



# **Aliso Canyon Gas-Electric Coordination**

## **Phase 3**

### **Straw Proposal**

**June 2, 2017**

**Table of Contents**

Introduction ..... 3  
Background and Issue Discussion ..... 4  
Straw Proposal..... 5  
    Operational tools and D+2 publication made permanent..... 6  
    Market measures extended temporarily ..... 9  
Plan for Stakeholder Engagement and Next Steps .....10

## Introduction

The purpose of this initiative is to mitigate continued risks to electric reliability due to constrained natural gas systems. Under the previous Aliso Canyon Gas-Electric Coordination Initiatives conducted in spring and fall 2016, the ISO identified there was a need to enhance its market and operational tools to increase gas-electric coordination to address reliability risks caused by the limited operability of the Aliso Canyon natural gas storage facility. The market and operational tools introduced to the CAISO market on a temporary basis will expire on November 30, 2017.

Because the Aliso Canyon natural gas storage facility is expected to have limited operability for an extended period of time, the California ISO (CAISO) is proposing to extend the temporary market and operational tools currently in-place so that they remain in-effect beyond November 30. The CAISO proposes to make market constraint limiting the maximum gas burn of a group of generators a permanent operational tool that can be used throughout the CAISO and Energy Imbalance Market balancing areas. Experience over the past year has shown that the CAISO has prudently used this tool and it has proven particularly effective when used. In combination with the natural gas constraint, the CAISO proposes to make permanent its authority to deem transmission constraints uncompetitive when the natural gas constraint is enforced and to suspend convergence bidding when the constraint adversely impacts market efficiencies. The CAISO also proposes to make the provisions to publish D+2 results permanent provisions. Finally, the CAISO proposes to further temporarily extend other temporary market measures.

CAISO proposes to temporarily extend the other temporary market measures because the long-term solutions to the need to balance gas-electric coordination issues through enhanced bidding rules addressed by these features are being evaluated under an existing stakeholder process, *Commitment Costs and Default Energy Bid Enhancements (CCDEBE)*<sup>1</sup>. The CAISO believes that initiative is the appropriate format for proposing to enhance its cost based framework to reflect need to balance gas-electric system in a manner that supports system reliability. The CCDEBE enhancements are currently planned to be effective as of fall 2018. Consequently, the CAISO proposes to extend these temporary measures until it implements these long-term changes.

This document describes the CAISO's straw proposal for this third phase of the Aliso Canyon Gas-Electric Coordination policy initiative. The discussion in this paper is organized into the following sections:

- **Background and Issue Discussion:** Background discussion summarizing previous phases of this initiative including the source of concerns with gas-electric coordination and a procedural history of the Aliso Canyon stakeholder processes and filings.
- **Straw Proposal:** Discussion of CAISO's straw proposal to extend temporary market measures and to make the publication of D+2 advisory results and the maximum gas

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<sup>1</sup> Stakeholder process documents available at: [http://www.caiso.com/informed/Pages/StakeholderProcesses/CommitmentCosts\\_DefaultEnergyBidEnhancements.aspx](http://www.caiso.com/informed/Pages/StakeholderProcesses/CommitmentCosts_DefaultEnergyBidEnhancements.aspx).

burn constraint and its accompanying measures a permanent operational tool. The section will first discuss the proposal for operational and D+2 publication to be made permanent and then discuss the proposal for the other market measures to be extended temporarily.

- Plan for Stakeholder Engagement and Next Steps: Reviews ISO's plan for the stakeholder initiative targeting the July 2017 EIM Governing Body and ISO Board of Governors meetings. This section also includes a request for stakeholder comments on this straw proposal.

## Background and Issue Discussion

Under the *Aliso Canyon Gas Electric Coordination Measures* initiative Phase 1, the ISO launched an expedited stakeholder process to address operational concerns due to reliability risks identified in an inter-agency task force's technical report and action plan.<sup>2</sup> The CAISO together with stakeholders designed eleven temporary measures which the CAISO filed with the Federal Energy Regulatory Commission (FERC) for approval on May 9, 2016<sup>3</sup>, to be effective through November 30, 2016. See the original Revised Draft Final Proposal for Aliso Canyon Gas-Electric Coordination for Phase 1 for background information and a description of each approved temporary measure<sup>4</sup>. FERC subsequently approved this filing effective June 1, 2016 through November 30, 2016<sup>5</sup>.

Of the 11 measures filed under the Phase 1 filing, three measures were previously vetted and developed with stakeholders under the Bidding Rules Enhancements initiative as permanent market features. Consistent with the Board of Governors' approval of these measures, the CAISO filed for approval to revise its tariff and make those bidding rules permanent on August 19, 2016.<sup>6</sup> FERC approved the three measures on November 21, 2016.

Under Phase 2, the CAISO evaluated whether the eight remaining temporary measures enhancing gas-electric coordination should be extended in light of concerns with continued operational risks. The concerns were based on a revised reliability assessment for winter 2016/2017 from the same interagency task force, the Winter Action Plan and Winter Risk Technical Report, and whether the revised assessment warrants continuing the CAISO's authority to utilize the eleven temporary measures designed to address operational concerns due to reliability risks.

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<sup>2</sup> All the inter-agency materials are accessible through the Aliso Canyon stakeholder page, <http://www.aiso.com/informed/Pages/StakeholderProcesses/AlisoCanyonGasElectricCoordination.aspx>.

<sup>3</sup> [http://www.aiso.com/Documents/May9\\_2016\\_TariffAmendment\\_EnhanceGas-ElectricCoordination\\_LimitedOperation\\_AlisoCanyonNaturalGasStorageFacility\\_ER16-1649.pdf](http://www.aiso.com/Documents/May9_2016_TariffAmendment_EnhanceGas-ElectricCoordination_LimitedOperation_AlisoCanyonNaturalGasStorageFacility_ER16-1649.pdf)

<sup>4</sup> [http://www.aiso.com/Documents/RevisedDraftFinalProposal\\_AlisoCanyonGas\\_ElectricCoordination.pdf](http://www.aiso.com/Documents/RevisedDraftFinalProposal_AlisoCanyonGas_ElectricCoordination.pdf)

<sup>5</sup> [http://www.aiso.com/Documents/Jun1\\_2016\\_OrderAcceptingTariffRevisions\\_Establishing\\_TechnicalConference\\_AlisoCanyon\\_ER16-1649.pdf](http://www.aiso.com/Documents/Jun1_2016_OrderAcceptingTariffRevisions_Establishing_TechnicalConference_AlisoCanyon_ER16-1649.pdf)

<sup>6</sup> Bidding Rules and Commitment Costs Enhancements (ER16-2445) filing, available at <http://www.aiso.com/Pages/documentsbygroup.aspx?GroupID=1AA66AC3-C157-44C8-9B7C-384FD77C06D5>.

The CAISO did not propose to introduce new measures as the three new permanent provisions and the eight temporary measures previously approved were effective at managing natural gas system capacity limitations in addition to imbalance limitations.<sup>7</sup> The ISO determined two of the eight measures were not necessary to extend as the portfolio of measures without them was sufficiently robust. See the original Revised Draft Final Proposal for Aliso Canyon Gas-Electric Coordination for Phase 2<sup>8</sup> for background information and a description of each approved temporary measure. On October 14, 2016, the CAISO filed to temporarily extend six measures to November 30, 2017. FERC approved the requested extension on November 28, 2016.

The inter-agency task force recently released the Aliso Canyon Risk Assessment Technical Report Summer 2017 Assessment.<sup>9</sup> The assessment states risks to electrical system reliability due to Aliso Canyon's limited operability are likely to continue. Consequently, the CAISO is issuing this straw proposal to enable it to maintain the operational and market tools until the risks on the constrained gas system due to the limited operability of Aliso Canyon storage facility no longer pose a risk to reliable electric system operation.

## Straw Proposal

The following table summarizes the current temporary measures intended to increase gas-electric coordination to address reliability risks caused by the inoperability of the Aliso Canyon natural gas storage facility. For each of these measures, it lists whether the CAISO proposes to temporarily extend the measure beyond November 2017, or whether the CAISO proposes to make the measure a permanent tariff provision, along with any proposed modifications to the measures.

Temporary Measures	Proposal	Modifications
<b>Maximum Gas Burn Constraint:</b> Ability to enforce gas constraints for either capacity or imbalance limitations and proposes to make refinements to the original constraints design	File permanent revision	Extend authority to entire footprint when conditions warrant in day-ahead and real-time (note: real-time market footprint includes multiple BAAs)
<b>Competitive Path Assessment:</b> Allow the ISO to manually override the dynamic and default competitive path assessment to determine transmission paths should be deemed uncompetitive if the gas constraint is enforced based on a forward competitive path assessment	File permanent revision	Extend authority to entire footprint when conditions warrant in day-ahead and real-time

<sup>7</sup> The Department of Market Monitoring has raised that there might be a need to mitigate exceptional dispatches related to the gas constraints under certain circumstances. The ISO and the Department of Market Monitoring continue to evaluate this issue and may later propose additional measures.

<sup>8</sup> Aliso Canyon Gas-electric Coordination Draft Final Proposal, available at <http://www.caiso.com/Documents/DraftFinalProposal-AlisoCanyonGasElectricCoordinationPhase2.pdf>.

<sup>9</sup> [http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-11/TN217639\\_20170519T104800\\_Aliso\\_Canyon\\_Risk\\_Assessment\\_Technical\\_Report\\_Summer\\_2017\\_Asses.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-11/TN217639_20170519T104800_Aliso_Canyon_Risk_Assessment_Technical_Report_Summer_2017_Asses.pdf)

<b>Virtual Bidding:</b> Ability to suspend virtual bidding in the event the CAISO identifies market inefficiencies	File permanent revision	Extend authority to entire footprint when conditions warrant
<b>D+2 Information:</b> Increase access to information prior to day-ahead by reporting scheduling coordinators' D+2 residual unit commitment results directly to the scheduling coordinator	File permanent revision	No
<b>Day-Ahead Market Gas Index:</b> Increase ability of suppliers to reflect cost expectations in day-ahead bids by using an approximation of the next day gas index published morning of the day-ahead market run to calculate cost estimates	File for temporary extension	No
<b>Adjustments to DEBs and Commitment Cost Caps:</b> Increase the gas commodity price index used to calculate default energy bids (DEBs) and commitment cost for resources in the Southern California Gas and SDG&E gas regions by introducing a commodity price scalar, for purposes of distinguishing resources affected by the gas limitations from the rest of the ISO market areas. The percent scalar is applied to the next day gas index published the morning of the day-ahead market run to calculate cost estimates.	File for temporary extension	No

### Operational tools and D+2 publication made permanent

**Gas Constraint and Accompanying Provisions:** The CAISO proposes to make the maximum gas burn constraint a permanent operational tool for use throughout the entire CAISO and EIM footprint when conditions warrant. The CAISO also proposes to make two accompanying provisions permanent provisions of the CAISO tariff. These are (1) the authority to override dynamic and default competitive path assessments when the gas constraint is enforced based on actual system conditions, and (2) the authority to suspend virtual bidding in the event virtual bids are introducing adverse market outcomes in conjunction with the use of the gas constraint.

The maximum gas burn constraint constrains the maximum amount of natural gas that can be burned by natural gas-fired resources, based on limitations, in applicable gas operating zones anticipated by the CAISO<sup>10</sup>. The natural gas constraint permits CAISO operators to enforce in the day-ahead and real-time markets a constraint(s) 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. The constraint(s) also limit the CAISO market dispatch of the affected generators in the

<sup>10</sup> *Aliso Canyon Gas-Electric Coordination* Revised Draft Final Proposal includes the details for the zonal nature and rules for the gas constraint under Phase 1, available at: [http://www.caiso.com/Documents/RevisedDraftFinalProposal\\_AlisoCanyonGas\\_ElectricCoordination.pdf](http://www.caiso.com/Documents/RevisedDraftFinalProposal_AlisoCanyonGas_ElectricCoordination.pdf). Under Phase 2, the CAISO revised select details of the initial design, available at [http://www.caiso.com/Documents/RevisedDraftFinalProposal\\_AlisoCanyonGas\\_ElectricCoordination.pdf](http://www.caiso.com/Documents/RevisedDraftFinalProposal_AlisoCanyonGas_ElectricCoordination.pdf).

real-time market to a maximum gas usage if there is a limitation that relates to differences between gas scheduled with the gas company and gas consumed during the operating day due to gas system imbalance limitations. The constraint lowers the resource-specific locational marginal prices of gas generators subject to the constraint to ensure the necessary supply reduction occurs<sup>11</sup>.

Although individual generators can manage their gas burn to comply with gas system constraints to a large extent through their CAISO market bids, these bids from individual resources cannot completely ensure that the gas burn resulting from the CAISO's overall dispatch in an area does not exceed the capacity of the gas system in that area especially under the existing bidding rules and cost estimate design. In some emergencies or situations that can lead to emergencies, the CAISO may be required to take action to avoid burning gas in gas operating zones and cannot rely on bidding behavior alone to ensure reliable operations of the electric system.

Based on its experience using the gas burn constraint in southern California over the past year, the CAISO has found this operational tool to be an important mechanism to avoid excessive impacts on the gas system under constrained gas system conditions to help keep the gas system within operational limits and avoid impacts to electric system reliability. Although the CAISO has had to use the constraint sparingly, the CAISO found the constraint to be a valuable operational tool to keep electrical generation gas usage within system constraints when it was used.

Specifically, the maximum gas burn constraint has proven to be effective for recognizing constraints on natural gas systems, when they arise, so that the CAISO's dispatch solution does not exceed the system limits; system limits if not addressed through manual dispatch could undermine electrical reliability. The CAISO has enforced the gas constraints (two of them, one for San Diego Gas and Electric system and one for the larger Southern California Gas Company system area) in the market for only four days, from January 23 through January 26, 2001. In two of these days (January 24 and 25), the gas system was constrained to such an extent that Southern California Gas Company withdrew gas from Aliso Canyon. The CAISO's use of the constraint on these days kept the gas burn of the generators subject to the constraint within the specified limit.

Aliso Canyon is likely to be out for the foreseeable future and there is the possibility that gas issues may develop in other areas in the future. For example, SB 887 is being considered by the state legislature and would be applicable to all gas storage facilities in California.<sup>12</sup> This legislation would direct the Division of Oil, Gas, and Geothermal Resources to impose additional regulations on gas storage operations. This bill would likely result in potential significant changes to gas storage operations throughout the state.

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<sup>11</sup> See section 6.1.3 of the Revised Draft Final Proposal under Phase 1 for pricing impacts, available at [http://www.aiso.com/Documents/RevisedDraftFinalProposal\\_AlisoCanyonGas\\_ElectricCoordination.pdf](http://www.aiso.com/Documents/RevisedDraftFinalProposal_AlisoCanyonGas_ElectricCoordination.pdf).

<sup>12</sup> [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201520160SB887](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB887)

The gas constraint is a useful tool that can be used in the event of gas system problems to better coordinate with gas system operations and help keep the gas system within operational limits and avoid impacts to electric system reliability. It is preferable to manual dispatches taken by operators because the impact of the gas system constraints are reflected in the CAISO market solution (both in locational marginal prices and dispatches) through the use of the gas constraint in the CAISO market. Therefore, the constraint reduces the need for manual interventions and uplift on the CAISO system.

The CAISO also proposes to make the gas constraint available for use by EIM Entities as part of their balancing authority role. A number of EIM resources have limited pipeline capacity and their gas burn cannot exceed that limited pipeline capacity. The gas constraint would ensure the EIM's dispatch respected when there is limited gas capacity. In addition, gas storage is fairly limited for portions of the EIM.<sup>13</sup> Because of this limited storage, on high demand days the ability to draft from the pipeline can become limited and therefore constrains the aggregate gas availability in real-time.

EIM Entity's use of the gas constraint would be limited to managing these physical gas limitations and they would communicate their use of the constraint to the CAISO. The CAISO notes that EIM Entity's already have similar authority to use manual dispatch at their discretion and the gas constraint would provide a more efficient means to managing gas usage. CAISO proposes to extend the use of the constraint consistent with the existing design and functionality as described in the Revised Draft Final Proposal from Phase 1 including revisions made under the second phase described in the Draft Final Proposal from Phase 2.<sup>14</sup>

Along with making the gas constraint a permanent operational tool, the CAISO proposes to make two accompanying provisions also permanent tariff provisions: (1) the authority to override dynamic and default competitive path assessments when the gas constraint is enforced based on actual system conditions, and (2) the authority to suspend virtual bidding in the event virtual bids are introducing adverse market outcomes in conjunction with the use of the gas constraint (this would not be applicable to EIM areas as there is not virtual bidding at those locations). As explained in the previous Aliso Canyon Gas-Electric Coordination proposals, these are important measures to mitigate adverse market outcomes in conjunction with the use of the gas constraint.

**D+2 Information:** This measure increases access to information prior to day-ahead by reporting scheduling coordinators' D+2 residual unit commitment results directly to the scheduling coordinator. The CAISO proposes to make these permanent tariff provisions because it believes this will continue to be useful information to suppliers to incorporate into their gas procurement conducted in the morning before the CAISO publishes day-ahead market results at 1 pm. The majority of gas trading occurs before the CAISO publishes day-ahead market results

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<sup>13</sup> <http://www.westernenergyboard.org/ngei/documents/reference/other/06-12APPIqs.pdf>

<sup>14</sup> Available at:  
[http://www.caiso.com/Documents/RevisedDraftFinalProposal\\_AlisoCanyonGas\\_ElectricCoordination.pdf](http://www.caiso.com/Documents/RevisedDraftFinalProposal_AlisoCanyonGas_ElectricCoordination.pdf),  
<http://www.caiso.com/Documents/DraftFinalProposal-AlisoCanyonGasElectricCoordinationPhase2.pdf>.



and suppliers have stated that although the D+2 results are not complete predictors of day-ahead market results, they are a useful data point in making their gas procurement decisions.

### Market measures extended temporarily

As described in the table above, the CAISO proposes to further extend some of the current temporary market measures designed to increase gas-electric coordination in light of the limited operability of the Aliso Canyon natural gas storage facility. As described below, these measures will likely no longer be needed once the CAISO implements market design changes being developed under the CAISO's current *Commitment Cost and Default Energy Bid Enhancements* policy initiative. The CCDEBE enhancements are currently planned to be effective as of fall 2018. Consequently, the CAISO proposes to extend these temporary measures until it implements these long-term changes.

The following discuss the temporary measures the CAISO proposes to further temporarily extend:

**Day-Ahead Market Gas Index:** This measure increases the ability of suppliers to reflect cost expectations in day-ahead bids by using an approximation of the next day gas index published the morning of the day-ahead market run to calculate cost estimates used for default energy bids, generated bids, and commitment cost bid caps (cost estimates). The CAISO proposes to extend it to continue to estimate suppliers' costs at cost estimates that more accurately reflect current gas market prices.

The CAISO is proposing to temporarily extend this measure, instead of making it permanent, because it is considering bidding rule and cost estimates changes in the ongoing Commitment Cost and Default Energy Bid policy initiative that will also increase the accuracy of cost estimates used by the day-ahead market.

**Adjustments to DEBs and Commitment Cost Caps:** These measures increase the gas commodity price index used to calculate cost estimates for resources in the Southern California Gas and SDG&E gas regions by introducing a commodity price scalar, for purposes of distinguishing resources affected by the gas limitations from the rest of the ISO market areas. The percent scalar is applied to the next day gas index published the morning of the day-ahead market run to calculate cost estimates. The CAISO proposes to extend these three temporary measures that made adjustments to its cost estimates to improve commodity price information or to include additional short-run marginal costs associated with generator's managing their balancing requirements.

Based on the recent summer 2017 assessment, and as was the case over both summer 2016 and winter 2016/2017, the CAISO anticipates that (1) Aliso Canyon will have only limited operability, (2) intra-day (*i.e.*, real-time) gas availability will likely decrease, and (3) there will be tightened gas balancing requirements. This means a lack of nearby gas storage to respond to electric ramping needs and, when there is a deterioration of gas pipeline pressures, limited ability for SoCalGas and SDG&E to support large increases of gas receipts onto their systems relative to their scheduled capacity or deliver the increased amounts of gas in real-time to

generators. CAISO expects that the current commitment costs, generated bids, and default energy bids likely will not fully accommodate these conditions. Because the CAISO's current calculation of the gas commodity price is based on trading for next-day delivery, it does not include information from the intra-day gas commodity markets regarding gas prices or risk of noncompliance with gas balancing rules. Therefore, absent the tariff provisions that the CAISO proposes to maintain in this filing, the resulting commitment costs, generated bids, and default energy bids may not allow resources to manage gas-balancing requirements within tightened tolerance bands, and the calculated gas price may not fully capture real-time gas commodity prices on all days. When generators on the affected gas system are under tightened gas balancing requirements, they will presumably reflect these tightened balancing requirements in their bids, which will likely achieve the desired result of the real-time market dispatching these resources only for local electrical needs.

Under the existing policy effort CCDEBE, the CAISO is evaluating with its stakeholder community where the long-term market design should be enhanced on a permanent basis to have a cost based framework where scarcity price for gas should be reflected in cost estimates when the gas system is adversely affected by constrained conditions so as to continue to differentiate between generators that are at risk of violating balancing rules and those that have gas available to respond to dispatch. The CAISO is developing a straw proposal to propose long-term solution that will continue to allow market dispatches and prices to reflect resources' expected costs even under constrained gas system conditions.

## Plan for Stakeholder Engagement and Next Steps

The current schedule for this initiative is shown below. Stakeholder comments will be due June 14, 2017. In comments, the ISO asks stakeholders to provide input on the ISO's straw proposal. The ISO will present its proposal to its Board of Governors and the EIM Governing Body during their July 2017 meetings. This initiative involves the EIM Governing Body Authority's advisory role to the Board of Governors as it involves rules generally applicable to the real-time market.

Milestone	Date
Issue and Straw Proposal Posted	06/02/2017
Stakeholder Call	06/07/2017
Stakeholder Written Comments Due	06/14/2017
Draft Final Proposal Posted	06/21/2017
Stakeholder Call	06/23/2017
Stakeholder Written Comments Due	06/30/2017
EIM Governing Body Meeting	TBD
July Board Meeting	07/26/2016