

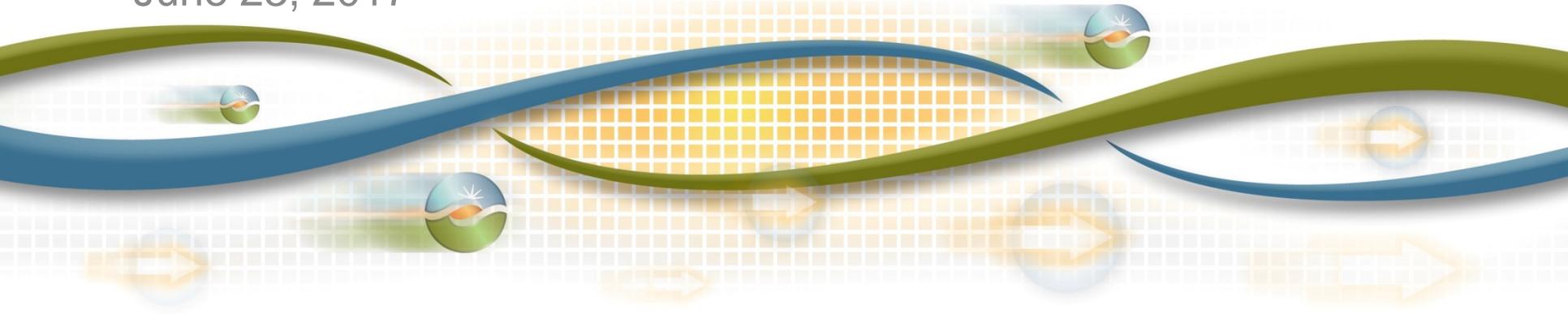


Aliso Canyon Gas-Electric Coordination Phase 3 – Draft Final Proposal

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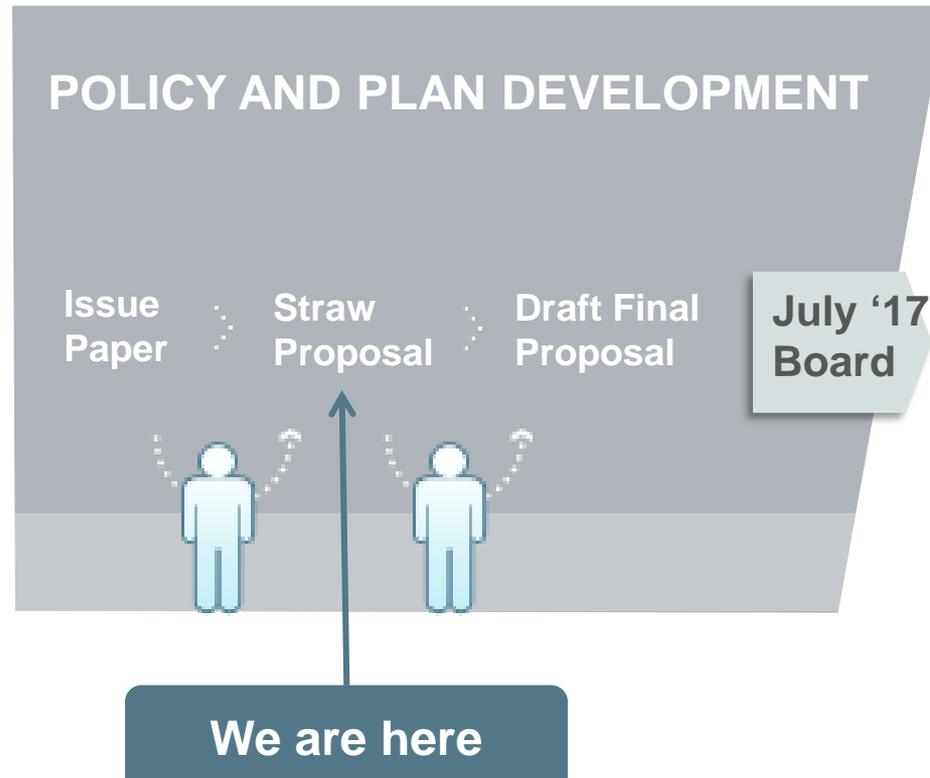


Agenda

Time	Topic	Presenter
10:00 – 10:05	Introduction	Kim Perez
10:05 – 10:15	Overview	Cathleen Colbert
10:15 – 11:00	Background and Issue Discussion	Cathleen Colbert
11:00 - 11:50	Proposal	Cathleen Colbert
11:50 – 12:00	Next Steps	Kim Perez

INTRODUCTION

ISO Policy Initiative Stakeholder Process



Plan for stakeholder engagement



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	06/22/2017
Stakeholder Call	06/23/2017
Stakeholder Written Comments Due	06/30/2017
EIM Governing Body Meeting	07/13/2017
July Board Meeting	07/26/2017

EIM Categorization

- CAISO plans to divide the initiative into two separate parts for decisional purposes.
 - Seek approval under the EIM Governing Body's primary authority for the element of this initiative proposing to allow an EIM Entity to implement a gas constraint in its balancing authority area (E1)
 - Seek advisory input under EIM Governing Body's advisory role for the remainder of the initiative's elements (E2)

<http://www.caiso.com/Documents/GuidanceforHandlingPolicyInitiatives-EIMGoverningBody.pdf>

OVERVIEW

Make some Aliso Canyon mitigation measures permanent and extend other temporary measures

- To ensure ISO Operations can manage needs when adverse operating conditions arise on the gas system, ISO proposes to:
 - Make permanent the natural gas constraint and its accompanying measures
 - Make permanent the publication of D+2 results
 - Extend temporary provisions affecting cost estimates
- Propose to extend sunset date on temporary measures until changes contemplated in *Commitment Cost and Default Energy Bid Enhancements* are implemented

Make some Aliso Canyon mitigation measures permanent and extend other temporary measures

- Continued operational risks due to:
 - Continued limited Aliso Canyon operability
 - Similar constraints likely developing in other areas of ISO balancing authority area due to Senate Bill 887 and new CARB rules on storage facility methane leaks
 - Similar constraints exist in portions of the EIM footprint due to gas availability limitations
- Grid Operations has found maximum gas burn constraint to be useful tool
- ISO finds it prudent to have authority to manage limitations if need arises

BACKGROUND AND ISSUE DISCUSSION

Background

- ISO participates in inter-agency task force assessing gas and electric risks and proposing mitigation measures
- Inter-agency task force release technical assessments on gas-electric reliability and found operational concerns due to reliability risks
- FERC approved 11 temporary measures on June 1, 2016 (Phase 1 measures) to address these operational concerns that would sunset November 30, 2016
- FERC approved to make 3 of these measures permanent on November 21, 2016
- FERC approved extending seven measures on November 28, 2016 to November 30, 2017

Operational risks – Southern California

- Aliso Canyon Risk Assessment Technical Report Summer 2017 Assessment found risks to electrical system reliability due to Aliso Canyon's limited operability
- CAISO and the LADWP's ability to meet the 1-in-10-year peak summer electric load is dependent on the amount of SoCalGas/SDG&E's system receipt point utilization and withdrawal capability from storage facilities other than Aliso Canyon
- At 90% flowing pipeline supplies (POR utilization) and max storage withdrawal rate of 1.47 Bcf/d excluding Aliso Canyon, LADWP/CAISO can meet minimum requirements

Operational risks – Southern California

- Summer electric reliability risks arise from expectation of imbalance limitations on gas system when gas-fired generation needed to meet incremental needs in ISO real-time operations
- During peak summer load conditions and historical electric usage, ISO expects that incremental gas-fired generation may be required to meet electric reliability
- If gas supply is insufficient to meet demand then the ISO may need to seek emergency assistance from neighboring balancing authorities or shed load in Southern California

Operational risks – outside of Southern California

- Higher levels of awareness of adverse impacts if gas storage facilities are unsafely operated
- Potential impacts on gas systems availability due to changes to the storage facility operations needed to comply with both:
 - Approved Senate Bill initially launched in response to the Aliso Canyon incident that increased requirements on storage facilities by DOGGR (September 2016)
 - New California Air Resource Board rules aimed at combatting emissions from methane leaks (March 2017)

Operational risks – EIM balancing authority areas

- Some portions of EIM have resources that
 - Need to transport gas on pipelines that do not offer interruptible service
 - Need to procure firm transport capacity
 - Gas storage is fairly limited
 - Must maintain gas burn within limited pipeline capacity unless storage capability is available
 - Serviced by gas companies in areas likely to experience imbalance limitations resulting in gas company notifications (e.g. curtailment watch/flow orders)
- Risks of constrained gas burn levels in real-time

Gas constraint useful for managing limitations; prudent to allow elsewhere if conditions warrant

- ISO found natural gas constraint proved effective for recognizing constraints on natural gas systems → enables dispatch solution to not exceed gas limits
- Enforced during constrained system conditions during 4 days from January 23 – January 26, 2017
 - Enforced San Diego Gas & Electric operating zone and Southern California Gas system area nomograms
 - On January 24 and 25 Aliso Canyon inventory needed to support gas-electric reliability
- ISO finds it prudent to be prepared to manage limitations if needed through gas constraint across its footprint

PROPOSAL

Propose to make permanent operational tools and D+2 publication

Ability to enforce gas constraints for either capacity or imbalance limitations

- Mitigation measure – Can override assessment of competitive paths (dynamic/default)
- Mitigation measure – Can suspend virtual bidding for market inefficiencies

**Make
Permanent**

Publish 2 day-ahead (TD-2) RUC schedules to Scheduling Coordinators

**Make
Permanent**

Make gas constraint a permanent provision and expand area it can be used

- Constraint allows grid operators to limit the gas burn of a group of generators in a defined area
- Constraint lowers resource-specific prices to ensure necessary supply reduction under the affected area
- Important backstop to generator's managing gas limitations through CAISO market bids
- Extend ability to enforce constraint to entire CAISO balancing area and to EIM balancing areas
- EIM entities already have similar authority through manual dispatch

Make gas constraint a permanent provision and expand area it can be used cont.

- Each maximum gas burn constraint defined is a different constraint but all are created similarly using the same principles from Phase 1 and Phase 2 design documents
- ISO proposes for establishing gas constraints outside of Southern California that the ISO will establish specific procedures for addressing outages or service limitations with the affected entity
- Procedures developed by ISO Operations with either:
 - Gas system operator if within the CAISO balancing area
 - EIM Entity if within an EIM Entity balancing area

Consideration for applying gas constraint within EIM

- EIM Entity and ISO Operations establish operating procedures detailing process
- ISO Operations responds to communications from EIM Entity (similar process as manual dispatches)
- EIM Entity would have to designate all generators' within the maximum gas burn constraint as participating
- Propose to maintain policy to not assess deliverability as a part of the sufficiency test (no impact from constraints)
 - Does not include impact of transmission constraints so should not include impact of generation group constraints
 - May consider in future with potential resource sufficiency test improvements

Automate dynamic competitive path assessment to include gas constraint and continue manual override as bridge to full solution

- Simultaneous impact of enforcing both the gas burn constraint and transmission constraint is not included
- Automate inclusion of gas constraint in the dynamic competitive path assessment as the full solution
- Currently - manual override authority mitigates risks of market power when the gas constraint is enforced
- Maintain authority to override dynamic/default competitive path assessments until full solution is effective
 - Additional constraints may have to be phased in based on ability to support manual efforts through the bridge period

Make permanent virtual bidding suspension authority

- Maintain authority to suspend virtual bidding in the event virtual bids are introducing adverse market outcomes when the gas constraint is enforced
- Measure to mitigate adverse market outcomes in conjunction with use of gas constraint
- Not applicable to EIM areas as there is no virtual bidding at those locations

Make publication of D+2 residual unit commitment results a permanent provision

- CAISO currently publishes D+2 RUC schedules for scheduling coordinators for generation
- Gas trading mostly occurs prior to day-ahead market results
- D+2 results serve as a reference point for their gas procurement
- Useful since it allows suppliers to incorporate ISO's expectations of gas needs into their gas procurement during the timely gas cycle

Commit to providing sufficient levels of transparency on use of mitigation measures

- Continue to provide transparency around enforcing the maximum gas burn constraint and if it deems transmission paths uncompetitive at that time
 - Release notification if gas constraint enforced
 - Release notification if manual override needed when constraint was enforced
- Continue to commit to providing transparency around authority to suspend virtual bidding when constraint is enforced
 - Issue a technical bulletin with justifications for a general suspension or limitation of Virtual Bids if suspended using this authority

Propose to extend temporarily market measures

Improve DAM gas price index using an approximation of next day gas index

Extend

Adjust the RTM gas price index to include a scalar on the next day gas index

Extend

Include in after-the-fact cost recovery filing right opportunity to seek energy costs incurred above mitigated price

Extend

Extend temporary market measures until long-term changes contemplated in CCDEBE implemented in Fall 2018

- Adjust day-ahead market gas price index using gas price information published each morning
 - Accounts for sudden gas price fluctuations
 - Improves day-ahead market accuracy
- Adjust the real-time market gas price index to include a scalar on the next day gas index
 - Accounts for real-time gas price fluctuations and allows So. Cal. generators to be dispatched only for local needs
- After-the-fact cost recovery filing right opportunity to seek energy costs incurred above mitigated price

Extend temporary market measures until long-term changes contemplated in CCDEBE implemented in Fall 2018

- Propose to extend the sunset date for temporary market measures beyond November 30, 2017 until ISO implements *Commitment Costs and Default Energy Bid Enhancements* proposals for long-term changes
- Caveats that it retains authority to adjust scalar levels
- ISO and DMM will continue to evaluate scalar levels and potentially adjust so that they:
 - Result in units dispatched to address system needs
 - Account for differences between DA & RT gas prices
 - Improve ability to manage usage within gas rules

NEXT STEPS

ISO requests written comments by June 14th 2017



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APPENDIX – COORDINATION

Coordination practices supporting reliability

- Outage Planning – bi-weekly calls with planners
- Under normal operations –
 - Provide D+2 and D+1 gas burn schedules
 - Hold daily calls on D+2 and D+1 gas burn schedules
 - Notify if RT burns are higher than gas burn schedules
- Under peak day operations –
 - Issue flex alert or restricted maintenance operations
 - Hold peak day reliability call including gas companies, Peak RC, PTOs, and neighboring BAAs
 - Hold peak day market calls (all market participants)

Gas-electric operations coordination under pipeline derates or outages outside of SoCalGas' area

- Operations follows its Gas Transmission Pipeline Derates or Outages Procedure 4120, <http://www.caiso.com/Documents/4120.pdf>.
 - More applicable to coordination between ISO and Pacific Gas & Electric, El Paso Gas Co., and Kern River Gas
- Gas system operator notifies ISO of curtailment (pro-rata) → ISO can manage system using gas curtailment tool or exceptional dispatches
- ISO will issue market notifications when action is taken.

Gas-electric operations coordination under gas limitation conditions in SoCalGas' area

- Operations follows its SoCalGas Service Area Limitations or Outages Procedure 4120C, <http://www.caiso.com/Documents/4120C.pdf>.
- SoCalGas notifies ISO of curtailment watch → ISO can manage system using **gas constraints**, adjusting internal transfer capability, or exceptional dispatches
- SoCalGas notifies ISO of curtailment (pro-rata) → ISO can manage system using gas curtailment tool or exceptional dispatches
- ISO will issue market notifications when action is taken.