161 FERC ¶ 61,232
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Neil Chatterjee, Chairman;
Cheryl A. LaFleur, and Robert F. Powelson.

California Independent System Operator Corporation Docket No. ER17-2568-000

ORDER ON TARIFF REVISIONS

(Issued November 28, 2017)

1. On September 29, 2017, the California Independent System Operator Corporation (CAISO) filed, pursuant to section 205 of the Federal Power Act (FPA),[1] two sets of revisions to its tariff to address the effects of natural gas system limitations on CAISO's system and market operations. In this order, we accept CAISO's proposal to temporarily extend its Aliso Canyon-related tariff revisions and reject CAISO's proposed permanent tariff revisions, as discussed below.

I. Background

2. In October 2015, Southern California Gas Company's (SoCal Gas) Aliso Canyon natural gas storage facility in southern California (Aliso Canyon) experienced a large natural gas leak. As a result of this leak, Aliso Canyon was rendered unavailable for gas storage and balancing purposes. Service at Aliso Canyon has since been partially restored but it continues to experience limited operability. The facility is a key part of the gas system serving customers in the Los Angeles basin and San Diego, California, including many gas-fired power plants. CAISO states that the limited operability of Aliso Canyon presents challenges today and will continue to present challenges for the foreseeable future.[2]

3. On May 9, 2016, CAISO proposed tariff revisions to provide it with a set of tools, on an interim basis, to address the reliability and market distortion risks posed by the limited operability of Aliso Canyon. In an order issued June 1, 2016, the Commission accepted the proposed revisions, subject to condition, and directed a technical conference

[1] 16 U.S.C. § 824d (2012).

[2] CAISO Transmittal at 13.

to discuss lessons learned during the summer of 2016 and potential longer-term solutions.[3]

4. In an order issued November 21, 2016, the Commission accepted CAISO's proposal to make permanent three measures that were accepted on an interim basis in the Phase I Order: (1) revisions to permit scheduling coordinators, except under two limited circumstances, to rebid commitment costs in the real-time markets; (2) revisions to the short-term unit commitment process to ensure that the process does not commit non-resource adequacy or use-limited resources that were not bid into the real-time market if those resources were not scheduled or committed in the day-ahead market; and (3) revisions to permit scheduling coordinators to seek after-the-fact fuel costs related to commitment costs from the Commission through FPA section 205 filings.[4]

5. Finally, in an order issued on November 28, 2016,[5] the Commission accepted a proposal to extend for an additional year the following interim provisions: (1) CAISO's provision of two-day-ahead advisory schedules to assist scheduling coordinators with gas procurement and nomination decisions; (2) CAISO's use of a more timely and accurate gas commodity price for commitment cost bid caps, default energy bids, and generated bids in the day-ahead market, based on Intercontinental Exchange (ICE) generated gas prices that CAISO will obtain between 8:00 a.m. PT and 9:00 a.m. PT; (3) CAISO's use of a gas price adder to calculate commitment cost caps and default energy bids for generators served by the affected gas systems at an amount necessary to ensure that CAISO's real-time market-clearing process can take into account the impact of gas system limitations and avoid further aggravating existing gas system constraints; (4) CAISO's use of a maximum natural gas burn constraint to limit the maximum amount of generation dispatched in a given area of the CAISO balancing authority if burning more gas might risk jeopardizing gas and electric system reliability; and (5) CAISO's ability to suspend virtual bidding and to deem certain transmission constraints uncompetitive when it employs a maximum gas constraint. CAISO also proposed and the Commission accepted on an interim basis a proposal to augment the ability of scheduling coordinators to pursue after-the-fact cost recovery of incremental fuel costs.

6. In the instant filing, as discussed in greater detail below, CAISO proposes two sets of tariff changes: (1) a set of tariff changes to continue, on an interim basis, the

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[3] *Cal. Indep. Sys. Operator Corp.*, 155 FERC ¶ 61,224, at PP 12-13, 104 (2016) (Phase I Order). The Commission accepted CAISO's compliance filing in an order issued August 26, 2016. *Cal. Indep. Sys. Operator Corp.*, 156 FERC ¶ 61,135 (2016).

[4] *Cal. Indep. Sys. Operator Corp.*, 157 FERC ¶ 61,138 (2016).

[5] *Cal. Indep. Sys. Operator Corp.*, 157 FERC ¶ 61,151 (2016) (Phase II Order).

effectiveness of existing, previously accepted interim tariff provisions[6] that address gas system limitations related to the continuing limited operability of Aliso Canyon that will otherwise expire on November 30, 2017; and (2) a set of tariff revisions reflecting interim measures that CAISO seeks to modify and permanently apply to the entire CAISO footprint and the CAISO-operated Western Energy Imbalance Market (EIM).

II. Notice of Filing and Responsive Pleadings

7. Notice of CAISO's filing was published in the *Federal Register*, 82 Fed. Reg. 47,193 (2017), with interventions and protests due on or before October 20, 2017. Timely motions to intervene were filed by NRG Power Marketing LLC and GenOn Energy Management, LLC, Southern California Edison Company, the City of Santa Clara, California and M-S-R Public Power Agency, Six Cities (Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California), Northern California Power Agency, Pacific Gas & Electric Company, San Diego Gas & Electric Company, and Modesto Irrigation District. Puget Sound Energy, Inc. (PSE) submitted a motion to intervene and comments. The CAISO Department of Market Monitoring (DMM) filed out-of-time comments. On November 8, 2017, CAISO submitted an answer to DMM's comments.

III. Discussion

A. Procedural Matters

8. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2017), the timely, unopposed motions serve to make the entities that filed them parties to this proceeding.

9. Pursuant to Rule 214(d) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214(d) (2017), the Commission will grant the late-filed motions to intervene and will accept DMM's comments given the parties' interest in the proceeding, the early stage of the proceeding, and the absence of undue prejudice or delay.

10. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2017), prohibits answer to a protest unless otherwise ordered by the decisional authority. We will accept CAISO's answer because it has provided information that assisted us in our decision-making process.

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[6] *See* Phase II Order, 157 FERC ¶ 61,151.

B. Substantive Matters

1. Temporary Tariff Revisions

a. Day-Ahead Market Gas Index

i. CAISO Proposal

11. CAISO proposes to maintain for another 12 months existing tariff provisions that the Commission previously accepted on an interim basis to improve the accuracy of the gas commodity price indices used in the day-ahead market. Specifically, these tariff provisions state that CAISO will use a volume-weighted average price reported between 8:00 a.m. and 9:00 a.m. that ICE calculates based on trades transacted on ICE the morning of CAISO's day-ahead market. If that price is not available from ICE, CAISO states that it will use the most recently calculated price indices.[7] CAISO states that the proposed tariff procedure would replace CAISO's day-ahead procedure that applied before the Aliso Canyon Phase I and Phase II proceedings. Under the procedure that predated the Aliso Canyon proceedings, CAISO calculated the day-ahead gas price index two days prior to the applicable trading day using at least two or more of the following publications: NGI, SNL, Platt's Gas Daily, and ICE.[8]

12. According to CAISO, using the proposed procedure will substantially improve resources' ability to reflect their actual costs in default energy bids under the variable cost option and generated bids.[9] CAISO asserts that using information that more accurately reflects prevailing gas commodity costs enhances the day-ahead market's ability to dispatch resources efficiently, ensure resources will be compensated based on accurate fuel prices, and reflect constrained gas conditions that result from Aliso Canyon's limited operability. CAISO states that the Commission previously found that this procedure was just and reasonable and would allow CAISO to address the natural gas delivery system's limitations in southern California.[10]

13. CAISO cites market data from the summer of 2016 as support for continuation of the revised procedure. CAISO states that, of the 92 days from June through August of 2016, there were 19 days where the highest traded gas price was more than 110 percent

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[7] CAISO Transmittal at 16-17.

[8] *Id.* at 17.

[9] *Id.*

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

higher than the next-day gas index price published the day prior to the CAISO's day-ahead market. If the proposed revised procedure had been in effect, CAISO states that such price increases would have occurred on only 12 of the days.[11]

ii. DMM Comments

14. DMM believes that use of a more timely and accurate gas commodity price for commitment cost bid caps, default energy bids, and generated bids in the day-ahead market, based on ICE-generated gas prices, has substantially improved resources' ability to reflect their actual costs in their commitment cost bids and default energy bids.[12] Although CAISO proposes only an interim extension because of an ongoing stakeholder process, DMM recommends it be made a permanent feature of the market.

iii. CAISO's Answer

15. In its answer to DMM's comments, CAISO states that it is considering making its proposal permanent in a stakeholder process on commitment costs and default energy bids. However, CAISO explains that its stakeholder process is still ongoing, and that the final proposal will be subject to that stakeholder process.[13]

b. Adjustments to Commitment Cost Caps and Default Energy Bids

i. CAISO Proposal

16. CAISO also proposes to extend for an additional 12 months the provisions that allow CAISO to use a modified gas price to calculate: (1) commitment costs for resources subject to the proxy cost methodology;[14] (2) bids generated for resource adequacy resources; and (3) default energy bids under the variable cost option used for mitigation. CAISO argues that the provisions permit an increase or decrease in gas price to ensure the real-time market appropriately recognizes the increased constraints of resources in southern California. CAISO notes that the Commission previously found

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

[12] DMM Comments at 3-5.

[13] CAISO Answer at 5-6.

[14] The proxy cost methodology allows CAISO to use formulas to calculate start-up and minimum load costs for certain resources based on actual unit-specific performance parameters. CAISO Tariff section 30.4.

that these tariff provisions may allow resources to manage gas balancing requirements under tightened balancing tolerance bands and improve a generator's ability to recover fuel costs during this interim period of potential volatility.[15]

17. Specifically, CAISO proposes to maintain the provisions in section 39.7.1.1.1.3(d) that allow CAISO to increase the gas commodity price for resources connected to either the SoCal Gas or the San Diego Gas and Electric (SDG&E) system for the purpose of determining CAISO's real-time gas indices. CAISO explains that, for the real-time market, it uses a gas price index based on at least two gas commodity prices from two or more gas price publications, and it also includes the gas base transportation rate and other inputs. It states that commitment cost bids are capped at 125 percent of the cost calculated by CAISO. It further states that default energy bids under the variable cost option and generated bids for resource adequacy include an adder of 10 percent above CAISO's calculated costs. CAISO proposes to continue to use the increased gas price component of these formulas.[16]

18. CAISO anticipates that, absent extending the interim tariff provisions, current commitment costs, generated bids, and default energy bids may not fully account for the prospect of Aliso Canyon's limited operability, decreased intra-day gas availability, and tightened gas balancing requirements. CAISO argues that because it currently calculates gas prices based on trading for next-day delivery and because it does not currently include information about intra-day markets, CAISO's calculated gas price may not fully capture real-time gas prices on all days.[17]

19. CAISO further explains that the limited operability of Aliso Canyon may result in a limited ability for SoCal Gas and SDG&E to support large increases of gas demand onto their systems relative to scheduled capacity or to deliver these increased amounts of gas to generators. CAISO argues that it would be better for its real-time market to dispatch generators on these constrained systems to meet only local electrical needs and to dispatch non-constrained resources to meet system needs. As described above, CAISO argues that failure to retain the interim tariff provisions could result in commitment cost bid caps, generated bids, and default energy bids that are too low to reflect gas system limitations.[18]

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[15] CAISO Transmittal at 20 (citing Phase I Order, 155 FERC ¶ 61,224 at P 29).

[16] *Id.* at 21.

[17] *Id.*

[18] *Id.* at 21-22.

20. CAISO explains that, during the stakeholder process for this proceeding, DMM presented an analysis of the market that, according to DMM, did not support the need for the real-time gas price scalars at the levels described above. CAISO states that, in response to DMM's comments, it reevaluated its needs and decided to lower the scalars as of August 1, 2017. CAISO states that it made further adjustments to the scalars during the month of August, raising and lowering them as appropriate, and that it agrees with DMM's assessment that CAISO should increase and decrease the scalars based on need. CAISO states that it has developed procedures to expeditiously facilitate this process and commits to continue evaluating the market. CAISO states that it would discuss any modifications to the scalars with DMM, and, pursuant to the proposed tariff provisions, issue a market notice specifying the amount of any subsequent changes to the gas commodity price.[19]

ii. DMM Comments

21. DMM supports CAISO's proposal to extend its use of gas price scalars, but contends that CAISO's application of this tool has been crude and resulted in commitment costs and default energy bids that sometimes do not reflect the true cost of gas.[20] DMM states that, if CAISO notices an issue with gas prices, it is not able to update its scalars until the following operating day. DMM recommends that CAISO develop the capability to update gas prices used in the real-time market based on same day gas market price information that is available each morning.

iii. CAISO's Answer

22. Regarding DMM's comments that the gas scalars could be replaced with same-day gas price information, CAISO states that the scalars are useful to distinguish between generators that have gas available and those that may be subject to operation flow orders.[21] CAISO also states that the main purpose of the scalars is to allow resources to reflect the high cost of gas within the constrained SoCal Gas region, to allow it headroom to shift dispatch outside the region where it is able to do so, and to properly compensate gas resources within the constrained region when it cannot.[22] Thus, CAISO states that an analysis that simply compares gas prices to the level of scalars is not sufficient to measure the effectiveness of the scalars.

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

[20] DMM Comments at 7-8.

[21] CAISO Answer at 9.

[22] *Id.* at 12-13.

c. After-the-Fact Cost Recovery

i. CAISO Proposal

23. CAISO also proposes to maintain for 12 months the tariff provisions that allow scheduling coordinators to seek after-the-fact recovery of incremental fuel costs associated with default energy bids and with generated bids by submitting an FPA section 205 filing to the Commission. According to CAISO, these tariff provisions address the possibility that fuel costs may exceed the amounts recoverable under CAISO's normal cost recovery provisions due to the uncertainty and potential price volatility as a result of Aliso Canyon's limited operability. CAISO states that the Commission recognized that allowing this type of section 205 filing is a reasonable interim solution to ensure reliable operation of the grid at just and reasonable rates.[23] CAISO anticipates that scheduling coordinators will, in almost all circumstances, be able to recover their fuel-related costs under the normal cost recovery tariff provisions and will not need to submit these types of section 205 filings.[24]

24. CAISO notes that it and its stakeholders are considering additional measures to improve resources' cost recovery in the ongoing Commitment Cost and Default Energy Bid Enhancements stakeholder initiative. CAISO expects that it will complete this initiative by early 2018 and implement long-term solutions prior to the expiration of the temporary measures proposed here.[25]

d. Commission Determination

25. We accept CAISO's proposal to extend, for one further year, several tariff provisions related to the limited operability of Aliso Canyon. Specifically, we accept: (1) interim provisions allowing CAISO's use of a more timely and accurate gas commodity price for commitment cost bid caps, default energy bids, and generated bids in the day-ahead market, based on ICE-generated gas prices;[26] (2) interim provisions allowing CAISO's use of a gas price adder to calculate commitment cost caps and default

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[23] CAISO Transmittal at 25 (citing Phase I Order, 155 FERC ¶ 61,224 at P 92).

[24] *Id.*

[25] *Id.* at 26.

[26] *See* Proposed CAISO Tariff section 39.7.1.1.1.3 (a)(b)(c).

energy bids for generators served by the affected gas systems;[27] and (3) interim provisions allowing scheduling coordinators to pursue after-the-fact cost recovery.[28]

26. We find that maintaining the measures accepted on an interim basis in the Phase II Order for an additional year is a just and reasonable approach to addressing the ongoing risks posed by the limited operability of Aliso Canyon. As CAISO reports, Aliso Canyon will continue to experience limited operability for the foreseeable future, which presents the risk of curtailments to gas-fired generators and, potentially, the interruption of service to load. We find that continuation of the interim measures for an additional year should improve scheduling coordinators' ability to manage their gas procurement and enhance their ability to recover gas procurement costs, while also providing CAISO with flexible tools to maintain reliability and avoid adverse market outcomes related to the limited operability of Aliso Canyon.

2. Permanent Tariff Revisions

a. Maximum Gas Constraint

i. CAISO Proposal

27. CAISO proposes to make permanent tariff provisions that allow it to implement gas constraints that would limit the maximum amount of natural gas that can be burned by natural gas-fired resources and to extend the application of these tariff provisions to its entire balancing authority area and to the EIM.[29] For a constraint applying to its own balancing authority area, CAISO's proposed tariff provisions would allow CAISO to develop the constraint on its own motion and would require CAISO to publish the developed constraint and give market participants an opportunity for review and comment.[30] Under CAISO's proposal, it would publish the final technical details and the terms that govern the constraint in its Business Practice Manuals and Operating

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[27] *See* Proposed CAISO Tariff section 39.7.1.1.1.3 (d).

[28] *See* Proposed CAISO Tariff sections 30.12, 39.7.1.7, and 40.6.8.1.6.

[29] The balancing authorities that are "EIM Entities" include PacifiCorp, NV Energy, Puget Sound Energy, Inc., Arizona Public Service Company, and Portland General Electric Company. Future EIM Entities include Idaho Power Company, Powerex Corp., the Balancing Authority of Northern California/Sacramento Municipal Utility District, Salt River Project, Seattle City Light, and the Los Angeles Department of Water and Power.

[30] *See* Proposed CAISO Tariff section 27.11.3(a).

Procedures. When CAISO intends to enforce a developed natural gas constraint, it will notify market participants that it intends to enforce the natural gas constraint and will include the "magnitude" of the constraint as well as the areas affected by the constraint.[31]

28. When a natural gas constraint is enforced and binding, the shadow price of the constraint will be reflected in the marginal cost of congestion component of the locational marginal prices of only the affected natural gas-fired resources in the applicable natural gas region of the CAISO balancing authority area.[32] For the purposes of settling demand, virtual bids, or congestion revenue rights, the shadow price of the constraint will not affect the locational marginal price. Thus, in terms of the effect on locational marginal prices, a gas constraint developed under these provisions would be similar to the effect of the gas constraint developed for gas-fired generators affected by the Aliso Canyon outage.

29. For a constraint affecting EIM entities, CAISO will enforce the constraint "at the request of and in coordination with" the relevant EIM Entity.[33] Prior to establishing the constraint, the EIM Entity must notify CAISO of the need for the constraint and provide CAISO with sufficient information for CAISO to evaluate, develop, and test the performance of the constraint. The EIM Entity must also provide CAISO with enough information to verify the physical limitations it asserts may materialize on the natural gas pipeline systems that serve generating facilities in its balancing authority area.[34] CAISO may deny the development of a constraint to the extent it believes the physical limitations are unlikely to develop.

30. CAISO contends that the effect of a proposed constraint developed for EIM Entities would be similar to the effect of a constraint developed for CAISO's balancing authority area. Under CAISO's proposed provisions, the shadow price of a constraint in the EIM will be reflected in the marginal cost of congestion component of the locational marginal prices of only the affected natural gas-fired resources.[35] The shadow price of

[31] *See* Proposed CAISO Tariff section 27.11.3(b).

[32] *See* Proposed CAISO Tariff section 27.11.2.

[33] *See* Proposed CAISO Tariff section 29.27(c). An EIM Entity is a balancing authority that opts to participate in the EIM.

[34] *See* Proposed CAISO Tariff section 29.27(c)(1).

[35] *See* Proposed CAISO Tariff section 29.27(c)(2).

the constraint will not be reflected in the marginal cost of congestion component of the locational marginal prices for purposes of settling cleared demand.

31. For constraints in both its own balancing authority area and in the EIM, CAISO states that it will continue to use nomograms, which are sets of operating or scheduling rules used to ensure that simultaneous operating limits are respected, to enforce the maximum gas constraints.[36] CAISO states that it will also continue to have a penalty price associated with relaxing gas constraints.

32. CAISO states that it will continue to settle resource specific injections at prices influenced by a gas constraint. CAISO states that it will implement this approach by applying the constraint only to the resource specific price at the connectivity node (CNode) used to dispatch affected generators but not to the bus location reflecting the point of delivery or receipt on the CAISO controlled grid.[37] In practice, CAISO notes that pricing of the constraint will work as follows: when a maximum gas burn limit is binding, the CNode locational marginal price (i.e., the affected generator's locational marginal price) will decrease, which will tend to reduce the amount of energy the CAISO market dispatches from that generator.

33. CAISO states that it is just and reasonable not to reflect the shadow price of a maximum gas constraint in the price of congestion revenue rights and virtual bids.[38] CAISO states that because congestion revenue rights and virtual schedules settle on locational marginal prices that reflect the shadow price of the constraint, financial entities might be able to take large positions at little or no cost and inappropriately profit at the expense of revenue inadequacy balancing accounts allocated largely to load serving entities.

34. CAISO states that its proposed tariff provisions will allow it to maintain its system reliably and to address known gas constraints and challenges posed by the limited operability of Aliso Canyon, which CAISO expects to persist for the foreseeable future.[39] CAISO also states that the proposed tariff provisions will permit CAISO operators to enforce in the day-ahead and real-time markets constraints to limit the dispatch of generators in the affected areas to a maximum gas usage if there is a limitation on the maximum amount of gas used. CAISO states that these provisions will also allow

[36] CAISO Transmittal at 32.

[37] *Id.* at 33.

[38] *Id.* at 36.

[39] *Id.* at 27.

CAISO to limit the dispatch of the generators in the real-time market to a maximum gas usage if there is a limitation that relates to differences between gas scheduled and gas consumed due to gas system imbalance limitations.

35. CAISO states that it will enforce a constraint developed for the CAISO balancing authority area in the day-ahead market, the real-time market, or both; however, it will enforce a constraint developed for an EIM balancing authority area in the real-time market only.[40] For a constraint in the CAISO balancing authority area, CAISO states that it will enforce the constraint based on its assessment of gas and electric conditions, but will coordinate with the gas companies to the maximum extent possible to ensure the limitations imposed by the constraint in the market are consistent with the limitations observed on the gas system.[41] Similarly, for a constraint developed for an EIM balancing authority area, CAISO will apply the constraint in coordination with the EIM Entity in whose balancing authority area it is applying the constraint. CAISO expects that the EIM Entity will coordinate with the gas company in its balancing authority area for purposes of defining the constraint and determining when it should be enforced.

36. As an example of how CAISO may use its discretion to apply a constraint in its own balancing authority area, it states that if an unplanned gas outage occurs after the day-ahead market or a gas curtailment is issued during the real-time market, CAISO may enforce the constraint in the real-time market run after not enforcing it in the day-ahead market run. Also, CAISO states that it will retain the flexibility to modify the level of the constraint, or to remove the constraint, if the CAISO determines that the constraint is leading to adverse market impacts.[42]

37. As an example of the proposed coordination with EIM Entities, CAISO states that after it has developed such a constraint for the EIM Entity balancing authority area, if the EIM Entity requests CAISO to enforce such constraint based on information of a particular gas system outage in the EIM, CAISO will enforce the constraint in the real-time market.[43]

38. CAISO states that it is prudent to expand the geographic scope of maximum natural gas constraints beyond the southern California gas regions because similar gas system constraints likely will develop in other parts of the CAISO balancing authority

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[40] *Id.* at 30.

[41] *Id.*

[42] *Id.* at 31.

[43] *Id.*

area as a result of more stringent safety and reliability measures for natural gas storage facilities recently adopted by the State of California.[44] Specifically, CAISO states that California Senate Bill No. 887, which augmented requirements on gas storage facilities in response to the Aliso Canyon leak, and new California Air Resource Board rules aimed at combatting emissions from methane leaks will create an increased risk of system gas storage capability and availability limitations.[45]

39. CAISO states that it received adverse comments from DMM in the stakeholder process and modified its elements of its proposal in response to those concerns. Specifically, DMM questioned the need for an expansion of the authority at this time. In response, CAISO cites the forthcoming regulations from the State of California in its filing.[46]

40. CAISO notes that DMM also opposed the expansion of this authority into the EIM until CAISO develops more detail on how the EIM Entity can decide to create and enforce new gas nomograms. DMM recommended that CAISO clarify that only physical limitations should be managed through gas constraints and not business decisions made by the EIM Entity. In response, CAISO states that it included language in its proposal that limits the application of gas constraints to enforce physical limitations, and required that the EIM Entity present CAISO with sufficient information to develop a gas constraint and verify physical limitations.[47]

41. CAISO states that DMM also recommended that the tariff specify the role of natural gas companies in developing constraints.[48] CAISO states that because it does not have authority over or a relationship with gas companies affecting EIM entities, it decided not to specify this in the tariff. CAISO states that the requirement that EIM entities present CAISO with sufficient information to develop constraints means that they will have had to coordinate with gas companies in developing the information.

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[44] *Id.* at 27.

[45] *Id.* at 28.

[46] *Id.* at 37.

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

[48] *Id.* at 38.

42. CAISO states that DMM requested that CAISO include details about how stakeholders would be informed about the enforcement of the gas constraint.[49] In response, CAISO included provisions in its proposal to provide for the notice and the opportunity to comment before any new constraints were enforced in CAISO's balancing authority area or the EIM.

ii. PSE's Comments

43. PSE supports CAISO's filing. PSE agrees with CAISO that a constraint is a better tool for managing gas system limitations than manual dispatch. PSE notes that its own gas-fired generation can be limited by a lack of interruptible gas and argues that a gas constraint would be more effective at managing the limitation.[50]

iii. DMM's Comments

44. DMM states that it supports CAISO's filing, but also expresses specific concerns and recommendations about CAISO's proposal. DMM states that its review of the natural gas constraint has shown that while constraints may be a useful tool, CAISO needs more experience using them before expanding their usage outside of southern California. DMM maintains, however, that it does not oppose expanding CAISO's tariff authority.[51] DMM argues that it appears that CAISO has set the penalty price for violating gas constraints at too low a value, making them ineffective at limiting gas burn in a constrained area. DMM also notes that CAISO has indicated that it is in the process of revising its penalty prices.[52] DMM states that it disagrees with CAISO that gas burn constraints, as presently construed, are more effective than managing gas system limitations through manual dispatches.[53]

45. DMM also states that maximum gas constraints could interact poorly with various sufficiency tests used in the EIM. Each EIM Entity must submit its base schedules in advance of a market run. CAISO tests these base schedules to ensure that the EIM Entity has sufficient generation to meet demand and sufficient flexibility to increase or decrease output. DMM states that imposing a gas nomogram has essentially the same effect as de-

[49] *Id.* at 38-39.

[50] PSE Comments at 2.

[51] DMM Comments at 12-13.

[52] *Id.* at 13-14.

[53] *Id.* at 14-15.

rating available capacity or limiting the energy bids from a specific group of generating resources.[54] However, DMM states that under the proposed tariff revisions, the impact of the maximum gas constraints would not be incorporated into the sufficiency tests. DMM argues the impact of the constraints should be included in the sufficiency tests. DMM argues that gas nomograms represent a clear limit on output from a specific group of gas generators, and believes it would be relatively straightforward to incorporate the impacts of a gas nomogram into the important supply sufficiency tests.[55]

iv. CAISO's Answer

46. With respect to DMM's criticisms of the implementation of maximum gas constraints, CAISO states that the penalty prices are not relevant to its tariff revisions because they are listed in CAISO's business practice manuals and are addressed through change management proceedings.[56] CAISO states that it plans to address the penalty prices in the near future.

47. In response to DMM's claims that maximum gas constraints may be less effective than manual dispatch, CAISO argues that a constraint represents an improvement on manual dispatch because, in part, it is less burdensome for operators and more likely to produce an efficient outcome.[57] Further, CAISO states that a constraint is preferable because it allows prices to reflect the costs of restraint on the system. CAISO also states that it is easier for a constraint to respond to sudden changes in system conditions.[58]

b. Provisions Related to Maximum Gas Constraints

i. CAISO Proposal

48. CAISO also proposes to make permanent two existing interim measures related to its use of maximum gas constraints. First, CAISO proposes to make permanent the provision allowing it to deem uncompetitive certain internal transmission constraints as part of its local market power mitigation process when it enforces a natural gas

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[54] *Id.* at 20-21.

[55] *Id.* at 21.

[56] CAISO Answer at 15.

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

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

constraint.[59] CAISO's market power mitigation process as currently constituted only considers the effects of transmission constraints when determining whether a transmission constraint is competitive. CAISO states that granting it this authority is consistent with the Commission's determination in the Phase I Order.

49. CAISO also proposes to make permanent its authority to suspend virtual bidding when virtual bids may detrimentally effect market efficiency due to the enforcement of a natural gas constraint. CAISO states that there may be times when the price convergence promoted by virtual bidding runs contrary to market efficiency. CAISO states that one result of the enforcement of a gas constraint may be the persistent divergence of day-ahead and real time prices, which virtual bidders could use to make profits at little or no risk.

ii. <u>DMM Comments</u>

50. DMM notes that the authority for CAISO to deem transmission paths as uncompetitive when a gas constraint is enforced was intended as a temporary measure. DMM argues that the market power effects of gas constraints would be more transparent and accurate if they were integrated into the automated market power mitigation process.[60] DMM also argues that under CAISO's proposed tariff revisions, resource sufficiency and flexible ramping sufficiency tests would continue to ignore the impact of gas usage limits. DMM believes that the impacts of gas nomograms on the amount of available generation from groups of resources should be incorporated into these tests.[61]

iii. <u>CAISO's Answer</u>

51. In response to DMM's concerns about its manual intervention in the market power mitigation process, CAISO states that it is working to automate this process.[62] CAISO states that it will work to implement an automated process by the end of next year. In response to DMM's concerns about the impact of gas constraints on resource sufficiency tests, CAISO states that it will honor its commitments to monitor the impact of the constraints on the EIM resource sufficiency tests.[63]

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[59] CAISO Transmittal at 39-40.

[60] DMM Comments at 19-20.

[61] *Id.* at 21.

[62] CAISO Answer at 22.

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

c. Two-Day-Ahead Advisory Schedules

i. CAISO Proposal

52. Lastly, CAISO proposes to make permanent its ability to provide scheduling coordinators with advisory day-ahead commitment schedules produced in the residual unit commitment process on a two-day-ahead basis. CAISO states that the Commission found this advisory information can help scheduling coordinators make more informed gas procurement decisions and more closely match their gas procurement with their potential gas consumption. CAISO also notes that the Commission found that the information could help reduce gas and electric reliability risks associated with imbalances between the amount of gas that generators nominate and the amount of gas they burn. In addition, CAISO states that the Commission previously concluded that the proposal was just and reasonable in the interim period where there was uncertainty about Aliso Canyon's operation and its impact on gas and electric reliability.[64]

d. Commission Determination

53. We reject CAISO's proposed set of permanent tariff provisions. Specifically, we reject: (1) tariff provisions granting CAISO authority to implement and enforce, throughout the CAISO balancing authority area and in the EIM, maximum gas burn constraints limiting the dispatch of gas-fired generators; (2) tariff provisions related to CAISO's use of the natural gas constraint, specifically, its ability to suspend virtual bidding and deem transmission constraints non-competitive when it enforces a maximum gas constraint;[65] and (3) tariff provisions allowing CAISO to release two-day-ahead advisory schedules to certain scheduling coordinators.[66]

54. We recognize that rejecting CAISO's permanent tariff revisions will leave CAISO without the maximum gas constraint and the two-day-ahead advisory schedules to address the ongoing limited operability of Aliso Canyon. Our rejection of these permanent tariff provisions does not foreclose CAISO from proposing an extension of these interim Aliso Canyon-specific tariff provisions for an additional year, as CAISO did with the three tariff provisions that we accept on a temporary basis in this order.

55. We reject CAISO's permanent proposals because we find that CAISO's proposed extension of the use of maximum gas constraints to the EIM has not been shown to be

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[64] CAISO Transmittal at 12.

[65] *See* Proposed CAISO Tariff sections 7.9.2(d) and 39.7.2.2, respectively.

[66] *See* Proposed CAISO Tariff section 6.5.2.2.3.

just and reasonable and not unduly discriminatory. CAISO has not demonstrated how it would prevent EIM Entities from having too much discretion over the development and enforcement of the constraint or using the constraints to influence market operations to their advantage.[67] CAISO's proposal would give EIM Entities an inappropriate advantage over other market participants. Notably, CAISO's proposal relies on an EIM Entity developing a maximum gas constraint with the relevant gas company and informing CAISO when the constraint should be enforced. While the constraint would be vetted in a public process, the EIM Entity would have a great deal of discretion over the development and enforcement of the constraint. This raises the concern that an EIM Entity would be able to develop a constraint to help it manage gas supply issues of its affiliated resources while other market participants would have to rely on appropriate bidding and contracting.

56. CAISO states that the constraints will only be used for physical limitations; however, CAISO has not shown how it will ensure that this will be the case. CAISO states that it does not have a relationship with the gas companies affecting EIM Entity Balancing Authority Areas.[68] CAISO relies on a public stakeholder process to ensure that the constraints reflect the physical limitations of the gas system, but it is unclear what information other market participants will have to ensure that the constraints are appropriate or how often would the constraints be subject to stakeholder review.

57. Moreover, CAISO does not explain how it would monitor and enforce the maximum gas constraints in the EIM. Under its proposal, CAISO would rely solely on EIM Entities to enforce constraints and CAISO would not communicate directly with the natural gas companies. The role of the relevant natural gas company in this process is neither defined in the tariff, nor are there protections to ensure that the design or triggering of any natural gas constraint does not harm the natural gas company or other electric resources. As CAISO would be apparently reliant on information from non-independent EIM Entities about the relevant natural gas systems, CAISO does not explain how it would effectively monitor the enforcement of the constraint in the market it independently operates.

58. In addition, CAISO has not demonstrated how it will ensure that marketing function employees of EIM Entities will be prevented from participating in the

[67] CAISO Tariff, Appendix A, Master Definition Supplement, defines EIM Entities as Market Participants. Specifically, an EIM Market Participant is defined as "An EIM Entity, EIM Entity Scheduling Coordinator, EIM Participating Resource, or EIM Participating Resource Scheduling Coordinator."

[68] CAISO Transmittal at 38.

development and enforcement of maximum constraints. Under the Commission's standards of conduct, marketing function employees may not have access to non-public information about transmission systems.[69] Here, CAISO proposes to allow an EIM Entity to develop and enforce a constraint affecting the dispatch of generation using information about the supply of natural gas available to generation. While it may be possible to develop a generation-based constraint without the involvement of the marketing function, CAISO's proposal potentially opens the door to this kind of coordination and CAISO has not included any safeguards against it.

59. Moreover, given the design of the EIM, a constraint in the EIM would only apply to resources participating in the EIM, and thus may not apply to all resources that may be affected by or driving a natural gas emergency. Further, if the constraint were triggered, it would only affect EIM participating resources actually bidding into the market at the affected time. Given these limitations, CAISO does not provide evidence that the constraint will mitigate overall gas supply limitations for the natural gas company. The constraint may be effective in limiting consumption by EIM Entities' participating generation, but given CAISO's apparent lack of coordination with the relevant natural gas company, CAISO has not shown that the natural gas constraint would improve overall supply conditions.

60. CAISO also does not address DMM's concern about the impact of constraints on resource sufficiency tests. The Commission is concerned that if CAISO enforces a natural gas constraint, but does not require that the constraint be included in the EIM Entity's base schedule, then the EIM balancing authority area may violate one of the resource sufficiency tests during the real-time market and cause prices to increase due to the constraint violation.

61. Our rejection of its permanent proposals here is without prejudice to CAISO refiling a permanent maximum gas constraint for its own balancing authority area that addresses the Commission's concerns as discussed below. The Commission believes that a maximum gas constraint is, in concept, a useful tool that can enable CAISO to manage physical natural gas limitations more efficiently than relying solely on manual dispatch. Managing gas limitations within CAISO's market optimization processes has the potential to result in a more optimal dispatch and more transparent price signals. While CAISO asserts that the tool has been useful and more effective than manual dispatch, this assertion is disputed by its own DMM,[70] and CAISO does not provide sufficient evidence or analysis to support its claim.

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[69] *See* 18 C.F.R. § 358.7 (2017).

[70] DMM Comments at 14-15.

62. CAISO also does not provide clear standards as to when a constraint would be developed and enforced. While the interim Aliso Canyon provisions were tied to a known physical limitation on the natural gas system, CAISO's proposed permanent expansion would allow it to develop new constraints based on limitations that may occur in the future. CAISO does not precisely define what it means by "physical" limitation or what type of "physical" limitation on the natural gas system would be subject to the constraint and why the maximum gas constraint would be an appropriate tool to deal with these sorts of limitations. The Commission is concerned that, in situations beyond the known physical limitation at Aliso Canyon, a maximum gas constraint would be used for situations where responsible bidding and contracting for natural gas supplies by the gas-fired generators would be appropriate.

63. In addition, CAISO's proposal relies on interventions in other market processes, such as virtual bidding and its market power mitigation process in order for CAISO to enforce the maximum gas constraint. These solutions may be appropriate for an interim tariff provision to address an identified problem, such as Aliso Canyon's limited availability, but CAISO has not provided justification that they are appropriate or adequate in their current form as permanent features of CAISO's market. CAISO's maximum gas constraint should not require frequent manual interventions into its market power mitigation process, which has an automated process designed to guard against over and under-mitigation. Similarly, CAISO's enforcement of the maximum gas constraint should not require the suspension of virtual bidding if it is to be used as a regular feature of CAISO's market operation. Virtual bidding was designed to enhance the efficiency of CAISO's markets, and that purpose should not be undermined by new permanent features of CAISO's markets.

<u>The Commission orders</u>:

(A) CAISO's interim tariff proposals are accepted, as discussed in the body of the order.

(B) CAISO's permanent tariff proposals are rejected, as discussed in the body of the order.

By the Commission.

(S E A L)

Kimberly D. Bose,
Secretary.