bids on the ability of software to achieve market solutions; and (8) the challenge of determining which "best practices" of other ISOs should be incorporated into CAISO convergence bidding software.[18]

13. Moreover, given the complexity of the technical challenges, the CAISO asserts that there are a limited number of experts, both at the CAISO and at Siemens, the primary software vendor, who have the expertise to work on the development of the software. The CAISO notes that it authorized Siemens to hire or assign additional employees to the project, but explains that Siemens has expressed its opinion that additional employees will not significantly hasten implementation. Similarly, the CAISO states that it has explored the possibility of hiring a separate software vendor to develop the convergence bidding software, but has concluded that Siemens remains the best choice for the timeliest development of convergence bidding.[19] The CAISO states that given the resources needed for a safe and reliable MRTU start up, Siemens was unable to focus on post-launch enhancements until May 2009, resulting in a deviation from the original implementation schedule of approximately six months. The CAISO adds that even if Siemens had been able to resume work on the convergence bidding software sooner, policy decisions made after the stakeholder process resumed in July 2009 would have rendered most of that work obsolete.[20]

14. In addition, the CAISO observes that it is concurrently developing other market enhancements to comply with Commission directives, but maintains that the proposed convergence bidding schedule reflects the appropriate order for the development of these additional market features. Specifically, the CAISO asserts that it is necessary to develop and build the multi-stage generation functionality[21] before convergence bidding. Given

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[18] *Id.* at 17-18.

[19] *Id.* at 19-20.

[20] *Id.* at 22-23.

[21] Multi-stage generation modeling is an enhancement that will allow combined cycle resources to be modeled more accurately. Multi-stage generation modeling is one of the "deferred functionality" features for which the Commission authorized post go-live implementation. The Commission has directed the CAISO to implement this

(continued…)

the benefits of the multi-stage generation functionality, the CAISO contends that stakeholders would not support a delay in the implementation of this feature, even if such a delay allowed for earlier implementation of convergence bidding. The CAISO further asserts that it has determined that delaying other market enhancements under development, such as scarcity pricing, is unlikely to have an impact on the convergence bidding schedule. Thus, the CAISO maintains that it has considered a full range of measures that could potentially expedite convergence bidding, but has determined that none of the possible scenarios would facilitate implementation in time to satisfy the Commission's March 31, 2010 deadline.[22]

15. The CAISO states that its new estimate for convergence bidding implementation includes a 20 percent safety margin to account for complications that have not yet been identified. Thus, the CAISO has expanded its timeline for the development and testing of the software from fifteen to eighteen months, including four months for software design, six months to build the software, four months for software testing and integration, and four months for market simulation. The CAISO also states that its revised implementation schedule avoids certain "hands off" periods, including the summer months and the months of December and January, that have been identified as undesirable implementation dates by a wide range of market participants.[23]

### b. Comments and Protests

16. Financial Marketers, Dynegy, and WPTF oppose the Motion for Extension of Time. Financial Marketers argue that the CAISO's motion for a ten-month extension of time to implement convergence bidding is unreasonable and must be rejected. Financial Marketers contend that the CAISO's revised implementation timeline, as well as the design policy itself, proceed from the mistaken assumption that convergence bidding must be implemented very gradually to guard against market manipulation and reliability issues. According to Financial Marketers, experience in other ISOs and RTOs belies the CAISO's fears, as virtual trading has been successfully implemented at the nodal level elsewhere with little or no additional costs, delay, or operational problems. Financial Marketers assert that deferring convergence bidding until February 2011, and then imposing numerous restrictions and fees, would only serve to "preserve market

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functionality within six to nine months of MRTU startup. *Cal. Indep. Sys. Operator Corp.*, 126 FERC ¶ 61,081, at P 30 (2009).

[22] CAISO Motion for Extension of Time at 25-31.

[23] *Id.* at 23-25.

distortions, invite market manipulation and the exercise of market power by existing market participants, and subject consumers to unnecessarily high energy costs."[24]

17. Financial Marketers insist that the CAISO should not need more than a few months to implement convergence bidding, and suggest that the CAISO can utilize the policies, tariff provisions, and software used by other ISOs and RTOs. The Financial Marketers also support the hiring of a consultant, if that would help the CAISO implement convergence bidding sooner.[25]

18. Dynegy also opposes the CAISO's Motion for Extension of Time and argues that the delay is of the CAISO's own making. Specifically, Dynegy asserts that the decision for a further ten-month delay is the consequence of deliberate CAISO actions, including: (1) the CAISO's failure to inform the Commission and the market participants of the potential consequences of suspending convergence bidding activity; and (2) the CAISO's failure to seek Commission approval for the delay until November 20, 2009 – less than five months before the Commission's implementation deadline. Dynegy contends that further delay is not simply a scheduling or policy matter and asserts that by repeatedly failing to implement convergence bidding in a timely manner, the CAISO has shown a lack of concern about the need for risk-management tools for generators.[26]

19. However, Dynegy acknowledges that the Commission may have no other option at this late date than to grant the CAISO's request. Even so, Dynegy asserts that by granting the extension, the Commission may undermine market participants' confidence that the Commission can act to ensure fair and balanced markets, if doing so depends on the Commission's ability to direct the CAISO to implement needed market functionality on a specified timeline. Therefore, Dynegy suggests that the Commission should direct the CAISO to implement a more effective and reliable process for prioritizing and developing new market functionality. To that end, Dynegy requests the Commission to direct the CAISO to annually seek approval of the CAISO's future plans, including both the scope and schedule, for adding new market functionality.[27]

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[24] Financial Marketers December 9, 2009 Answer to Motion for Extension of Time and Motion for Technical Conference in Docket No. ER06-615-000 at 5 (Financial Marketers Answer to Motion for Extension of Time).

[25] *Id.* at 10-11.

[26] Dynegy December 9, 2009 Answer to Motion for Extension of Time in Docket No. ER06-615-000 at 2-5.

[27] *Id.* at 5-8.

20. WPTF opposes the motion for extension of time, but asserts that the CAISO has waited so long in seeking the delay as to leave no other practical alternative than delaying implementation of convergence bidding. Thus, WPTF concludes that more Commission oversight is needed to ensure that the CAISO stays on track with its schedules for developing and implementing Commission-directed market functionality. Specifically, WPTF requests that the Commission more actively monitor the remaining stages of the convergence bidding development and implementation process by taking the following actions: (1) directing the CAISO to report on the status of remaining challenges and action plan in monthly status filings to the Commission until convergence bidding is implemented; (2) directing the CAISO to resume its bi-weekly Convergence Bidding Working Group calls with the goal of eliminating remaining vendor challenges and working toward an October 2012 implementation date, with Commission staff participating when possible; and (3) continuing to urge the CAISO to sincerely and diligently investigate possibilities for a quicker implementation.[28]

21. In addition, WPTF opposes the requests by other market participants to slow down the implementation of convergence bidding. WPTF remarks that the Commission has already ruled on the desirability of implementation within 12 months of MRTU go-live, and observes that parties have been aware of this directive for three or more years.[29]

22. Powerex states that it does not oppose the CAISO's requested extension of time. However, given the history of delays in the implementation of convergence bidding, Powerex requests the Commission to direct the CAISO to file quarterly reports with the Commission regarding the CAISO's progress towards implementation.[30]

23. PG&E and SoCal Edison support the CAISO's motion for extension. PG&E agrees with the CAISO's characterization of the remaining challenges to implementing convergence bidding and asserts that February 1, 2011 is an aggressive target. PG&E opines that setting a realistic implementation schedule benefits the CAISO and market participants alike. Thus, PG&E states that it would oppose any efforts to accelerate the schedule and requests the Commission to direct the CAISO to discontinue unrealistic and disruptive efforts to implement convergence bidding any sooner than February 1, 2011.[31]

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[28] WPTF December 9, 2009 Answer to Motion for Extension of Time at in Docket No. ER06-615-000 at 3-5.

[29] *Id.* at 5-6.

[30] Powerex December 9, 2009 Answer to Motion for Extension of Time in Docket No. ER06-615-000 at 2-3.

[31] PG&E December 9, 2009 Answer to Motion for Extension of Time in Docket No. ER06-615-000 at 1-5.

SoCal Edison remarks that the broad cross-functional impacts of convergence bidding on other systems will require extensive functional and integration testing and asserts that the implementation schedule must include sufficient time to satisfactorily address remaining technical challenges. SoCal Edison maintains that a February 1, 2011 implementation is realistic, given the remaining challenges and testing required. SoCal Edison further notes that it supports the 20 percent contingency margin proposed by the CAISO because of the benefits to all market participants of developing an implementation schedule that is realistic, rather than one with continuous changes and delays.[32]

### c. Commission Determination

24. The Commission grants the motion, but with qualifications. Notwithstanding the CAISO's focus on ensuring the successful launch of MRTU, we nevertheless emphasize that it has been on notice of the precise deadline for convergence bidding for over three years. So, while the timing of the CAISO's request effectively leaves the Commission with no practical alternative but to grant the motion for extension of time until February 1, 2011, further delay is unacceptable. Consequently, although we grant the requested extension, we expect the CAISO to continue to strive for the earliest possible implementation date possible. Further, given the CAISO's history of delay in connection with this market design feature, we find it necessary to increase transparency into the CAISO's convergence bidding implementation process so that the Commission and stakeholders alike will be promptly informed of progress, as well as additional problems, if they arise. To that end, we direct the CAISO to provide monthly status updates, beginning April 1, 2010, which include information about the CAISO's progress towards implementation, including any new or remaining challenges and the actions the CAISO is taking to resolve them. We also direct the CAISO to advise all interested stakeholders of any potential impediments to achieving a February 1, 2011 launch at the earliest possible date, and to work diligently with stakeholders to achieve the necessary solutions and prevent further delay. Finally, while we understand the CAISO's desire to be conservative in its estimate of a feasible implementation date, we urge the CAISO to make all reasonable efforts towards an earlier implementation.

25. We deny Dynegy's request to direct the CAISO to establish an annual Commission approval process for all new market functionality. Because Dynegy's request implicates market enhancements in general, rather than focusing on the convergence bidding implementation process, we find that the request is beyond the scope of this proceeding.

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[32] SoCal Edison December 10, 2009 Answer to Motion for Extension of Time in Docket No. ER06-615-000 at 2-3.

### 2. Motion for Technical Conference

26. Financial Marketers request that the Commission order a technical conference to address all issues contributing to the delay of convergence bidding implementation. Financial Marketers contend that a technical conference would be a far more efficient and productive forum for vetting these issues than through an "interminable series of pleadings," and more conducive to reaching a common understanding and resolution of the issues.[33]

27. The Commission finds that holding a technical conference at this stage of the process would be an inefficient use of time and resources. Interested parties have had the opportunity for several years to participate in a stakeholder process on these issues and to offer numerous rounds of comments on the CAISO's straw proposals. Although, as discussed below, we find that we are not able to resolve all of the outstanding issues on the basis of the Conceptual Filing, we remain confident that these issues will be sufficiently addressed in subsequent stakeholder processes and pleadings. Thus, we deny Financial Marketers' request for a technical conference.

## B. Conceptual Filing

28. The Conceptual Filing proposes the following major design elements for the CAISO's convergence bidding market:

- Scheduling coordinators, on behalf of entities that enter into convergence bidding entity agreements, will be able to submit convergence bids at all internal pricing nodes, including aggregated pricing nodes, and at the interties;

- Initial position limits,[34] to be gradually phased out, will reduce the total number of megawatts of convergence bids that a scheduling coordinator can place on behalf of a convergence bidding entity at any one internal pricing node or intertie;

- Intertie schedules will be subject to constraints that ensure compliance with applicable intertie scheduling limits. In addition, stricter position limits have

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[33] Financial Marketers Answer to Motion for Extension of Time at 11-12; Financial Marketers December 11, 2009 Protest and Request for Technical Conference in Docket No. ER10-300-000 at 39 (Financial Marketers Protest).

[34] Position limits restrict the megawatt volume of convergence bidding by individual bidders at any node or intertie (there is no limit on the number of convergence bidders that may submit bids at any node or intertie).

been proposed for convergence bids at the interties to ensure that these virtual bids do not adversely affect system reliability;

- The existing local market power mitigation and reliability requirements process, which is based on physical bid-in generation and the load forecast, will continue to be applied; the CAISO's Department of Market Monitoring will closely monitor convergence bidding to address the potential for the use of convergence bidding to manipulate market prices or undermine local market power provisions;

- The ability of the CAISO to suspend convergence bidding for a single entity or the market as a whole at any or all nodes in the event that convergence bidding: (1) detrimentally affects grid or market operations; (2) contributes to an unwarranted divergence between prices in the integrated forward market and real-time market; or (3) otherwise distorts competitive market outcomes;

- A settlement rule will be applied to deter adverse incentives to engage in strategic convergence bidding that could affect revenues associated with congestion revenue rights;

- Each convergence bidding entity must either be a scheduling coordinator or use a scheduling coordinator to submit convergence bids; the CAISO will administer a registration process for becoming a convergence bidding entity;

- Costs attributable to convergence bidding will be allocated to scheduling coordinators through special transactions charges, uplift charges, and grid management charges; and

- A dynamic credit checking policy to ensure the creditworthiness of convergence bidding entities.

29. In general, commenters support the idea of incorporating convergence bidding into the CAISO's markets and recognize the potential benefits of this market feature. In addition, commenters generally express support for many of the design elements proposed in the Conceptual Filing, with several notable exceptions, such as the CAISO's proposal to impose position limits, as discussed in greater detail below. Several commenters note that the CAISO has not provided sufficient detail to permit a thorough evaluation of a number of design elements (e.g., grid management charges, constraints to ensure an AC solution) and reserve the right to comment on these items once the tariff language has been developed and filed with the Commission. Finally, many commenters stress the importance of a meaningful opportunity to participate in the software testing and market simulation process prior to implementation, as well as meaningful opportunities to address any new issues identified during pre-implementation testing.

30. As discussed in previous orders,[35] convergence bidding is expected to improve market performance in a number of ways. First, convergence bidding is expected to increase liquidity in the day-ahead market. By expanding the number of offers to buy and sell in the day-ahead market, convergence bidding helps prevent the exercise of market power. Without convergence bidding, participants with market power may have the ability to influence prices in the day-ahead market in a way that causes the forward price to be systematically different than real-time prices. In addition, convergence bidding generally reduces the price differentials between the real-time and the day-ahead markets, thus reducing the incentive for buyers or sellers to forego bidding physical schedules in the day-ahead market with the expectation of more favorable prices in the real-time markets. Finally, convergence bidding benefits market participants by providing a mechanism for hedging exposure to real-time prices. Convergence bidding has proven to be a valuable market design feature in other locational-marginal-price-based electricity markets.[36] Thus, we continue to emphasize that convergence bidding is an important market enhancement. As discussed below, we approve in principle the majority of the proposed major design elements.

### 1. <u>Nodal Convergence Bidding and General Design Issues</u>

31. The CAISO proposes to allow convergence bidding at the nodal level. Both the CAISO and the CAISO's Market Surveillance Committee agree that "the major market efficiency benefits from convergence bidding … can only be realized by allowing transactions at the nodal level."[37] The CAISO states that its current market data show a divergence of prices between the day-ahead and real-time markets at both the nodal level and load aggregation point level and assert that implementing convergence bidding only at the load aggregation point level would allow large and systematic differences between nodal prices to persist. The CAISO also asserts that nodal-level virtual bids can be used for more accurate demand bidding and to give suppliers the ability to hedge exposure to real-time prices in the event of a generation outage. The CAISO observes that

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[35] *See* MRTU Order, 116 FERC ¶ 61,274 at P 449-51; July 2005 Order, 112 FERC ¶ 61,013 at P 175; June 2004 Order, 107 FERC ¶ 61,274 at P 158.

[36] *See, e.g.*, July 2005 Order, 112 FERC ¶ 61,013 at P 175 (stating that the introduction of virtual bidding in ISO-NE and MISO has proven to be a success).

[37] Conceptual Filing at Attachment C, Final Market Surveillance Committee Opinion, dated October 2, 2009 (MSC Opinion) at 2. The Department of Market Monitoring also supports the CAISO's proposal to implement nodal convergence bidding. *See* Conceptual Filing at n.22.

convergence bidding on a nodal basis also accords with the practices of the other ISOs and RTOs.[38]

32. The CAISO also proposes to allow convergence bidding at aggregated pricing hubs, including trading hubs and load aggregation points. However, the CAISO plans to allow each convergence bidding entity to submit, through its scheduling coordinator, only one virtual supply bid and one virtual demand bid per location per hour. Further, all convergence bids will include a flag that identifies the bid as virtual, rather than physical.[39] The CAISO states that it does not intend to place a maximum megawatt-hour limit on the size of convergence bids, but has proposed a minimum limit of one megawatt. Finally, to handle the anticipated increase in the number of bids in the day-ahead market, the CAISO proposes to aggregate all of the virtual bids at each location, node, load aggregation point, or trading hub to create one composite virtual bid curve for virtual supply and virtual demand. The CAISO proposes to conduct the day-ahead process using these aggregated bid curves and then de-aggregate the virtual bid results into individual cleared bids and publish the day-ahead market results.[40]

### a. <u>Comments and Protests</u>

33. Most commenters strongly support a nodal convergence bidding design, stressing that this level of granularity is necessary to achieve the expected benefits of convergence bidding.[41] SWP also strongly supports the CAISO's determination to use nodal-level convergence bidding, but cautions that appropriate safeguards against market manipulation are essential. Thus, SWP states that before this convergence bidding design is approved, specifics of unacceptable behaviors and their consequences should be made clear, and the CAISO should be directed to transparently report on successes and failures

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[38] Conceptual Filing at 10-12.

[39] The CAISO is currently conducting a stakeholder process regarding the issue of e-tagging requirements to more clearly distinguish between physical and virtual bids. *See* CAISO Final Draft Proposal E-tag Timing Requirements Initiative, dated January 7, 2010, available at: http://www.caiso.com/2717/2717a27c40bf0.pdf.

[40] Conceptual Filing at 10.

[41] DC Energy December 11, 2009 Comments in Docket No. ER10-300-000 at 4-7 (DC Energy Comments); WPTF December 11, 2009 Comments in Docket No. ER10-300-000 at 3 (WPTF Comments); J.P. Morgan December 11, 2009 Comments in Docket No. ER10-300-000 at 6 (J.P. Morgan Comments).

of the convergence bidding program.[42] Similarly, CERS supports the CAISO's proposal only if the proposed mitigation provisions are approved and are diligently carried out.[43] SoCal Edison, on the other hand, expresses concern that a nodal convergence bidding framework may present technical challenges that could further delay implementation.[44]

34. Financial Marketers state that the disallowance of any convergence bids of less than one megawatt is arbitrary and unwarranted, as other ISOs and RTOs have far lower minimum bids and have not reported any resulting problems. Financial Marketers claim that most other ISOs and RTOs permit bids of significantly less than one megawatt, because this encourages more vibrant trading at each node, thereby enhancing the price convergence effect. Financial Marketers also assert that this restriction would needlessly limit the number of convergence bids and the ability of convergence bidders to identify locations where there is a divergence that can be closed through arbitrage.[45] In addition, Financial Marketers request that the Commission direct CAISO to explain how the aggregation of virtual bids at each location will work, provide examples, and demonstrate that any effects it has on market participants submitting virtual bids are just and reasonable.[46]

### b. Commission Determination

35. We approve the CAISO's proposal to implement convergence bidding on a nodal level. Nodal convergence bidding provides benefits that have been well-documented by the Commission. We have found that convergence bidding can have reliability benefits,[47] lower incentives for buyers and sellers to forego bidding physical schedules in day-ahead markets in expectation of better prices in the real-time markets, improve day-ahead and

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[42] SWP December 11, 2009 Comments in Docket No. ER10-300-000 at 6 (SWP Comments).

[43] CERS December 11, 2009 Comments in Docket No. ER10-300-000 at 4 (CERS Comments).

[44] SoCal Edison December 11, 2009 Comments in Docket No. ER10-300-000 at 4-5 (SoCal Edison Comments).

[45] Financial Marketers Protest at 36-37.

[46] *Id.* at 37-38.

[47] *Wholesale Competition in Regions with Organized Electric Markets*, Order No. 719, FERC Stats. & Regs. ¶ 31,281 (2008); *ISO New England, Inc.*, 113 FERC ¶ 61,055, at P 30 (2005).

real-time price convergence, and provide price discovery and liquidity to the market.[48] Studies conducted by other ISOs have confirmed the benefits of convergence bidding.[49]

36. Concerns by some commenters regarding the potential for the exercise of market power and market manipulation caused by the introduction of convergence bidding, particularly at the nodal level, are addressed in more detail below. We find that the CAISO has proposed adequate market mitigation measures and safeguards that are designed to prevent manipulation of markets through the use of convergence bidding. We find that these measures should assuage market participant concerns.

37. We reject Financial Marketers' request to allow convergence bids smaller than one megawatt. While some other RTOs and ISOs, as Financial Marketers assert, may permit convergence bids of less than one megawatt, the CAISO's proposal is consistent with the bidding limitations employed by both ISO-NE and NYISO.[50] The Commission has, therefore, previously approved virtual bidding market designs that include the one megawatt minimum.[51] Financial Marketers have not demonstrated that the CAISO's proposal is unjust and unreasonable. We find no reason to require the CAISO to implement a different policy in this case.

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[48] MRTU Order, 116 FERC ¶ 61,274 at P 450-451.

[49] NYISO and ISO-NE studies showed virtual bidding improved price convergence and lowered the market price of risk. *See, e.g.,* Celeste Saravia, *Speculative Trading and Market Performance: The Effect of Arbitrageurs on Efficiency and Market Power in the New York Electricity Market,* Center for the Study of Energy Markets Working Paper Series (Univ. of Cal. Energy Inst.), Nov. 2003, http://www.ucei.berkeley.edu/PDF/csemwp121.pdf; *Impact of Virtual Transactions on New England's Energy Market,* Mkt. Monitoring Dep't. Report (ISO New England Inc.), Nov. 1, 2004, http://www.iso-ne.com/pubs/spcl_rpts/2004/virtual_transactions_report.pdf.

[50] ISO New England Manual for Market Operations (Manual M-11), § 2.5.6 (June 30, 2009); New York Independent System Operator, Inc., Market Services Tariff, § 4.1.4 (January 14, 2010).

[51] *See New York Independent System Operator, Inc., Morgan Stanley Capital Group, Inc. v. New York Independent System Operator Inc.,* "Order Accepting Virtual Bidding Proposal and Mitigation Measures, and Directing Compliance Filing," 97 FERC ¶ 61,091 (2001); *New England Power Pool and ISO New England Inc.*, 100 FERC ¶ 61,287, *order on reh'g*, 101 FERC ¶ 61,344 (2002).

38. We do, however, agree with the Financial Marketers that the Conceptual Filing lacks certain details regarding the bid aggregation element of the proposal that need to be explained. We encourage the CAISO to work with market participants to provide the data and information requested by Financial Marketers, and to provide additional support for and explanation of its proposed rules for convergence bidding in its section 205 tariff filing.

**2. Position Limits at Internal Nodes**

39. The CAISO proposes position limits at internal nodes as a measure for mitigating the potential exercise of market power by any one market participant that could occur absent a deep and liquid market for convergence bidding at the initial implementation of convergence bidding. For nodes associated with generators, the CAISO proposes to base the position limits for each convergence bidding entity on the maximum normal capability of the generator. For nodes associated with demand, the CAISO proposes to base position limits on the maximum megawatt volume that flows over a node over a period of time or on the megawatt-hour volume of the peak withdrawal at the node.[52]

40. For internal nodes, the CAISO proposes the following schedule for the establishment and gradual phase-out of position limits:

- Ten percent limits, based on a percentage of either a generator's maximum normal capability or maximum megawatt volume flowing over a particular node, for the first eight months after the implementation of convergence bidding;
- 50 percent limits for months nine through 12;
- 100 percent limits for months 13 through 24;
- No position limits starting in the 25th month after convergence bidding implementation.[53]

**a. Comments and Protests**

41. SoCal Edison, PG&E, the CPUC, NCPA, CERS, and SVP support the CAISO's proposal to impose position limits upon initial implementation of convergence bidding, but assert that administratively set timelines for relaxing the limits may not provide adequate safeguards. In general, these parties agree that a gradual phase-out of position

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[52] Conceptual Filing at 12-13.

[53] *Id.* at 14.

limits will provide time for the CAISO and market participants to gain experience with convergence bidding and to assess market manipulation risks. CERS asserts specifically that the proposed initial position limits will minimize CERS' exposure under the seller's choice contracts.[54] These parties argue that the limits should only be relaxed with the consent of the Department of Market Monitoring and Market Surveillance Committee, based on an assessment of actual market performance at the time of the decision.[55] Six Cities echo these sentiments, but also express particular concern about the impact of convergence bidding on the residual unit commitment process. Six Cities urge the Commission to direct the CAISO to develop, in consultation with the stakeholders, market performance criteria that must be met prior to the relaxation of position limits from one stage to the next. Thus, Six Cities recommend a two-part test that permits the relaxation of position limits only: (1) after substantial experience with market operations (no sooner than the time periods set forth in the CAISO's proposal); and (2) only after the defined performance criteria have been satisfied.[56] SVP also suggests that any relaxation of the position limits should be tied to market performance metrics, to be determined by the Department of Market Monitoring or Market Surveillance Committee.[57]

42. In contrast, Dynegy, DC Energy, Powerex, Calpine, WPTF, J.P. Morgan, and Financial Marketers oppose position limits at individual nodes entirely, claiming that the CAISO has overstated the potential for the exercise of market power. Dynegy states that the CAISO's fears about market manipulation are groundless, because, by the CAISO's own assessment, convergence bidding is designed to enhance market liquidity.[58] Calpine

[54] Seller's choice contracts are contracts entered into by the State of California during the 2000-2001 western energy crisis that permit the seller to select the location for delivery of energy. Conceptual Filing at 23. CERS notes that it remains under seller's choice contracts, which have staggered expiration dates between 2010 and 2012. CERS Comments at 4.

[55] SoCal Edison Comments at 5-6; PG&E December 11, 2009 Comments in Docket No. ER10-300-000 at 7-10 (PG&E Comments); CPUC December 16, 2009 Comments in Docket No. ER10-300-000 at 4 (CPUC Comments); NCPA December 11, 2009 Comments in Docket No. ER10-300-000 at 4-5 (NCPA Comments); CERS Comments at 4-5.

[56] Six Cities December 11, 2009 Comments in Docket No. ER10-300-000 at 2-3 (Six Cities Comments).

[57] SVP December 11, 2009 Comments in Docket No. ER10-300-000 at 5 (SVP Comments).

[58] Dynegy December 11, 2009 Comments and Limited Protest in Docket No. ER10-300-000 at 3 (Dynegy Comments).

argues that given the potentially unlimited supply of convergence bids and the absence of barriers to entry, convergence bidding markets are essentially self-policing, and that any attempts at gaming these markets would generally create profitable arbitrage opportunities for other bidders.[59] Powerex asserts that the CAISO has not justified its proposal to establish limits beyond making general assertions about the need for gradual implementation.[60]

43. Similarly, WPTF contends that the CAISO has provided no evidence demonstrating the potential for convergence bidders to exercise market power. Further, WPTF argues that the concept of market power as it relates to convergence bidding makes no sense because there is no limit to the participation nor any “ownership” or ability to concentrate convergence bids.[61] J.P. Morgan asserts that the CAISO has not demonstrated that the nodal market for convergence bids will be illiquid or that individual market participants will be able to systematically exercise market power at a particular node.[62] Financial Marketers contend that the proposed position limits place an undue constraint on competition because the CAISO’s claims that the limits are needed to protect against market manipulation or the exercise of market power are unsupported and conclusory.[63]

44. Multiple parties assert that although no other ISO imposes position limits, the CAISO has not identified any actual incidents of the exercise of market power in other organized markets where convergence bidding has been implemented.[64] In fact, WPTF argues, the perspective in other ISOs is that position limits on virtual bids would harm their ability to curb the market power of physical generation.[65]

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[59] Calpine December 11, 2009 Comments in Docket No. ER10-300-000 at 2-3 (Calpine Comments).

[60] Powerex December 11, 2009 Limited Protest in Docket No. ER10-300-000 at 8 (Powerex Protest).

[61] WPTF Comments at 7.

[62] J.P. Morgan Comments at 7.

[63] Financial Marketers Protest at 10.

[64] *See, e.g.*, Dynegy Comments at 3; Calpine Comments at 3; J.P. Morgan Comments at 7; Financial Marketers Protest at 11.

[65] WPTF Comments at 7.

45. Moreover, Calpine, WPTF, and DC Energy insist that the CAISO has other, more effective tools at its disposal to prevent the exercise of market power. Calpine argues that if the Market Surveillance Committee or the Department of Market Monitoring detects systemic gaming or other market power abuse during the initial year of convergence bidding, the CAISO should be able quickly to propose and to implement mitigation measures, including imposition of position limits.[66] DC Energy posits that other RTOs and ISOs view convergence bidding as part of the market power solution. Indeed, DC Energy submits that while not sufficient by itself, the greatest market monitoring leverage comes from a well-designed market that reduces the incentives for participants to conduct inappropriate transactions.[67]

46. Further, DC Energy and WPTF observe that pursuant to the Conceptual Filing, the CAISO will have at its disposal a suite of market monitoring checks on convergence bids, such as the congestion revenue rights settlement rule.[68] DC Energy also asserts that CAISO's local market power mitigation approach obviates the potential for generators to escape mitigation through the use of convergence bids. Finally, DC Energy states that while not strictly market monitoring tools, the proposed credit checks and bid fees will effectively limit the potential of any one virtual participant to capture an unfair or outsized share of the market.[69]

47. In addition, several parties argue that not only are the proposed position limits unnecessary; they may also be counterproductive by making it more difficult for generators to adequately hedge their exposure to risk,[70] limiting the degree to which virtual bids can compete against physical bids and provide market convergence benefits,[71] and preventing a deep and liquid market for convergence bidding from developing.[72] Dynegy contends that it is illogical for the CAISO to profess to expect convergence bidding to enhance market liquidity while at the same time it proposes to impose strict limits on the megawatt size of convergence bids. Moreover, Dynegy argues

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[66] Calpine Comments at 4.

[67] DC Energy Comments at 9-10.

[68] DC Energy Comments at 10; WPTF Comments at 7-8.

[69] DC Energy Comments at 10-11.

[70] Dynegy Comments at 3-4; WPTF Comments at 8; J.P. Morgan Comments at 7.

[71] DC Energy Comments at 9.

[72] Dynegy Comments at 4; J.P. Morgan Comments at 7; Financial Marketers Protest at 11.

that the CAISO's proposal to automatically roll-off position limits in the months following the implementation of convergence bidding undermines the CAISO's argument that the limits are truly needed.[73]

48. WPTF and Calpine submit that the arbitrary position limits proposed for the first two years of implementation may actually be counterproductive by initially diluting interest in convergence bidding and forcing generators to enter into "dirty" hedges, thereby blunting the efficiency of risk management, without any commensurate market protections against gaming.[74]

49. Further, Financial Marketers claim that the limits are actually bid limits, not position limits, because they limit the bids a market participant can place, not the market participant's position after the market has cleared. Financial Marketers claim that these restrictions are anti-competitive, would severely limit the volume of convergence bids, and would leave the market subject to the exercise of market power by incumbents.[75] Financial Marketers also object to the CAISO's proposal to "reject all virtual bids at the location of a [s]cheduling [c]oordinator" when the position limit has been exceeded at a particular location. Financial Marketers state that they understand this to mean that any market participant whose bids exceed the limits would have all of its virtual bids at the location rejected, not just the excess portion of the market participant's position. Additionally, Financial Marketers contend that the CAISO proposes to perform position limit evaluation "based on the highest bid segment megawatt point submitted in the energy bid curve." Financial Marketers state that the CAISO has provided no justification for using the highest megawatt point. In addition, Financial Marketers object to the CAISO's proposal to evaluate virtual supply bids and virtual demand bids separately, without any netting. Finally, Financial Marketers remark that the CAISO states that it will "timely" publish the position limits for internal nodes, and that market participants "will be aware of the position limits for interties," but argue that these proposals are too vague to allow parties to comment and thus cannot be approved.[76]

50. However, if the Commission finds that position limits are necessary upon initial implementation, Calpine, Dynegy, and WPTF propose modifications to the CAISO's approach. Calpine argues that the CAISO should set uniform limits at nodes and the interties, such limits should be no lower than 50 percent at the outset of implementation,

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[73] Dynegy Comments at 3-4.

[74] Calpine Comments at 3; WPTF Comments at 8.

[75] Financial Marketers Protest at 10.

[76] *Id.* at 11-12.

and any limits should phase out within one year.[77] Dynegy states that if the Commission permits position limits, it should also allow generators to fully hedge their physical generation positions by increasing the position limits to 100 percent of the generating unit capability connected to a node.[78] WPTF requests the Commission to require the CAISO to remove the position limits on a very aggressive schedule.[79] DC Energy advocates an aggressive and firm sunset schedule with all limits removed automatically, and at least as fast as the CAISO proposes. DC Energy argues that the burden of proof should be high for deviating from any agreed-to schedule.[80]

### b. <u>Commission Determination</u>

51. We find that the CAISO has failed to demonstrate a need for a two-year phased implementation period. We therefore reject the two-year period proposed by the CAISO for the phase-in of unlimited convergence bidding. Instead, and to the extent the CAISO continues to find position limits appropriate, the CAISO may propose a significantly shorter time period, during which position limits at internal nodes will serve as a "safety net" during the early implementation of convergence bidding, as explained further below.

52. The CAISO Conceptual Filing makes no concretely-justified arguments in support of a two-year implementation period, noting only that position limits "were originally suggested by the [Market Surveillance Committee]" and seconded for inclusion by the Department of Market Monitoring.[81] However, neither the CAISO, the Department of Market Monitoring, nor the Market Surveillance Committee provides any evidence supporting the duration of the transition. The Department of Market Monitoring echoes the CAISO and the Market Surveillance Committee, stating that position limits at internal nodes would provide "a controlled transition" and "an effective 'safety net'" to convergence bidding that would "substantially mitigate several of the specific ways in which [convergence] bidding might be used to 'game' [CAISO] market rules" and limit "the potential for any unforeseen ways in which [convergence] bidding may

[77] Calpine Comments at 4.

[78] Dynegy Comments at 4.

[79] WPTF Comments at 8.

[80] DC Energy Comments at 11.

[81] Conceptual Filing at 12.

detrimentally impact market performance or reliability."[82] These statements address the need for a safety net, but not the duration proposed here, i.e., two years.

53. It appears that the proposed position limits are merely one among many tools available to the CAISO, under its convergence bidding proposal, to address market power issues. First, the CAISO's existing local market power mitigation procedures can continue to provide the same safeguards against adverse market results that they do elsewhere. To restrict the use of convergence bidding to affect the value of other instruments, e.g., congestion revenue rights, the CAISO has proposed settlement rules that automatically adjust the revenue from congestion revenue rights for any participant that engages in convergence bidding behavior that affects the value of the congestion revenue rights it holds. Further, the CAISO has proposed administrative fees that will be applied to each bid or cleared bid, credit requirements based on position sizes, transaction fees per bid segment, and uplift costs, all of which serve to implicitly limit the accumulation of large convergence bidding positions by individual participants. On top of these preemptive measures, the CAISO can rely on its market monitoring units to closely observe convergence bidding's effect on market outcomes and quickly respond if there is evidence of a participant exercising market power. If all of these measures fail, and the market monitor determines that a participant is undermining the competitive nature of the markets and contributing to adverse market outcomes, the CAISO has requested the authority to suspend convergence bidding to prevent the further distortion of market outcomes, subject to post-hoc Commission review.

54. Further, the CAISO's fee structure and credit requirements also serve to implicitly limit the positions taken by individual market participants. The CAISO proposes to impose significant per-cleared gross megawatt-hour charges on convergence bidders, as well as a per-bid segment transaction fee that is equal to that charged by ISO-NE. Both net virtual supply and net virtual demand will be subject to uplift costs, and all convergence bidders will be subject to credit requirements that are on par with the other ISOs' convergence bidding rules. These fees and requirements will prevent unfettered bidding and position accumulation by individual participants.

55. We do, however, recognize that at the start of convergence bidding, an additional safety net may be appropriate to prevent unforeseen and unintended market outcomes that might come about because market participants lack experience in the new convergence bidding market. Moreover, this lack of experience could result in illiquidity at certain nodes at the outset of convergence bidding, which in turn could lead to distorted market outcomes. While other RTOs and ISOs employ many of these tools to address market power issues in their respective virtual bidding markets, none has established position

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[82] Conceptual Filing at Attachment B, Comments of the Department of Market Monitoring (DMM Comments) at 3.

limits that apply ex ante to virtual bids. However, if the CAISO wishes to propose position limits as part of a transitional safety net, it would need to make the appropriate justification in its 205 filing.

56. The Commission has found in other contexts that uncertainty at the start-up of a new market design justifies the implementation of interim measures to smooth the transition to a new market, so as to protect customers from potentially unjust and unreasonable rates during the early stages of implementation.[83] In the Exceptional Dispatch Order, for example, the Commission recognized that the CAISO may not become fully aware of opportunities for market participants to exercise market power until after gaining some operational experience with the new market. The Commission concluded that this uncertainty justified the implementation of interim measures, during the first four months of its new market, to guard against potentially unreasonable prices during the early stages of implementation.[84] We find that similar interim measures may be justified in this case. However, we also expect the CAISO to consider the effectiveness of the numerous other market power mitigation measures proposed. If the CAISO continues to believe that some safety net is required to smooth the implementation of convergence bidding, the CAISO may propose and justify in its section 205 filing, a substantially shorter phase-in period than the proposed two-year period, consistent with the concept of the transitional mechanism approved in the Exceptional Dispatch Order.

### 3. <u>Convergence Bidding at the Interties</u>

57. The CAISO proposes to allow convergence bidding at the interties between the CAISO balancing authority area and other balancing authority areas external to the CAISO, which will enable explicit convergence bidding. According to the CAISO, this

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[83] The Commission has previously directed system operators to implement interim measures to help facilitate the smooth transition to a new market structure. *Cf.* Exceptional Dispatch Order, 126 FERC ¶ 61,150; *Midwest Indep. Transmission Sys. Operator, Inc.*, 108 FERC ¶ 61,163 (2004) (ordering the Midwest ISO to implement additional safeguards and confidence-building protections at startup and for a transition period); *New York Indep. Sys. Operator, Inc.*, 91 FERC ¶ 61,218 (2000) (placing mandatory bid requirement and a temporary bid cap on NYISO's non-spinning reserve market); *New York Indep. Sys. Operator, Inc.*, 92 FERC ¶ 61,073 (2000) (imposing a temporary bid cap on NYISO's energy markets); *Blumenthal, et al. v. ISO New England Inc.*, 117 FERC ¶ 61,038 (2006) (instituting revised bidding rules as an interim measure to give low-capacity factor generating units operating in designated congestion areas the opportunity to recover their costs through the market).

[84] Exceptional Dispatch Order, 126 FERC ¶ 61,150 at P 84.

will mitigate the potential for the operational difficulties created by "implicit" convergence bidding.[85] The CAISO explains that allowing convergence bidding at the interties presents a number of special market design challenges. The CAISO explains that the reliability standards of the North American Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) prohibit physical schedules from violating the scheduling limits on the interties coming out of the day-ahead market. In addition, the CAISO notes that virtual and physical schedules at the interties must be cleared together in the integrated forward market based on their economic bid prices.[86]

58. In order to satisfy these two fundamental requirements, the CAISO proposes to add a constraint that will be enforced in both the scheduling run and the pricing run of the integrated forward market, which will require that physical and virtual imports, minus physical and virtual exports, must be less than or equal to the scheduling limit at the intertie scheduling point in the applicable direction. According to the CAISO, this new constraint will ensure that physical and virtual bids on the interties are treated in a manner consistent with the way other bids at internal nodes are treated from a pricing perspective. Further, the CAISO notes that it is addressing, through a separate stakeholder process that is currently underway, the need for additional requirements to help ensure that intertie bids identified as physical are truly physical.[87]

59. In addition, in order to give the CAISO additional opportunity to observe the impact of convergence bidding at the interties on the residual unit commitment process and uplift charges, the CAISO proposes to implement position limits at the interties that are more restrictive and longer lasting than those at the internal nodes. The CAISO proposes to base these position limits on the operating transfer capacity of each intertie and to phase them out according to the following schedule:

- Five percent limits for the first eight months after the implementation of convergence bidding;

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[85] Implicit convergence bidding involves the scheduling of physical bids in the day-ahead market by market participants that have no intention of physically delivering on the schedule, but intend instead to liquidate the schedule in the hour-ahead scheduling process. *See* CAISO January 7, 2010 E-tag Timing Requirements Draft Final Proposal at 4, http://www.caiso.com/2717/2717a27c40bf0.pdf. The CAISO argues that permitting explicit convergence bidding at the interties will help to reduce or eliminate this practice. Conceptual Filing at 15.

[86] Conceptual Filing at 16.

[87] *Id.* at 16-18.

- 25 percent limits for months nine through 12;
- 50 percent limits for months 13 through 24;
- 100 percent limits for months 25 through 36;
- No position limits starting in the 37th month after convergence bidding implementation.[88]

**a. Comments and Protests**

60. SoCal Edison and PG&E argue that convergence bidding at the interties should be permitted only if certain issues are resolved prior to implementation. SoCal Edison contends that convergence bidding should be allowed at the interties only if the CAISO has developed a method to clearly distinguish between true physical bids and virtual bids. SoCal Edison cautions that the failure to address this issue can create a variety of adverse impacts on prices and bidding incentives.[89]

61. PG&E argues that convergence bidding at the interties should not be implemented unless the CAISO is able to develop mechanisms to address the following issues: (1) the potential unintended consequences of adding a constraint on physical intertie schedules that is not reflected in the prices; (2) the need to resolve current discrepancies between hour-ahead and real-time prices; and (3) potential crowding out of physical imports by virtual imports in the integrated forward market. PG&E requests the Commission to direct the CAISO to convene a stakeholder process to evaluate these issues, develop mechanisms to address them, and incorporate these mechanisms into its convergence bidding design prior to convergence bidding implementation.[90]

62. DC Energy, Calpine, Powerex, WPTF, and J.P. Morgan support the CAISO's proposal to allow convergence bidding at the interties, but oppose the position limits proposed by the CAISO. Calpine argues that position limits at interties are inappropriate for the same reasons explained in the section on position limits at internal nodes. DC Energy argues that more restrictive limits at the interties are unnecessary because the volume of convergence bidding at the interties will not have a material, adverse impact on real-time energy offset charges, the CAISO's ability to import power, or day-ahead

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[88] *Id.* at 19.

[89] SoCal Edison Comments at 6-8.

[90] PG&E Comments at 10-13.

tagging incentives. Rather, DC Energy asserts that convergence bidding at the interties will have a positive impact on these issues.[91]

63. Powerex states that the CAISO has not identified any issues specific to convergence bidding at the interties that would justify the stricter limits proposed by the CAISO. Rather, Powerex claims that position limits at the interties are more likely to create incentives for participants to continue implicit virtual bidding behavior at the interties, in an effort to circumvent the position limits and avoid uplift charges. Powerex states that these incentives will undermine the CAISO's goal of being able to fully distinguish between physical and virtual bids, thereby undermining the benefits to be gained from convergence bidding.[92]Powerex states that position limits at the interties are particularly unnecessary, given the CAISO's proposal to adopt additional constraints in its software to ensure feasible schedules at the interties. WPTF echoes these sentiments and concludes that if the Commission allows the CAISO to start with lower position limits at the ties, it would be unjust and unreasonable to allow the tighter restrictions to persist without the CAISO's providing concrete evidence that lower restrictions are needed.[93]

64. Powerex asserts that in the event the Commission does not reject the CAISO's proposal, it must direct the CAISO to adopt measures to mitigate the impact of any unintended consequences of strict position limits at the interties and ensure that the day-ahead schedules that the CAISO believes to be physical are in fact physical. Thus, Powerex asks the Commission to direct the CAISO to expedite its development of e-tagging standards at the interties. Further, Powerex requests the Commission to direct the CAISO to file periodic reports on its progress towards convergence bidding and the convergence bidding implementation process.[94] Powerex notes that the Commission has directed other RTOs implementing convergence bidding to file similar reports.[95]

[91] DC Energy Comments at 6, 9.

[92] Powerex Protest at 6-8.

[93] WPTF Comments at 8-9.

[94] *Id.* at 8-10. Powerex states that any reports should include, on an aggregated basis and with confidential information, a comparison of day-ahead schedules to actual physical delivery at each intertie.

[95] *Id.* at 10 (citing *ISO New England, Inc.*, 109 FERC ¶ 61,383, at P 28 (2004); *New York Indep. Sys. Operator, Inc.*, 97 FERC ¶ 61,091, at 61,471-72 (2001)).

65. J.P. Morgan asserts that although certain issues associated with convergence bidding at the interties generally merit further examination by the CAISO and stakeholders, these issues do not warrant the imposition of the restrictive position limits proposed by the CAISO. If the Commission chooses to accept the application of position limits, J.P. Morgan recommends that the Commission direct the CAISO to gradually increase and sunset the limits after one year.[96]

**b. Commission Determination**

66. We agree with the CAISO that convergence bidding should be permitted at the interties. To that end, the Commission will approve the CAISO's proposal to enforce additional constraints within its market software for each intertie scheduling point. However, we reject as unsupported the CAISO's plan to impose position limits at the interties for 36 months, as proposed. Thus, as discussed below, the CAISO may propose and support a significantly shorter phase-in period, consistent with the discussion above.

67. First, regarding the need for additional constraints at the interties, the Commission recognizes the additional reliability challenges facing the CAISO in implementing convergence bidding at the interties. As the CAISO points out, the NERC and WECC reliability standards state that physical schedules cannot violate the scheduling limits on the interties coming out of the day-ahead market. Thus, the CAISO must structure its rules for convergence bidding at the interties in a way that will not violate the NERC and WECC standards. We find the CAISO's proposal to enforce two sets of constraints on intertie schedules in the day-ahead market (one for physical exports and imports and another for the sum of the physical and virtual import and export schedules[97]) to be a reasonable approach to meeting the applicable reliability standards.

68. Regarding position limits, we find that the CAISO has not demonstrated the need for a three-year transitional mechanism. Nevertheless, a phase-in period similar to that discussed above with respect to internal nodes, during which the position limits function as a safely net, may be appropriate. We note that the reasons that justify a temporary safety net at the internal nodes during the early months of convergence bidding apply similarly to the situation at the interties. Accordingly, to the extent the CAISO believes it

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[96] J.P. Morgan Comments at 11.

[97] The CAISO has acknowledged that it is impossible to determine definitively if a day-ahead intertie schedule is truly physical. CAISO Final Draft Proposal E-tag Timing Requirements Initiative, dated January 7, 2010, *available at*: http://www.caiso.com/2717/2717a27c40bf0.pdf, at 3. As a result, the CAISO needs to consider the sum of virtual and physical bids to ensure that NERC reliability requirements are not violated.

appropriate, the CAISO may propose, in its section 205 filing, a reasonably short transition period during which some level of position limits at the interties may be in place. This transition period should be consistent with type of remedy established in the Exceptional Dispatch Order. If the CAISO believes that other issues at the interties (e.g., impact on the residual unit commitment process or other reliability issues) justify longer and/or stricter position limits at the interties, the CAISO must provide concrete examples of the challenges presented and explain why other tools at the CAISO's disposal will not adequately address these issues.

### 4. Market Power Mitigation Measures

69. The CAISO expresses concern that the implementation of convergence bidding may increase opportunities for market participants to engage in market manipulation. In addition to the proposed incorporation of position limits, as discussed above, the CAISO states that it has included the following measures in the design of convergence bidding to reduce the potential to exercise market power or manipulate market outcomes: (1) application of the CAISO's existing local market power mitigation procedures; (2) an automated congestion revenue rights settlement rule; (3) authority to suspend convergence bidding under certain circumstances; and (4) increased monitoring of trading activity by market participants operating under "seller's choice" contracts.

70. First, for the initial implementation of convergence bidding, the CAISO proposes to apply its existing local market power mitigation and reliability requirements to mitigate physical bid-in generation only, in both the competitive constraint run and all constraint run, which will be based on forecast demand. The CAISO states that it does not intend to consider virtual supply bids in the local market power mitigation process. The CAISO adds that it plans to continue to use forecast demand, rather than bid-in demand. The CAISO states that it is mindful of the fact that the Commission has previously directed the CAISO to use bid-in demand in its market power mitigation procedures within three years of MRTU start-up. The CAISO notes that its Department of Market Monitoring has set forth a possible approach, referred to as "Option B," that would include both virtual and physical bids in the local market power mitigation procedures, and would use default energy bids in the all-constraints run to determine which physical supply is subject to mitigation. The CAISO affirms that it plans to evaluate possible enhancements to its local market power mitigation measures, including Option B, to satisfy the Commission's directive.[98]

71. Second, the CAISO asserts that the use of convergence bidding to alter the value of congestion revenue rights is a well-documented market manipulation concern. The CAISO states that other RTOs and ISOs have addressed this issue through the application

[98] Conceptual Filing at 20-21.

of special congestion revenue rights settlement rules.[99] Thus, the CAISO proposes to include in the design of convergence bidding an automated settlement rule that will adjust the revenue from congestion revenue rights in the event that convergence bidders that are also congestion revenue rights holders engage in convergence bidding behavior that "may impact the value of their [congestion revenue rights] in the day-ahead market."[100]

72. Next, the CAISO requests the authority to limit or suspend convergence bidding by market participants in the event that convergence bidding by any particular participant or group of participants is found to: (1) detrimentally affect grid or market operations; (2) contribute to an unwarranted divergence in prices in the integrated forward market and real-time market; and (3) otherwise distort market outcomes. The CAISO proposes to base its determination on simulations of integrated forward market results without the virtual bids under review and calculations of the deviation between average hourly prices in the day-ahead and real-time markets during a rolling four-week period, or other appropriate period depending on the bidding behavior under review. The CAISO has included a proposed requirement for filing documentation with the Commission within ten business days of enforcing such a limitation or suspension, which would remain in effect for 90 calendar days after the filing has been submitted. The CAISO adds that potentially manipulative bidding behavior will be subject to referral to the Commission's Office of Enforcement when necessary.[101]

73. Finally, the CAISO explains that as the result of a settlement in another Commission proceeding, the CAISO has established market rules to prevent sellers under seller's choice contracts from choosing delivery nodes that would alter their effective congestion charges, and to require physical validation of certain trades associated with seller's choice contracts. The CAISO cautions that convergence bidding may undermine the physical validations. Thus, the CAISO proposes initially to monitor trading by parties to these contracts to determine if market manipulation is occurring. The CAISO states that if it uncovers market manipulation, its preferred approach is to apply behavioral restrictions on parties to seller's choice contracts.[102]

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[99] The CAISO cites the settlement rules used by NYISO, PJM, and ISO-NE as examples. Conceptual Filing at n.41.

[100] *Id.* at 21.

[101] *Id.* at 22-23.

[102] *Id.* at 23-24.

### a. **Comments and Protests**

#### i. **Use of Forecast Demand**

74. SoCal Edison, Six Cities, DC Energy, WPTF, and J.P. Morgan support the CAISO's proposal to retain the current method for applying its local market power mitigation procedures that use forecast, rather than bid-in, demand for initial implementation of convergence bidding. However, given the market efficiency gains associated with the use of bid-in demands, SoCal Edison requests that the Commission direct the CAISO to implement Option B, as discussed by the Department of Market Monitoring, no later than April 12, 2012.[103] In contrast, Six Cities assert that Option B would not fully resolve the tendency of virtual bids to undermine local market power mitigation. Six Cities further assert that any alternative approaches that include virtual bids in the local market power mitigation procedures would contribute to increased reliance on the residual unit commitment process, thereby potentially decreasing overall efficiency and reliability.[104]

75. WPTF and J.P. Morgan assert that the CAISO's existing local market power mitigation measures should reasonably protect against the exercise of market power and ensure reasonable market outcomes. J.P. Morgan argues that extreme convergence bids will be disciplined by both the price benchmarks established for physical supply as well as the self-policing function of other convergence bidders, who will undercut extreme convergence bids.[105] WPTF states that it is not opposed to Option B at this time, but finds that linking this modification to the implementation of convergence bidding provides an unwarranted possibility of further delay in implementing convergence bidding.[106]

76. In contrast, PG&E, the CPUC, and SWP argue that Option B is superior to the CAISO's proposed approach and urge the Commission to direct the CAISO to further explore this option. PG&E expresses concern that the introduction of convergence bidding, particularly at the nodal level, creates the potential to undermine the CAISO's

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[103] SoCal Edison Comments at 20-21. SoCal Edison further requests that any issues identified by the Department of Market Monitoring during the design and implementation phases of Option B should be presented to the Commission prior to the April 2012 implementation for additional Commission guidance.

[104] Six Cities Comments at 2.

[105] J.P. Morgan Comments at 16-17.

[106] WPTF Comments at 4.

current local market power mitigation provisions. Thus, PG&E asks the Commission to direct the CAISO to immediately initiate a stakeholder process to improve its local market power mitigation process and to implement an Option B-like process that incorporates the use of bid-in demand and also incorporates virtual demand and supply bids. PG&E asserts that the use of this type of process would prevent higher priced virtual supply from crowding out physical supply that has a lower default energy bid cost.[107]

77. The CPUC expresses concern that under the CAISO's proposal to use its current local market power mitigation process, it may be possible for market participants with virtual demand bids to avoid mitigation altogether. Similarly, the CPUC asserts that under the CAISO's current proposed approach, virtual supply bids have the potential of undermining the local market power mitigation process. Thus, the CPUC argues that Option B is the better choice. The CPUC contends that Option B should be implemented concurrently with convergence bidding, thereby taking care of two Commission directives (the implementation of convergence bidding and the use of bid-in demand in its local market power mitigation process) at the same time, while decreasing the likelihood that virtual bids will undermine local market power mitigation.[108]

78. SWP argues that if convergence bidding achieves its objective of promoting greater accuracy in demand bidding in the day-ahead market, then it is counterproductive to ignore more accurate bid-in demand in favor of non-market forecasts. SWP further asserts that the CAISO's proposed implementation timeline is intended to provide ample time for software development, making inclusion of the Option B software change all the more logical and appropriate. Thus, SWP asserts that the Commission should direct the CAISO to employ Option B in its convergence bidding design and to consider use of bid-in demand, as opposed to forecast demand, for other purposes as appropriate.[109]

79. Financial Marketers claim that the use of forecast demand rather than bid-in demand in the CAISO's local market power mitigation procedures is an unsupported deviation from the Commission's prior directives. Financial Marketers assert that the CAISO has not explained how this proposal would impact convergence bids.[110]

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[107] PG&E Comments at 4-6.

[108] CPUC Comments at 3-4.

[109] SWP at 7-10.

[110] Financial Marketers Protest at 32.

### ii. Congestion Revenue Rights Settlement Rule

80. The majority of comments on the CAISO's proposed congestion revenue rights settlement rule express support. For example, WPTF submits that the CAISO's congestion revenue rights rule provides the most effective means possible for identifying and revoking unjust congestion revenue rights profits, while avoiding an overly conservative approach that would discourage legitimate convergence bidding participation by congestion revenue rights holders.[111]

81. On the other hand, Financial Marketers argue that the congestion revenue rights settlement rule is overbroad, would penalize innocent bidding behavior, and lacks objective standards so that market participants and the Commission can determine whether it is being applied properly and in a non-discriminatory manner. Financial Marketers state that the CAISO fails to provide any objective standard on which convergence bidders could rely in an effort to avoid application of the forfeiture rule. In addition, Financial Marketers contend that the proposed rule would be unduly discriminatory in that it does not similarly subject physical market participants to forfeiture in the event they engage in bidding behavior that enhances the value of their congestion revenue rights.[112]

### iii. Suspension Authority

82. Parties offer a wide range of opinions on the CAISO's proposed suspension authority provisions, ranging from full support, to direct opposition, to reservation of judgment until more details are available. CERS supports the CAISO's proposal to establish its authority to suspend convergence bidding. J.P. Morgan, Dynegy, and DC Energy agree in principle that the CAISO should have suspension authority, but note that that the current proposal is not sufficiently detailed regarding the conditions under which the authority would apply.[113]

83. Dynegy and SWP request that the Commission defer granting the broad suspension authority sought by the CAISO until precisely detailed tariff language is submitted.[114] Similarly, WPTF requests that if the Commission approves this design

[111] WPTF Comments at 4-5.

[112] Financial Marketers Protest at 32-34.

[113] J.P. Morgan Comments at 13; Dynegy Comments at 4; DC Energy Comments at 7.

[114] Dynegy Comments at 4-5; SWP Comments at 7.

element, the approval be made subject to the CAISO's provision of further information that will permit stakeholders to understand clearly the details of the market monitoring provisions.[115]

84. Financial Marketers assert that the authority the CAISO seeks to suspend convergence bidding is overbroad and excessive in that it would give the CAISO unilateral authority to suspend convergence bidding for more than 100 days based on subjective criteria. Financial Marketers claim that no other ISO or RTO has needed such authority. To the extent CAISO is given authority to suspend or limit market participant bidding rights, Financial Marketers request that the CAISO be required to exercise the authority in a manner that is consistent, non-discriminatory, based on objective, verifiable factors, and narrowly limited to what is necessary to address the perceived threat. Also, Financial Marketers request that the CAISO be required to consult with the market participants involved before exercising such authority.[116]

### b. Commission Determination

85. For the following reasons, we find that the CAISO's mitigation measures may be acceptable as proposed, subject to the modifications discussed below. Subject to certain conditions, we find that the CAISO's proposal is consistent with prior Commission directives as well as mitigation practices developed in similar markets.

86. As recognized by the CAISO, the Commission has previously addressed the issue of using forecasted load as a basis for local market power mitigation.[117] While recognizing the benefits of using bid-in demand, the Commission determined that such a market enhancement should be implemented subsequent to MRTU operations in order not to delay the startup of MRTU operations. We are not persuaded that the implementation of convergence bidding requires expediting the timeline for using bid-in demand. There is no evidence that the implementation of convergence bidding will render existing mitigation procedures less effective, and we are concerned that requiring the use of bid-in demand at this time could ultimately delay the implementation of convergence bidding. We find that the timely implementation of convergence bidding will prove most beneficial to market participants. Therefore, we will not require the CAISO to begin using bid-in demand simultaneously with the implementation of convergence bidding. Nevertheless, we continue to encourage the CAISO to expeditiously investigate the merits of an option that utilizes bid-in, rather than forecast,

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[115] WPTF Comments at 11.

[116] Financial Marketers Protest at 34-36.

[117] *See* MRTU Rehearing Order, 119 FERC ¶ 61,076 at P 496.

demand. We expect the CAISO to comply with the prior Commission directive concerning the use of bid-in demand. We reserve judgment on any proposal to use bid-in demand until an appropriate filing is before the Commission.

87. Consistent with practices in similar markets with convergence bidding,[118] the CAISO's proposed congestion revenue rights settlement rule is a reasonable mechanism to mitigate convergence bidding that is intended to alter the value of congestion revenue rights. We disagree with Financial Marketers that the CAISO's proposal is overly broad. This proposed rule is targeted to participants with congestion revenue rights positions and uses the combined impact of each convergence bidder's portfolio of convergence bids on the value of its congestion revenue rights. Nonetheless, we expect the CAISO to file tariff provisions that clearly and objectively describe the instances that warrant mitigation. This includes a description of what constitutes a "significant impact" and providing actual measures to be used. The Market Surveillance Committee notes that the Department of Market Monitoring will need to carefully monitor the congestion revenue rights markets as there is no perfect tool for determining if anomalous behavior is occurring.[119] The Commission also notes that participants' convergence bidding practices should not enhance the value of any financial products they hold, be it a congestion revenue right or other product.

88. Regarding the CAISO's proposed authority to suspend convergence bidding, we agree in principle that such authority should be granted subject to clearly and objectively defined tariff provisions that explain the instances in which the CAISO will exercise such authority. We agree with commenters that the Conceptual Filing does not contain sufficiently detailed or objective language and may be read as introducing unacceptable CAISO subjectivity in making a suspension determination. Accordingly, we direct the CAISO to clearly and objectively define phrases such as "detrimentally affects," "distorts," and "unwarranted divergence." Additionally, we will require the CAISO, when it is possible to do so, to consult with market participants whose bids are subject to suspension prior to taking any such action. Accordingly, suspension authority will not be granted until appropriate tariff provisions are filed with the Commission.

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[118] *See Benchmarking Against NYISO, PJM, and ISO-NE*, Convergence Bidding: Department of Market Monitoring Recommendations (CAISO Department of Market Monitoring), November 2007, at Attachment D, p. 3, http://www.caiso.com/1c8f/1c8ff55150b0.pdf.

[119] MSC Opinion at 7.

### 5. Constraints to Ensure an AC Solution

89. The CAISO states that the inclusion of virtual bids in the day-ahead market may make it more difficult to achieve an alternating current (AC) solution.[120] In order to increase the likelihood of achieving an AC solution, the CAISO proposes to incorporate contingency constraints in its software that will enforce megawatt limits at particular locations when an AC solution is not attainable, thereby limiting the number of bids that can clear at that location. Under the CAISO's proposal, the contingency constraint will affect both physical and virtual bids. When the constraint is enforced, the CAISO proposes to clear bids based on their effectiveness in relieving the constraint and their price. The CAISO notes that this practice is consistent with that of other ISOs and RTOs.[121]

#### a. Comments and Protests

90. Parties generally support the CAISO's proposal to use limited additional constraints to achieve an AC solution, but some commenters express reservations about the lack of implementation details in the Conceptual Filing. WPTF supports this element of the CAISO's proposal, and argues that it is critical that the megawatt limit applies equally to physical and virtual bids as the CAISO proposes, because applying the constraint first to virtual bids would effectively treat virtual bids as "second class."[122] NCPA asserts that the CAISO's use of additional constraints to ensure an AC solution should be kept to minimum, as manual intervention in the process will have a direct

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[120] Computer representations of transmission networks that carry AC power are generally formulated using either direct current (DC) power flow models or AC power flow models. A DC solution is a less accurate formulation of the power flow and is used when a large power network is difficult to formulate using an AC solution. An "AC solution" refers to a system run in which all constraints on the network are enforced. Enforcing these additional constraints increases the complexity and difficulty of determining a solution. Parties have raised the possibility that due to the large number of convergence bids, as well as the magnitude of individual convergence bids, the CAISO's computer software many not be able to achieve an AC solution.

[121] Conceptual Filing at 24-25. The CAISO notes that PJM applies location-based megawatt limits necessary to achieve an AC solution and that NYISO, MISO, and ISO-NE also impose various megawatt limits on virtual bids. Conceptual Filing at 32.

[122] WPTF Comments at 5.

impact on market results.[123] DC Energy agrees with CAISO's proposal to enforce injection and withdrawal limits only if necessary to achieve an AC solution.[124]

91. PG&E and NCPA request the Commission to require some type of reporting on the CAISO's progress on an AC solution. PG&E requests that the Commission order the CAISO to provide a status report on its progress to implement its proposed solution to achieve AC convergence on July 10, 2010, three months prior to the commencement of the market simulation phase. PG&E asserts that the report should address the following issues: (1) the impact of including nodal limit constraints in the integrated forward market security constrained unit commitment; (2) the effect on participants' ability to clear physical bids; and (3) the effect on locational marginal price formation, at the nodal and load aggregation point level, resulting from the enforcement of numerous additional constraints. Further, PG&E requests that the CAISO be required to solicit and respond to stakeholder questions on this issue.[125]

92. Many parties, including SVP, indicate that more detail is necessary regarding the CAISO's proposed AC solution.[126]

### b. Commission Determination

93. The Commission approves in principle the CAISO's plan to enforce megawatt constraints that limit the number of bids that clear at a particular location, or set of locations, in the integrated forward market, only when an AC solution is not otherwise attainable. However, we agree with some parties that the instant proposal lacks sufficient detail explaining how the CAISO will accomplish this, and we agree with other parties that the CAISO should work to minimize its manual intrusions in the market. We also agree with WPTF that all bids – physical and virtual – should be treated equally in any proposal by the CAISO to add constraints to the day-ahead market to achieve an AC solution. The differences between physical and virtual bids are irrelevant regarding this design feature, and treating physical and virtual bids similarly in this instance will not produce any harm to the market. We will not, however, impose any reporting requirement on the CAISO regarding the development of the details of this proposal. The

[123] NCPA Comments at 6.

[124] DC Energy Comments at 6.

[125] PG&E Comments at 16-17.

[126] *See, e.g.,* SVP Comments at 6.

CAISO acknowledges the importance of this issue, and has committed to addressing this issue with stakeholders.[127]

### 6. Certification Requirements

94. The CAISO proposes the following certification requirements for any market participant wishing to become a convergence bidding entity: (1) each convergence bidder must be a scheduling coordinator or must be represented by a scheduling coordinator; (2) each must execute a convergence bidding agreement, to be developed by the CAISO; and (3) convergence bidders will be required to disclose information concerning affiliates, as is also required of entities holding congestion revenue rights.[128]

95. DC Energy and WPTF support the CAISO's proposed certification requirements because they ensure that convergence bidding entities are qualified to do so, without imposing onerous burdens on market participants.[129] On the other hand, Financial Marketers oppose the proposed certification requirements and assert that the proposed scheduling coordinator requirement would impose unjustified additional costs on convergence bidders. Financial Marketers claim that no other ISO or RTO has such a requirement. Financial Marketers characterize the scheduling coordinator requirement as a barrier to entry and an infringement on their ability to preserve the confidentiality of their proprietary bidding data.[130]

96. The Commission finds that the CAISO's proposed certification requirements are reasonable. With regard to Financial Marketers' objections, we note that it has always been a basic feature of the CAISO's market design that all energy market transactions must be conducted through a scheduling coordinator.[131] We see no reason why the same requirement should not apply to entities that wish to engage in convergence bidding.

### 7. Credit Policy

97. The CAISO proposes to modify its credit policy to ensure that convergence bids satisfy the CAISO's existing credit policy, which requires each market participant to maintain an aggregate credit limit that equals or exceeds its estimated aggregate liability.

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[127] Conceptual Filing at 25.

[128] *Id.* at 25.

[129] DC Energy Comments at 8; WPTF Comments at 5-6.

[130] Financial Marketers Protest at 38.

[131] *See* CAISO Tariff § 4.5.1.

The proposed modifications consist of three main components: (1) dynamic credit checking of convergence bids; (2) calculation of the estimated value of convergence bids; and (3) adjustment of the value of convergence bids based on final market clearing prices. The CAISO asserts that its approach achieves the proper balance between the need to ensure that market participants are credit worthy or post sufficient collateral to support their bids, and the risk of establishing credit requirements so onerous as to have the effect of discouraging bidding.[132]

98. Under the CAISO's proposed dynamic credit checking policy, the CAISO will perform a credit check whenever a scheduling coordinator submits convergence bids. The CAISO states that it will determine the value of the convergence bids by calculating "the sum of the product of the absolute values of the megawatts of the convergence bids multiplied by a reference price for the convergence bids." The CAISO proposes to use the 95$^{th}$ percentile value of (i) the price difference between the real-time and day-ahead markets as the reference price for virtual supply bids, and (ii) the price difference between the day-ahead and real-time markets for virtual demand bids. The CAISO states that it plans to calculate these two reference prices for each node for quarterly periods of each year using the actual hourly locational marginal prices for the corresponding period of the previous year. The CAISO states that it intends to review the reference pricing methodology twelve months after convergence bidding is implemented and at least every three years thereafter.[133]

99. The CAISO explains that once a scheduling coordinator's estimated aggregate liability exceeds the available credit limit, convergence bids will be rejected on a last-in, first-out basis. Although convergence bids will not be rejected until the credit limit is exceeded, the CAISO proposes to request additional collateral when the estimated aggregate liability exceeds 90 percent of the aggregate credit limit. Defaults resulting from convergence bids will be allocated according to the same methods the CAISO currently employs to allocate any other type of financial default. The CAISO notes that its proposed approach is similar to the approach it uses to calculate the credit requirements for market participants holding congestion revenue rights with terms of one year or less, and also to the convergence bidding credit policies of other RTOs and ISOs.[134]

100. To calculate the estimated value of convergence bids, the CAISO proposes performing an initial estimate, using the methodology discussed above, after the day-

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[132] Conceptual Filing at 25-26.

[133] *Id.* at 26-27.

[134] *Id.* at 27-29.

ahead market closes but before the real-time market closes. The CAISO also proposes a second calculation, to be performed after the real-time market clears. For the second calculation, the CAISO will factor in the actual locational marginal prices of the pricing nodes that match the geographical specifications of the convergence bids. After the close of the real-time market, the CAISO plans to make any adjustments necessary, based on initial market clearing prices, and to adjust the estimated aggregate liability of the market participant accordingly.[135]

### a. Comments and Protests

101. DC Energy, WPTF, and J.P. Morgan support the CAISO's proposed convergence bidding credit policy. Specifically, DC Energy supports the CAISO's proposal to perform ongoing evaluations to ensure requirements are commensurate with the risks but, at the same time, not unduly restrictive.[136] WPTF believes that the proposed credit policy for convergence bidding improves upon the existing CAISO credit policy and provides a reasonable level of assurance that parties will not default as a result of virtual transactions.[137] J.P. Morgan supports the CAISO's proposed dynamic credit checking policy and recommends, in support of further enhancing the CAISO's overall credit process, that the Commission direct the CAISO to examine the feasibility of implementing and applying its proposed convergence bidding credit process to both physical and financial trades.[138]

102. Financial Marketers oppose the CAISO's proposed credit policy. Specifically, Financial Marketers assert that the CAISO's proposed use of a 95th percentile in setting reference prices for purposes of determining credit requirements for convergence bids would require gross over-collateralization of convergence bidders and impede development of the market. Financial Marketers claim that the Midwest ISO uses the 50th percentile and has not experienced any defaults attributable to it. In addition, Financial Marketers contend that the requirement that a convergence bidder post additional collateral as soon as its estimated aggregate liability surpasses 90 percent of its credit limit is unsupported and effectively converts the collateral requirement into one that is based on a reference price in excess of the 99th percentile. In Financial Marketers'

[135] *Id.* at 28-29.

[136] DC Energy Comments at 8.

[137] WPTF Comments at 5.

[138] J.P. Morgan Comments at 14-15.

view, this would needlessly tie up capital and impede the growth of convergence bidding.[139]

103. Financial Marketers ask the Commission to direct the CAISO to revise its proposal to utilize the 50th percentile to set reference prices instead of the 95th percentile, eliminate the 90 percent trigger, and utilize the lesser of the reference price and the bid price to value virtual demand bids. Financial Marketers assert that these changes will strike the appropriate balance between ensuring the adequacy of collateral and promoting a vibrant convergence bidding market.[140]

#### b. Commission Determination

104. We find that the CAISO's proposed credit policy for convergence bidders is reasonable in that it should adequately protect other market participants from financial risk, while not discouraging the active participation of convergence bidders in the CAISO's energy markets. Regarding the concerns of Financial Marketers, we find that the CAISO's proposal to use a 95th percentile reference price for determining credit requirements is appropriate. As the CAISO notes, the Commission has found the use of a 97th percentile value to be just and reasonable for PJM and the NYISO, both of which have locational energy markets that are more mature than that of the CAISO.[141] With regard to what Financial Marketers refer to as the "90 percent trigger," we note that the CAISO's existing credit requirements contain a similar provision. Thus, we see no reason for removing this provision from the convergence bidding proposal. Finally, we will not direct the CAISO to use the lesser of the reference price and the bid price to value virtual demand bids, as requested by Financial Marketers. For purposes of establishing appropriate credit coverage for convergence bidding transactions, we find that the reference price provides a much better measure of risk exposure.

### 8. Settlement of Convergence Bidding

105. The CAISO proposes to settle convergence bids that are cleared in the integrated forward market based on the differences between the day-ahead locational marginal prices and the real-time locational marginal prices at the relevant locations. The CAISO also proposes to assess certain grid management charges at settlement, to the extent that those charges are consistent with cost-causation principles applicable to purely financial

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[139] Financial Marketers Protest at 28-29.

[140] *Id.* at 27, 30.

[141] Conceptual Filing at n.57 (citing relevant portions of NYISO and PJM tariffs, both of which utilize a 97th percentile reference price).

transactions. Thus, the CAISO proposes to apply the following service charges to convergence bids: the forward scheduling charge, the market usage day-ahead charge, and the settlements, metering, and client relations charge. Because the forward scheduling charge and the market usage charge are not charged on a dollars per cleared megawatt-hour basis, the CAISO also proposes a new convergence bidding charge that will combine the existing forward scheduling charge and market usage charge for the day-ahead market for energy. The CAISO currently estimates that the rate for the convergence bidding charge will be between $0.065 and $0.085 per cleared gross megawatt-hour. The CAISO states that it expects that the exact rate will be established in a stakeholder process scheduled to begin in January 2010. In addition, the CAISO proposes to charge each market participant that becomes a scheduling coordinator a settlements, metering, and client relations fee in the fixed amount of $1,000 per month for each scheduling coordinator ID.[142]

### a. Comments and Protests

106. DC Energy, J.P. Morgan, and WPTF support the CAISO's conceptual approach to grid management and transaction fees, but defer final judgment until the CAISO files its final tariff language and rate details. J.P. Morgan supports the CAISO's proposal to address bid volume concerns by establishing certain requirements and a reasonable per-bid segment fee, but urges the Commission and CAISO to closely monitor the need for, and level of, the bid fee so that the CAISO does not unnecessarily dampen market liquidity and create barriers to entry.[143] WPTF also expresses concern about the potential effect of the CAISO's proposed fees on the level of participation in the convergence bidding market.[144]

107. SVP and Financial Marketers argue that the CAISO's proposed fee structure should be rejected. SVP states that although the transaction fees will be charged to the entity causing the transaction, the level of the fee appears to be unrelated to the level of costs the transaction imposes on the CAISO, and is instead set to encourage a desired level of market activity. Accordingly, SVP asserts that the transaction fee levels depart from cost causation principles.[145]

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[142] Conceptual Filing at 29-31.

[143] J.P. Morgan Comments at 9.

[144] WPTF Comments at 10.

[145] SVP Comments at 5-6.

108. Financial Marketers state that the CAISO has failed to demonstrate the lawfulness of its proposed charges. Financial Marketers argue that the proposal would allocate costs to virtual transactions on an arbitrary and discriminatory basis that bears no relation to actual cost causation. Financial Marketers urge the Commission to make clear that the only costs that might lawfully be allocated to virtual transactions are those that would not have been incurred absent virtual transactions.[146]

109. Further, Financial Marketers assert that the proposed convergence bidding charge is well in excess of similar charges imposed by other ISOs and RTOs, is not supported by any cost causation evidence, and is blatantly designed to require convergence bidders to subsidize the physical transactions of incumbents. Financial Marketers state that while the dollar amount of the bid charge may appear to be in the same range as that imposed by other ISOs/RTOs, the fees are not comparable because the CAISO proposes to impose the charge on a per-megawatt-hour basis, whereas the other ISOs and RTOs impose the charge on a per-bid basis. Financial Marketers argue that the proposed charge is further flawed because it would be applied to the sum, rather than the net, of a participant's bids.[147] In addition, Financial Marketers contend that the proposed $1,000/month settlements, metering and client relations charge would needlessly burden development of convergence bidding and is not supported by any evidence.[148]

110. Finally, Financial Marketers assert that the transaction fee that would be imposed on each convergence bid segment would impede the growth of convergence bidding, discourage beneficial bidding behavior, and has no cost-justification. In response to the CAISO’s assertion that this fee will provide "further protection against bid fishing," Financial Marketers argue that such bidding behavior provides a beneficial price discovery function for the market, enabling market participants to identify nodes at which day-ahead and real-time prices diverge, and thereby to submit virtual bids and offers that will act to converge the market at such nodes. Financial Marketers claim that the Midwest ISO does not impose such a charge and has not reported any resulting problems.[149]

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[146] Financial Marketers Protest at 12-13.

[147] *Id.* at 13-16.

[148] *Id.* at 16-17.

[149] *Id.* at 17-18.

### b. Commission Determination

111. The Commission finds reasonable the CAISO's proposal to establish the following charges for convergence bidding: (1) a new convergence bidding charge; (2) a settlements, metering and client relations charge; and (3) a transaction fee. These charges are comparable to charges that the Commission has accepted for other RTOs and ISOs, and these charges have not hindered the development of convergence bidding in these other markets.[150] We note, however, that our acceptance of the CAISO's proposed charges is subject to our finding in the subsequent proceeding addressing the CAISO section 205 tariff filing that the level of the charges, and the tariff provisions that implement them, are just and reasonable.

112. We disagree with SVP that the transaction fee levels depart from cost causation principles. We also disagree with Financial Marketers' assertion that the only costs that can lawfully be allocated to virtual transactions are those that would not have been incurred absent virtual transactions. Cost causation principles do not require costs to be allocated with exacting precision, as long as the costs incurred are reasonably commensurate with the benefits received.[151] We expect that it would be difficult for the CAISO to isolate the incremental increase in the costs of convergence bidding activities that these fees are designed to recover. Rather, the CAISO has taken an alternative approach that allocates a nominal share of the relevant costs to convergence bidding activities. We find that this practical approach to ratemaking is, in this context, fair to all market participants in that it will reasonably allocate costs to those causing them.

113. We find that Financial Marketers' objection to the CAISO's proposal to assess the convergence bidding charge on a per-megawatt-hour basis is without merit. The CAISO states that it designed the charge in this way in response to requests from market participants that desired such a charge because it could be incorporated more easily into their bidding strategies. We also find that Financial Marketers' assertion that the CAISO's proposed charge is not comparable to those of other ISOs/RTOs to be factually inaccurate. Contrary to Financial Marketers' claims, both the NYISO and PJM assess

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[150] *See* Conceptual Filing at 31-32 for a comparison of the virtual bidding charges applied by other RTOs and ISOs.

[151] *See Sithe/Independence Power Partners, L.P. v. FERC*, 285 F.3d 1, 5 (D.C. Cir. 2002) (*Sithe/Independence*); *Midwest ISO Transmission Owners v. FERC*, 373 F.3d 1361, 1369 (D.C. Cir. 2004) (*MISO Transmission Owners*); *Illinois Commerce Commission v. FERC*, 576 F.3d 470, 477 (7th Cir. 2009) (*Illinois Commerce Commission*).

similar charges on a per-megawatt-hour basis.[152] In addition, we find that it is appropriate for the charge to be applied to the sum of participants' bids, rather than the net, because this is more consistent with the basis on which the associated administrative costs are incurred. Also, although the CAISO estimates that the level of this charge will be within a reasonable range, we note that we need not, and do not, rule on the level of the proposed charge until the CAISO files detailed tariff language to implement the charge in a subsequent proceeding.

114. Regarding Financial Marketers' objection to the CAISO's proposed $1,000/month settlements, metering and client relations charge, we note that this is the same charge that the CAISO currently assesses to all scheduling coordinators.[153] Thus, we find that it is reasonable to continue to assess this charge to scheduling coordinators, even if they represent only convergence bidders.

115. Finally, we reject Financial Marketers' objection to the proposed transaction fee. We find the CAISO's proposed imposition of a transaction fee on each convergence bidding segment to be reasonable. Given the possibility that high volumes of convergence bidding activity could overwhelm the capabilities of market software, and the fact that other ISOs and RTOs have found such a charge to be an important element of their market design,[154] we find it is reasonable for the CAISO to include such a charge in its initial implementation of convergence bidding. However, we recommend that the CAISO monitor the need for this charge and to consider eliminating it at such time that it proves to be unnecessary. Also, we note that the CAISO proposes to set the fee at a nominal level that is at or below that of other RTOs and ISOs.

### 9. <u>Allocation of Uplift Costs</u>

116. The CAISO states that its proposal to allocate uplift costs to convergence bidders is based on cost causation principles. However, the CAISO asserts that it cannot determine with absolute precision the additional uplift costs that virtual bids will create. Thus, the CAISO proposes to base its allocation on the general principle that virtual demand bids would be subject to uplift costs related to the increased unit commitment in

[152] *See* Commission December 2, 2009 Letter Order accepting NYISO October 23, 2009 Proposed Tariff Revisions in Docket No. ER10-95-000; NYISO October 23, 2009 Proposed Tariff Revisions in Docket No. ER10-95-000 at 7.

[153] CAISO Tariff Appendix F, Schedule 1, Part A.

[154] *See, e.g.*, PJM Interconnection, LLC, 107 FERC ¶ 61,007 (2004) (establishing a virtual bidding transaction fee to address high bidding volume that threatened its system).

the integrated forward market caused by convergence bidding. Similarly, virtual supply bids would be subject to uplift costs related to the increased unit commitment within the residual unit commitment process caused by convergence bidding. Specifically, the CAISO proposes to exempt virtual demand from integrated forward market uplift charges when either of the following conditions are satisfied:

- If total system-wide cleared demand (including physical and virtual demand), minus virtual supply, is less than or equal to measured demand; or

- The total system-wide net of virtual demand and virtual supply results in a positive net virtual supply.

If, however, total demand minus virtual supply is greater than measured demand and the total system-wide net of virtual supply and demand results in positive virtual demand, scheduling coordinators with net virtual demand will be assessed integrated forward market bid cost uplift for tier one, which will increase proportionately based on the quantity of net virtual demand that pushed the integrated forward market above measured demand.[155]

117. Also, virtual supply bids will be exempt from any residual unit commitment uplift if the CAISO's forecast demand exceeds realized real-time demand. In this case, uplift will be allocated entirely to real-time demand on a *pro rata* basis. However, to the extent that forecast demand is less than or equal to realized real-time demand, the residual unit commitment uplift costs will be allocated to virtual supply and under-scheduled load. In addition, the CAISO states that other costs related to real-time bid cost recovery will continue to be allocated to measured demand until the CAISO redesigns the real-time uplift charge to allocate costs in two tiers.[156]

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[155] Conceptual Filing at 33-34.

[156] *Id.* at 34-35. The CAISO has presented an issue paper discussing options for implementing a two-tiered system for allocating real-time bid cost recovery charges. The current, single-tier system for allocating bid cost recovery uplift is based purely on socialization and does not account for cost causation, which is different than the two-tier system used for assigning integrated forward market and residual unit commitment uplift costs. In the two-tier system, tier one is based on cost causation and tier two is based on socialization. The CAISO does not currently have a definite timeline for implementing a two-tier real-time uplift charge methodology. *See* CAISO October 9, 2008 Issue Paper on Two-Tier Real-Time Uplift, at: http://www.caiso.com/205b/205bf1653cf60.pdf.

### a. Comments and Protests

118. SoCal Edison, PG&E, SWP, and Financial Marketers oppose the CAISO's proposed uplift cost allocation methodology. SoCal Edison contends that the CAISO's proposed uplift cost allocation fails to follow cost-causation principles and inappropriately shifts costs to physical market participants. First, SoCal Edison argues that what it calls the "netting test" results in a potential subsidy to virtual resources, paid for by physical resources. SoCal Edison argues that because netting virtual demand against virtual supply has the potential to shift costs from virtual to physical bidders, it is unreasonable and should be eliminated from the CAISO's proposal.[157] To the extent that the Commission decides to allow the netting approach, SoCal Edison requests the Commission to limit it to netting within a single load aggregation point.[158]

119. Similarly, SoCal Edison argues that the Commission should reject the CAISO's proposal to condition uplift allocation on a threshold test. SoCal Edison contends that this test is completely detached from cost-causation principles and provides another means for shifting costs from virtual to physical resources. Accordingly, SoCal Edison urges the Commission to eliminate the threshold test and apply uplift to both physical and virtual bids in a like manner, irrespective of real-time demand levels.[159]

120. As an alternative to the CAISO's uplift cost allocation proposal, SoCal Edison proposes an approach based on the principle that if one uses the market and causes costs, one should pay for them. Specifically, SoCal Edison's proposes the following uplift cost allocation rules: (1) virtual demand will be charged tier one integrated forward market uplift charges regardless of the relationship between cleared demand and measured demand; (2) if the integrated forward market clears below ISO realized real-time demand, physical demand that clears in the real-time market should pay for the additional residual unit commitment associated with this difference; and (3) virtual supply should be charged residual unit commitment tier one uplift based on the amount of virtual supply that was awarded in the integrated forward market and had to be replaced in the residual unit commitment process.[160]

121. Similarly, PG&E argues that the CAISO's proposed threshold test is arbitrary, has no relationship to the integrated forward market cost drivers, and should be removed

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[157] SoCal Edison Comments at 8-13.

[158] *Id.* at 18.

[159] *Id.* at 13-16.

[160] *Id.* at 16-17.

from the convergence bidding design. PG&E contends that the only factors affecting integrated forward market uplift costs are net physical demand obligation and net virtual demand, not measured demand. Thus, PG&E asserts that the threshold test runs counter to cost-causation principles and should be eliminated.[161]

122. Financial Marketers assert that the proposed allocation of integrated forward market and residual unit commitment uplift costs to convergence bids is not supported by cost causation evidence, fails to reflect the savings in uplift costs that would be produced by convergence bids, and fails to reflect the differences between virtual and physical transactions. Financial Marketers contend that the Commission has previously approved an exemption of virtual transactions from similar supply-related unit commitment costs,[162] and argue that the Commission must again exempt virtual transactions from uplift charges in this proceeding. According to Financial Marketers, in *ISO New England*, the Commission concluded that allocating such costs to virtual transactions would "substantially and adversely affect the competitiveness and efficiency of ISO-NE's markets."[163] Financial Marketers add that in approving the exemption, the Commission noted that the important benefits provided by virtual transactions could be put at risk because the cost allocations at issue would result in high transactions costs, thereby deterring virtual trades.[164]

123. Moreover, Financial Marketers maintain that every cost causation analysis that has been performed to date in ongoing litigation of a currently-pending Midwest ISO case, has concluded that virtual transactions cause little, if any, costs associated with increased unit commitment, and whatever costs they cause may be more than offset by the cost reductions they produce in the hours in which there is net virtual demand.[165] Financial Marketers assert, therefore, that to the extent the CAISO continues to seek to allocate uplift costs to convergence bids, the CAISO should be directed to conduct a study concerning the overall net impact of virtual transactions on uplift costs. Financial Marketers contend that if this cost-of-service study cannot be completed before the

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[161] PG&E Comments at 14-16.

[162] Financial Marketers Protest at 18 (citing *ISO New England Inc.*, 110 FERC ¶ 61,250, at P 25 (2005), *reh'g denied*, 111 FERC ¶ 61,442 (2005) (*ISO New England*)).

[163] *Id.*

[164] *Id.* at 18-19.

[165] Financial Marketers Protest at 19, n.27 (citing, among other pleadings and studies, the Midwest ISO’s December 7, 2009 Compliance Filing in Docket No. ER09-411 at Tabs B and C).

deadline for implementation of convergence bidding, then the CAISO should either defer allocating any uplift to convergence bids or propose its allocation in a Section 205 filing that would be made subject to refund and hearing.[166]

124. Financial Marketers request that the Commission direct the CAISO to ensure that any section 205 tariff filing proposing to allocate uplift costs to virtual transactions adhere to the following principles: (1) must be based on a cost causation analysis demonstrating that virtual transactions are allocated only those costs caused; (2) must reflect the offsetting effect of virtual supply and demand bids in the unit commitment process; (3) must net costs caused against savings resulting from virtual transactions; (4) should be done on a basis that reflects the differences between virtual transactions and physical deviations; and (5) exemptions should be granted or created without undue preference or discrimination.[167]

125. SWP notes that the CAISO itself has indicated that the issue of uplift allocation redesign is integral to convergence bidding. Thus, SWP questions why the CAISO has neither addressed SWP's comments on this issue, nor taken this opportunity to implement the Commission's directive to develop a two-tier charge for real-time bid cost recovery uplifts. SWP states that efficiency dictates that the CAISO seize this opportunity to do the work to comply with the Commission mandate for a two-tier, real-time allocation system at the same time that uplift allocations are changed to accommodate convergence bidding. SWP states that nothing justifies unnecessary delay in making the real-time cost allocation reflect cost causation.[168]

126. In addition, SoCal Edison asserts that virtual demand bids have the potential to increase real-time imbalance energy offset costs. SoCal Edison notes that despite this potential, the convergence bidding design proposal is silent on the allocation of any of these costs to virtual demand. Thus, SoCal Edison requests that the Commission require the CAISO to include integrated forward market cleared virtual demand in the allocation of real-time imbalance energy offset costs based on virtual demand's proportionate share of the total cleared demand.[169] Moreover, SoCal Edison expresses concern that nodal bidding will shift location specific costs to the broader market and urges the Commission to direct the CAISO to investigate the implementation of a cost allocation methodology

[166] *Id.* at 18-20.

[167] *Id.* at 21-26.

[168] SWP Comments at 11-12.

[169] SoCal Edison Comments at 18-19.

for both physical and virtual demand that considers locational cost impact within one year of convergence bidding implementation.[170]

127. DC Energy, WPTF, and J.P. Morgan support the CAISO's uplift cost allocation proposal and maintain that the CAISO proposal assigns costs to convergence bids in proportion to the costs they cause, while ensuring that uplift charges do not create a barrier to establishing a liquid convergence bidding market.[171] NCPA agrees with the general principle that costs should be assigned on the basis of cost causation, but has not yet concluded its analysis of whether the CAISO's proposed allocations follow this principle.[172]

**b. Commission Determination**

128. While the use of the Conceptual Filing may be an efficient tool in which to raise and consider broad policy issues, its shortcoming is that it only provides limited information with respect to fact-intensive inquiries. Here, the Commission is unable to determine whether the CAISO's proposed allocation of uplift costs to convergence bidders is just and reasonable. Moreover, intervenors have raised a variety of objections to the CAISO proposal that the CAISO has not adequately addressed. We find that we are unable to determine whether the objections have merit because the CAISO has provided little in the way of rationale to support the particular allocation methodology proposed. Therefore, before the Commission can make a final determination regarding the justness and reasonableness of the proposed allocation methodology, the Commission will require additional support in the CAISO's section 205 filing implementing the methodology. Specifically, we direct the CAISO to consider thoroughly all of the objections raised by intervenors, and either modify its proposal in response to the objections, or explain why no modification is needed or desirable.

129. To provide the CAISO with some guidance in its review, we offer the following. First, we agree generally with all the parties that any reasonable uplift cost allocation methodology must adhere to cost causation principles. Thus, we expect the CAISO to explain in greater detail how virtual bidding contributes to costs in a way that corresponds to the proposed allocation methodology.

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[170] *Id.* at 19.

[171] DC Energy Comments at 8; WPTF Comments at 6; J.P. Morgan Comments at 15-16..

[172] NCPA Comments at 7.

130. Next, we do not agree with Financial Marketers that costs should be allocated to convergence bidding based on an estimate of the costs that would not have been incurred absent convergence bidding, as we do not agree with Financial Marketers that these are the only costs that may be associated with convergence bidding. Fairness often dictates that a share of the sunk or common costs associated with an activity be allocated to those that participate in, or benefit from, that activity. Indeed, if all market participants were allocated only the costs that would not have been incurred absent their market participation, it is likely that a large pool of costs would remain unallocated.

131. Further, we recognize that implementing convergence bidding for the first time is a complex undertaking. Thus, it is important that the CAISO adopt a cost allocation methodology that is administratively workable. This may mean that precision in cost allocation must be balanced against the need for workable rules that can be applied quickly and efficiently. It is well-established that the Commission is not required to allocate costs with exacting precision, nor are we obligated to reject any rate mechanism that tracks the cost causation principle less than perfectly.[173] Rather, the Commission has explained that as a general rule, cost causation principles are satisfied so long as there is an “articulable and plausible reason to believe that the benefits are roughly commensurate” with the costs.[174] For example, with regard to SoCal Edison’s concern about netting virtual demand and virtual supply over large geographic areas, the CAISO may determine that such netting is required for administrative feasibility. However, we stress that the burden is on the CAISO to justify any such proposal, and find that it has not clearly done so in the Conceptual Filing.

132. Additionally, as we have noted elsewhere,[175] convergence bidding provides important benefits to the market, including price convergence between the day-ahead and real-time markets, price discovery, market liquidity and increased competition. High transaction costs can deter virtual transactions and thus limit the ability of these transactions to provide market efficiencies, including price convergence. Therefore, we expect the CAISO to consider the burdens being placed on convergence bidders when it develops its final cost allocation proposal.

133. Finally, we do not expect that it is possible to isolate the impact of virtual bids from the many other factors that affect unit commitment and the level of uplift costs. As the CAISO notes, short of performing a separate market run and a subsequent settlement

[173] *Sithe/Independence*, 285 F.3d at 5; *see also Midwest ISO Transmission Owners*, 373 F.3d at 1369.

[174] *Illinois Commerce Commission*, 576 F.3d at 477.

[175] *See ISO New England Inc.*, 110 FERC ¶ 61,250, at P 30 (2005).

to determine market outcomes under alternate scenarios (i.e., with and without convergence bids), the CAISO cannot determine with exact precision the additional uplift costs that virtual bids may create, and even this may be inaccurate given the likelihood that market participants would behave differently under the two scenarios. Therefore, the Commission will not direct the CAISO to conduct a formal cost-of-service study, as requested by Financial Marketers, to ascertain the overall net impact of virtual transactions on uplift costs.

134. Further, we reject Financial Marketers' claims that the Commission has previously exempted virtual bidders from uplift costs. While it is true that in the *ISO New England* case cited by Financial Marketers, the Commission noted the potentially adverse affects that high costs may have on virtual bidding, the Commission did not approve a total exemption from uplift charges. Rather, the Commission accepted a proposal that merely broadened the pool of participants obligated to pay for increased reliability must run costs; virtual traders still shouldered their fair share of burden under the revised methodology.[176] The concerns that motivated our decision in *ISO New England* are analogous to the issues presented in this case. The Commission wants to ensure that uplift costs are allocated fairly among all bidders who cause increased costs, without unduly burdening a particular group of bidders. If the CAISO is able to demonstrate that its proposed methodology adheres to these principles, the Commission may be able to find that it is just and reasonable, and consistent with the measures approved for use in other RTOs and ISOs.

135. Regarding SWP's request that the CAISO take this opportunity to develop a two-tier charge for real time bid cost recovery uplifts, the CAISO notes that in an April 2007 Order, the Commission directed the CAISO to develop such a charge within three years, and that the CAISO intends to address this matter in a stakeholder process separate from that for convergence bidding.[177] Because the issues involved here go beyond the scope of this proceeding, we will not require the CAISO to address SWP's request in its tariff filing, nor do we find that the absence of a two-tier charge will likely have any impact on the CAISO's proposed uplift allocation methodology at this time. We do, however, expect that when the CAISO implements it two-tier system, it will be applied to convergence bids in a manner consistent with the Commission's ultimate findings on this issue.

136. Similarly, SoCal Edison asks the Commission to require the CAISO to act on cost allocation issues beyond the scope of this proceeding. Specifically, SoCal Edison asks

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[176] *ISO New England Inc.*, 110 FERC ¶ 61,250 at 30-32.

[177] Conceptual Filing at 35, n.66 (citing MRTU Rehearing Order, 119 FERC ¶ 61,076 at P 309).

the Commission to require the CAISO to include virtual demand cleared in the integrated forward market in the allocation of real-time imbalance energy offset costs, and to investigate the implementation of a cost allocation methodology for both physical and virtual demand that considers locational cost impact within one year of convergence bidding implementation. The Commission finds that while these measures may be useful steps in the evolution of the CAISO's convergence bidding program, they are not necessary upon implementation of the program. We are also concerned that market design refinements requiring additional software modifications will further delay the implementation of convergence bidding. Therefore, we will not require the CAISO to address these issues in its section 205 tariff filing.

### 10. Miscellaneous Issues

#### a. Release of Information

137. SoCal Edison states that it strongly supports the Market Surveillance Committee's recommendation that the CAISO immediately release the net cleared quantity of virtual bids at each node at the close of the day-ahead market. SoCal Edison notes that it disagrees with the CAISO's approach of shunting this issue to a secondary stakeholder process. SoCal Edison asserts that the market needs information on financial transactions in order to formulate financial and physical reactions and suggests that this information release could accelerate the rate at which convergence bids bring price convergence and overall efficiency to the market.[178] The CPUC agrees with the Market Surveillance Committee that, in the interest of transparency, the CAISO should release day-ahead convergence bidding information.[179]

138. In contrast, DC Energy supports the CAISO's plan to release information on convergence bidding and physical bidding contemporaneously, 90 days after the operating date.[180]

139. The Commission notes that the CAISO has initiated a stakeholder process to address the release of convergence bidding information.[181] Therefore, while we agree in principle with parties regarding the benefits of transparency, we will not require the

[178] SoCal Edison Comments at 21-22.

[179] CPUC Comments at 4.

[180] DC Energy Comments at 7.

[181] *See* CAISO Data Release Phase 2 stakeholder process information at http://www.caiso.com/2479/2479df7147660.html.

CAISO to modify this element of the Conceptual Filing unless and until the CAISO submits further revisions on this issue, based on the outcome of the stakeholder process.

### b. Residual Unit Commitment Redesign

140. SoCal Edison argues that a comprehensive redesign of the residual unit commitment process is needed, especially with the introduction of nodal convergence bidding. SoCal Edison asserts that nodal convergence bidding may result in higher reliance on the residual unit commitment process due to the displacement of physical supply with greater volumes of virtual supply in the integrated forward market. SoCal Edison posits that this increased reliance on the residual unit commitment process may decrease market efficiency and increase overall costs because the units committed in that process may represent a less efficient, higher cost mix of resources. In addition, SoCal Edison contends that increased reliance on the residual unit commitment process may allow certain units to escape market power mitigation in the integrated forward market. Thus, SoCal Edison asserts that it is more crucial than ever for the CAISO to commit to a comprehensive redesign of the residual unit commitment process and argues that this initiative should be included in the convergence bidding design policy. Although SoCal Edison concedes that this redesign could be implemented at a later time, SoCal Edison requests the Commission to direct the CAISO to include the schedule for comprehensive residual unit commitment redesign in the convergence bidding design policy.[182]

141. SWP states that to avoid the unnecessary adverse environmental and economic impacts of convergence bidding, the Commission should direct the CAISO to evaluate these costs and take steps to mitigate them. SWP states that the CAISO should be required to develop, as part of this convergence bidding design, a means of de-commitment when there is in fact sufficient physical supply to meet physical loads.[183]

142. DC Energy asserts that it is convinced, based on the CAISO's extensive stress testing and analysis, that convergence bidding poses no concerns for the residual unit commitment process under any plausible day-ahead market scenario, and hence, no modifications need to be made.[184]

143. We reject, as beyond the scope of this proceeding, requests to require the CAISO to redesign its residual unit commitment process as part of converge bidding design and

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[182] SoCal Edison Comments at 23-24.

[183] SWP Comments at 13-14.

[184] DC Energy Comments at 7.

implementation process. We will not require the CAISO to address this issue in its subsequent section 205 tariff filing. We do, however, expect the CAISO to monitor the affect of virtual bids on the residual unit commitment process and to act promptly, in coordination with the stakeholders, to address any necessary modification of this process.

### c. Real-Time Physical Demand Bids

144. SWP asserts that as part of the convergence bidding design, the CAISO should allow physical demand bids in the real-time market on a nondiscriminatory basis, and not restrict demand-side real-time bids to convergence energy buy backs. SWP states that it makes no sense to allow real-time virtual demand adjustments while denying physical demand side resources the same ability to bid in the real-time and hour-ahead timeframes with respect to nodes internal to the CAISO. SWP argues that convergence bidding may be expected to exacerbate demand resources' exposure to costs based on deviations from day-ahead demand bids. SWP states that with convergence bidding, day-ahead demand bids are subject to potential displacements or adjustments caused by virtual bids in the integrated forward market. SWP argues, therefore, that demand should be able to bid in the hour-ahead market or in real-time in order to mitigate such cost exposures imposed by convergence bidding. SWP further states that allowing physical demand to bid in other markets beyond the integrated forward market would increase efficiencies through greater price sensitive demand response, and would help eliminate forecasting errors.[185]

145. As with the requests for a comprehensive redesign of the residual unit commitment process, we find that issues related to the CAISO's policies regarding physical demand bids are not properly before us in this proceeding. This proceeding is limited to consideration of the CAISO's proposal concerning virtual bids, not physical bids. We therefore reject, as beyond the scope of this proceeding, SWP's request to require the CAISO to allow physical demand bids in the hour-ahead and/or real-time markets.

The Commission orders:

(A) The CAISO's Motion for Extension of Time is hereby granted, as discussed in the body of this order.

(B) The CAISO is hereby directed to file monthly status updates, beginning April 1, 2009 and continuing until convergence bidding is implemented, regarding its progress towards convergence bidding implementation, as discussed in the body of this order.

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[185] SWP Comments at 7-8.

(C) Financial Marketers' motion for technical conference is hereby denied, as discussed in the body of this order.

(D) Approval in principle is hereby granted for certain elements of the CAISO's November 20, 2009 Conceptual Filing; modification of certain elements of the proposal are directed; and guidance is provided, as discussed in the body of this order.

(E) The CAISO is directed to make a timely section 205 tariff filing that includes tariff language, consistent with the guidance provided in this order, for the implementation of convergence bidding.

By the Commission.

Nathaniel J. Davis, Sr.,
Deputy Secretary.

Document Content(s)

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