



2020 Policy Initiatives Catalog

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1 Introduction

This *Policy Initiatives Catalog* documents current, potential, planned and ongoing policy initiatives to develop enhancements to the California ISO (CAISO) markets or to related requirements for policy. These are enhancements requiring a stakeholder process and typically resulting in CAISO tariff changes. This catalog does not list potential process improvements or administrative changes.¹

This catalog is organized into the following sections:

- Initiative Categorization
- Stakeholder Policy Initiatives Catalog Submissions
 - Submissions Incorporated
 - Submissions Precluded
- Changes Since Previous Version
- Initiatives Completed Since Previous Catalog
- Initiatives Currently Underway and Planned
- Discretionary Initiatives
 - Energy and Ancillary Services Markets
 - Congestion Revenue Rights
 - Resource Adequacy
 - Interconnection
 - Deletions

The CAISO updates this catalog twice a year in February and August. Stakeholders may submit new initiative requests through the policy initiatives submission template posted on the *Annual Policy Initiatives* website.² Submissions will be collected and considered for its respective catalog update until the first Tuesday of January and July. Following the deadline of submissions, the process for updating the catalog is as follows:

1. Stakeholder submissions are posted
2. CAISO publishes draft policy initiatives catalog
3. Stakeholders submit comments on draft policy initiatives catalog
4. CAISO publishes revised draft policy initiatives catalog

¹ Such requests should be made through a CAISO customer service representative or account manager.

² <http://www.caiso.com/informed/Pages/StakeholderProcesses/AnnualPolicyInitiativesRoadmapProcess.aspx>

5. Stakeholders submit comments on revised draft policy initiatives catalog
6. CAISO publishes final policy initiatives catalog
7. Stakeholders submit comments on final policy initiatives catalog

Stakeholder's new initiative requests received for this version of the catalog are summarized in Section 3, below.

The *Policy Initiatives Catalog* is a separate document used in the development process for the *Annual Policy Initiatives Roadmap*.

2 Initiative Categorization

This catalog sorts initiatives into various categories using letter codes. These codes are found next to the initiative's title. An initiative's categorization determines priority for its inclusion in the roadmap.

The codes below are listed in priority of the CAISO:

- I** – In-progress initiatives;
- F** – FERC-mandated initiatives;
- C** – CAISO Committed initiatives; and
- D** – Discretionary initiatives

FERC mandated initiatives are initiatives the CAISO must complete to comply with FERC orders. CAISO committed initiatives, which the CAISO tries to use sparingly, are initiatives that address very significant reliability or market efficiency issues. They are also initiatives the CAISO previously committed to during a regulatory proceeding or has already stated that it would undertake to stakeholders, the CAISO Board of Governors, EIM Governing Body, or FERC. Discretionary initiatives are the remainder of initiatives suggested by either the CAISO or stakeholders for consideration in the roadmap. Discretionary initiatives are prioritized by the CAISO with stakeholder input during the development of the *Annual Policy Initiatives Roadmap*.

The *in progress* code may be combined with any of the other three codes. This indicates that a policy initiative has begun and a webpage likely exists on the CAISO website.³

In addition to the above codes, this document also includes codes for policy initiatives that may affect the Energy Imbalance Market (EIM). These codes describe the role of the EIM Governing Body in approving the policy resulting from the initiative.⁴

The EIM Governing Body categorizes initiatives into one of the following:

- 1 – EIM Governing Body's primary authority

³ <http://www.aiso.com/informed/Pages/StakeholderProcesses/Default.aspx>

⁴ <https://www.westerneim.com/Documents/GuidanceforHandlingPolicyInitiatives-EIMGoverningBody.pdf>

- 2 – EIM Governing Body’s advisory role
- 3 – EIM Governing Body’s hybrid- EIM driven
- 4 – EIM Governing Body’s hybrid- not EIM driven

A category 1 classification is any policy initiative that involves market rules changes that fall entirely within the EIM governing body’s primary authority.⁵ A category 2 classification is any policy initiative proposing changes to rules that are within the EIM Governing Body’s advisory authority.⁶ A category 3 classification is when the primary driver for the initiative is EIM and the policy initiative is a hybrid in that it has both a component that would fall within the EIM Governing Body’s primary authority and a component that does not.⁷ A category 4 classification is when the primary driver for the initiative is not EIM and the policy initiative is a hybrid in that it has both a component that falls within the EIM Governing Body’s primary authority and a component that does not.⁸

Stakeholders should consider the EIM classification codes listed in this document as preliminary. Classifications can be changed anytime during the stakeholder process of an initiative. An EIM classification generally becomes final after the policy paper titled, “draft final proposal” is published. More information regarding this process is located in the *Guidance for Handling Policy Initiatives within the Decisional Authority or Advisory Role of the EIM Governing Body*.⁹

3 Changes Since Previous Version

The CAISO made the following changes to the catalog published on August 15, 2019:

1. Removed the Stakeholder Policy Initiatives Catalog Submission section.
2. Updated the Changes Since Previous Version section.
3. Updated Greenhouse Gas (GHG) Attribution Approach for Day-Ahead (D, 2) description.
4. Updated System Market Power Mitigation (1, D, 2) description
5. Moved Real-Time Market and EIM Refinements (C, 2) from Section 6.1, Energy and Ancillary Services Markets to Section 6, Initiatives Currently Underway and Planned. Updated initiative’s categorization.
6. Moved Flexible Ramping Product Enhancements (D, 2) from Section 6.5 Deletions to Section 6.1, Discretionary Initiatives.
7. Moved Interconnection Process Enhancements (C) from Section 6.4, Interconnection to Section 5, Initiatives Currently Underway and Planned.
8. Added to EIM Governance Review Phase 2 (C, 2) to Section 5, Initiatives Currently Underway and Planned.

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

⁹ <https://www.westerneim.com/Documents/GuidanceforHandlingPolicyInitiatives-EIMGoverningBody.pdf>

4 Initiatives Completed Since Previous Catalog

This section lists the initiatives where the policy development has been completed since the CAISO published the 2019 Policy Initiatives Catalog. For the purpose of this catalog, policy development is considered completed when the stakeholder process is finished and the CAISO Board of Governors approved policy's proposal. Initiatives placed in this section may still be currently underway, but are anticipated to be approved by the CAISO Board of Governors by the end of the year.

For additional information on initiatives underway, please refer to the initiative's web page.¹⁰

4.1 Intertie Deviation Settlement (D, 2)

The current "decline charge" for undelivered imports or exports was put into place to provide an incentive to deliver imports and exports when dispatched by the real-time market. The decline charge penalizes undelivered imports or exports to the extent they exceed a threshold amount over each month. Because of recent operational and market concerns with undelivered imports and exports, this initiative examined if the current structure of the decline charge should be changed. The goal of this initiative was to ensure operational reliability by incentivizing intertie resources to deliver energy that has been awarded.

The EIM Governing Body was briefed at their January 24, 2019 meeting. The Board of Governors approved this initiative at their February 7, 2019 meeting.

4.2 Local Market Power Mitigation Enhancements (D, 1, 2)

The EIM Offer Rules stakeholder working groups discussed this topic and CAISO management initiated a separate initiative. Formerly known as EIM Identified Market Power Mitigation Enhancements, EIM Default Energy Bid Option, or EIM Mitigation, this initiative holistically reviewed the need for additional EIM default energy bid options, reference level adjustment request changes, changes to the competitive Locational Marginal Price, and EIM mitigation issues. The potential market design changes will apply to the entire CAISO market, not only to the EIM.

The EIM Governing Body approved this initiative at their March 12, 2019 meeting. The Board of Governors approved this initiative at their March 27, 2019 meeting.

4.3 Reliability Must Run (RMR) and Capacity Procurement Mechanism (CPM) Enhancements (C)

Formerly known as, Review Reliability Must Run (RMR) and Capacity Procurement Mechanism, this initiative provided a holistic review of the Reliability Must-Run contract tariff and Capacity Procurement Mechanism processes. The initiative developed enhancements to clarify and align the use of RMR versus backstop procurement under the CAISO's current Capacity Procurement Mechanism tariff.

The Board of Governors approved this initiative at their March 27, 2019 meeting.

¹⁰ <http://www.aiso.com/informed/Pages/StakeholderProcesses/Default.aspx>

4.4 Excess Behind the Meter (BTM) Production (D)

The CAISO expects the continued expansion of behind the meter resources in the future. Excess behind the meter production refers to energy generated by behind the meter resources above the host customer's load. This is observed when the household or customer site is generating more energy from a behind the meter resource while consuming less load than is being produced. Any excess behind the meter production is exported back onto the grid and consumed by other customers. The primary focus of this initiative was to resolve inconsistencies in how excess behind the meter production is reported to the CAISO and establish standard reporting practices to ensure gross load is reported consistently across utility distribution companies.

The Board of Governors approved this initiative at their May 15, 2019 meeting.

4.5 EIM Governance Review (D, 2)

This initiative explored an incremental near-term change to the EIM Governing Body's primary authority for reviewing potential changes to market rules. Additionally, at the request of the EIM Governing Body this initiative also commenced the Energy Imbalance Market (EIM) Governance Review contemplated by the Charter for Energy Imbalance Market Governance as well as the process and timing for that review.

The Board of Governors and EIM Governing Body approved this initiative at their June 28, 2019 meeting.

4.6 Real-Time Market Neutrality Settlement (D, 1)

The Real-Time Market Neutrality Settlement initiative evaluated if changes were needed to the offset calculations in order to more accurately reflect cost causation between balancing authority areas in the EIM area.

Based on the CAISO's review of the settlement of real-time market neutrality it proposed the following changes to the calculation of the real-time imbalance energy offset:

1. No longer transfer a portion of the real-time imbalance energy offset between balancing authority areas in the EIM.
2. For each Balancing Authority Area in the EIM Area, the CAISO will calculate the Real-Time Market financial value of EIM Transfers as the product of the MWh, either positive or negative, and the System Marginal Energy Cost, plus a greenhouse gas financial value credit calculated as the product of the portion of the EIM Transfers not corresponding to a greenhouse gas compliance obligations under CARB and the Marginal Greenhouse Gas Cost.
3. Change in the business process for submitting EIM transfers system resource (ETSR) E-tags with the CAISO. The EIM entity will submit the E-tag with 5-minute energy values for ETSRs with the CAISO. Currently, the CAISO uses the integrated hourly value for the dynamic schedules. This business process change will improve the accuracy of the CAISO EIM transfer financial value.

The EIM Governing Body approved this initiative at their June 28, 2019 meeting. The Board of Governors approved this initiative at their July 24, 2019 meeting.

4.7 System Market Power Analysis (I, D, 2)

In their 2017 Annual Report, the Department of Market Monitoring (DMM) assessed the structural competitiveness of the CAISO's energy market and determined there may be periods when the CAISO energy market may be uncompetitive at a system level in the CAISO balancing authority area. The CAISO followed up with its own analysis to confirm DMM's results. CAISO has presented its findings to stakeholders and is examining the appropriate measures to address CAISO balancing authority area system-level competitiveness and is also examining what automated system-level market power mitigation measures would look like in the market.

The CAISO will brief the Board of Governors on its recommended appropriate measures to address system-level non-competitiveness at their November 13, 2019 meeting.

4.8 Market Settlement Timeline Transformation (I, C, 2)

This initiative is exploring options and other methodologies to remedy current settlement construct alignment with CAISO's processes. In 2011, FERC order 760 established the CAISO's current settlement construct. The initial design called for 3 settlement statements: T+3B, T+12B, and T+55B with the last statement acting as the final statement after all disputes, defects and corrections have been identified and resolved after the T+12B statement publication. Four optional settlement statements were established with pre-determined publications at T+9 Months, T+18 Months, T+33 Months and finally T+36 Months. If either T+9 Months, T+18 Months or T+33 Months were generated, then a T+36 would be triggered to address any outstanding Scheduling Coordinator disputes generated from the optional statement. Additionally, price correction timelines were also established to be at T+3B for DA, T+5B for RT, T+10B for EIM entry for a period of 90 days, and finally T+20B for any system/process failure corrections.

The intent of settlement and price correction timelines were established to meet both participant and CAISO business needs. However, the CAISO recognized that current timelines are problematic given the rapid expansion to CAISO markets and introduction of new products in recent years.

The CAISO plans to seek approval for this initiative from the EIM Governing Body and from the Board of Governors at their November 13, 2019 meeting.

4.9 Generation Deliverability Assessment (I, C)

The purpose of this initiative is to review and develop revisions to the CAISO's deliverability assessment methodology, which is a CAISO methodology developed for generation interconnection study purposes pursuant to the CAISO tariff and used in support of resource adequacy assessments. Primarily, the deliverability assessment methodology is used to assess if there is sufficient transmission such that new generation resources are reasonably able to serve load at times of highest system need and can therefore be relied upon as resource adequacy capacity.

The CAISO last modified the existing methodology in 2009, and it has largely remained unchanged since its initial development in 2004. Given the significant changes in the composition of the existing generation fleet and the further changes anticipated over the forecast horizon, the CAISO is considering revisions to the study assumptions used in the

existing methodology to reflect changing system conditions that affect or drive when resource adequacy resources are needed the most.

The CAISO initially proposed revisions in the course of its 2018-2019 transmission planning cycle, and based on stakeholder feedback, the CAISO has undertaken this separate stakeholder initiative to review the issue more comprehensively and address stakeholder concerns with the potential impacts of the proposed revisions. In particular, stakeholders identified concerns that the methodology had also come to be relied upon as a means to mitigate the risk of transmission-related congestion curtailment, and the implications of any methodology changes on curtailment risk need to be considered.

The CAISO plans to seek approval for this initiative from the Board of Governors this year.

4.10 Local Capacity Technical Study Criteria Update (I, C)

The purpose of this initiative is to update the Local Capacity Technical (LCT) study criteria set out in CAISO Tariff section 40.3.1.1 and associated contingencies selected for study purposes set out in CAISO Tariff section 40.3.1.2.

The LCT study criteria are used to develop study results that are provided to the CPUC for consideration in its annual resource adequacy requirements program. These results are also used by the CAISO in determining “Local Capacity Requirements” or “LCR” (minimum quantity of local capacity necessary to meet the LCT criteria) and for assisting in the allocation of costs of any CAISO procurement of local capacity needed to achieve the same criteria after considering the resource adequacy procurement of all Load Serving Entities (LSEs) as well as any CAISO procurement of Reliability Must Run resources (required for compliance with all mandatory standards).

The existing Local Capacity Technical study criteria were developed prior to the existence of NERC mandatory standards, and while they include much of the current mandatory standards, they do not align fully, in content or in terminology, with the NERC mandatory standards and the CAISO Planning Standards currently in effect. The initiative will therefore focus on aligning the LCT study criteria to the extent appropriate, and providing clarity on the extent and rationale of any remaining differences.

The CAISO plans to seek approval for this initiative from the Board of Governors at their November 2019 meeting.

4.11 Day-Ahead Market Enhancements – 15-Minute Granularity (D, 4)

This initiative examined changing day-ahead scheduling from hourly to 15-minutes to align with the 15-minute market. This was to better schedule sufficient flexibility to meet sharp ramps in the real-time market due to high amounts of variable energy resources.

In response to stakeholder comments, the CAISO decided to defer consideration of day-ahead market 15-minute scheduling to a later time.

5 Initiatives Currently Underway and Planned

This section summarizes policy initiatives that are currently or will soon begin a stakeholder process, but will not be completed by the end of 2019. It also summarizes initiatives the CAISO already committed to before developing the 2020 *Policy Initiatives Roadmap*.¹¹

5.1 Energy Storage and Distributed Energy Resources Phase 4 (I, C, 2)

This initiative is exploring refinements to the distributed energy resource and storage participation models and lowering integration barriers for these resources, e.g. how to optimally leverage resource design attributes that support grid reliability and maximize their value. To continuously improve and enhance participation models for both storage and distributed energy resources, the CAISO will explore the following topics in this initiative:

- Adding a state of charge parameter in the non-generator resource model;
- Applying market power mitigation to energy storage resources;
- Streamlining interconnection agreements for non-generator resource participants
- Establishing parameters to better reflect demand response resource operational characteristics;
- Vetting qualification and operational processes for variable-output demand response resources; and
- Discussing the non-24x7 settlement implications of behind the meter resources within the non-generator resource model.

5.2 Resource Adequacy Enhancements (I, C)

The rapid transformation of the resource fleet to cleaner and more variable energy resources is exposing shortcomings in the current resource adequacy framework. In collaboration with the CPUC and stakeholders, the CAISO is proposing reforms to the CAISO's resource adequacy rules, requirements, and processes to ensure the future reliability and operability of the grid. With stakeholders, the CAISO is exploring the following topics:

- Enhancements needed to the flexible resource adequacy capacity construct to ensure there is sufficient flexible resource adequacy capacity procured and made available to the CAISO to meet the operational needs of the transforming grid;
- Local availability assessments;
- Must Offer obligation (MOO) review;
- Review of maximum import capability (MIC) calculation and allocation;
- Modifications of the resource adequacy availability incentive mechanism (RAAIM);

¹¹ The February 2020 update to the 2021 Policy Initiatives Catalog will summarize the initiatives the CAISO committed to during the development of the 2020 Policy Initiatives Annual Plan and Roadmap.

- Resource adequacy validation tools and portfolio analysis;
- Capacity procurement mechanism (CPM) enhancements;
- Local capacity needs for slow demand response resources; and
- Resource Adequacy capacity valuation rules.

5.3 Capacity Procurement Mechanism (CPM) Soft Offer Cap (I, 2)

This initiative is reviewing the soft offer cap for the CPM competitive solicitation process. The CPM Soft Offer Cap initiative is also reviewing appropriate compensation measures for 12-month CPM designations.

5.4 Day-Ahead Market Enhancements (I, D, 2)

This enhancement will introduce a new day-ahead imbalance reserve product so that the day ahead market can procure sufficient capacity, in both the upward and downward directions, to address granularity differences, ramping needs and uncertainty that materializes between the day-ahead and real-time market. The objective of the initiative is to ensure efficient unit commitment, adequate ramping capability, and submission of economic bids into the real-time market. The CAISO will consider two options for the new day-ahead market formulation, a financial option and a financial plus forecast option. The financial option would co-optimize products based on bid-in demand. The financial plus forecast option would co-optimize products based on bid-in demand and the CAISO forecast. In addition, the CAISO will consider approaches to improve the deliverability of both the day-ahead imbalance reserve product and the real-time flexible ramping products.

5.5 Import Bid Cost Verification (I, 2)

FERC Order 831 requires the CAISO to raise its bid cap from \$1,000/MWh to \$2,000/MWh. Suppliers within the CAISO BAA must have bids greater than \$1,000/MWh cost verified in order to set market-clearing prices. FERC did not require importers to cost justify bids above \$1,000/MWh. The objective of the Import Bid Cost Verification initiative is to ensure energy prices continue to reflect the marginal cost of supply when those prices exceed \$1,000/MWh, and to ensure intertie offer rules are consistent with ISO's internal bidding rules by developing reasonable cost-verification measures for intertie offers above \$1,000/MWh.

5.6 Multi Greenhouse Gas Area (D, 1)

Pending other state's greenhouse gas regulations, this initiative would explore how the CAISO would incorporate different greenhouse gas rules into the market. Since balancing authority areas can be comprised of multiple states, this initiative will look at modifying the current attribution approach based upon balancing authority area boundaries to state geographic boundaries.

5.7 Extend Day-Ahead Market to EIM Entities (D, 2)

This initiative would develop an approach to extend participation in the day-ahead market to EIM Entities. This approach would enable EIM Entities to participate in the day-ahead market in a framework similar to the existing EIM approach for the real-time market, rather than requiring full integration into the CAISO balancing area.

EIM Entities would participate in the day-ahead energy market while retaining flexibility and independence, including retaining their balancing area and planning functions. The extended day-ahead market approach will bring many of the benefits of day-ahead market participation, notably, increased ability to integrate renewable resources, without having to form a multi-state balancing area. For example, transmission costs would continue to be collected under each EIM Entities' Open Access Transmission Tariff (OATT), although EIM Entities will likely need to make changes to align with an expanded day-ahead market. Resource adequacy similarly would be the responsibility of each EIM Entity, although the EIM's existing resource sufficiency evaluation would have to be extended to the day-ahead market.

The CAISO envisions it will work with stakeholders to develop this approach by addressing the topics described in the sub-sections below.

5.7.1 Align Transmission Access Charge (TAC) Paradigms (D, 2)

Under an extended day ahead market, the CAISO and stakeholders will need to address transmission compensation through transmission access charges. Currently, the Open Access Transmission Tariff framework provides different scheduling priorities over different time periods for both load and generation to secure transmission. Under the CAISO approach, transmission costs are recovered through MWh based charges to load and exports. However, the CAISO is currently evaluating changes to its transmission billing determinant in the *Transmission Access Charge Structure Enhancements* (I, C) initiative. Additional market efficiencies may be gained by aligning the billing determinants for transmission cost recovery over the extended day ahead market used by each balancing authority area to recover its costs. For example, there may be a monthly or daily transmission rate that is used to meet load and an hourly transmission rate for imbalance energy and exports from the combined footprint. In addition, the CAISO has rules for supporting existing transmission customers by providing them the perfect hedge which could also be used by EIM entities joining the extended day ahead market.

5.7.2 Day-Ahead Resource Sufficiency Evaluation (D, 2)

The day-ahead resource sufficiency evaluation is intended to ensure that each EIM Entity and the CAISO have sufficient bid range participating resources to individually meet their bid-in demand, ancillary services, flexible reserve product and their residual unit commitment demand. This proposed design would seek to ensure that EIM balancing areas and the CAISO do not lean on other balancing areas to avoid incurring costs for capacity, flexibility, or transmission in the forward bilateral markets. Unlike the hourly EIM resource sufficiency evaluation, freezing transfers for a given period may not be an appropriate repercussion for failure since there is an opportunity to cure the issue prior to the operating hourly in real-time. Therefore, alternative repercussions for failing the day ahead resource sufficiency evaluation will need to be considered.

5.7.3 Transferring Bid Range (D, 2)

The resource sufficiency evaluations insure that each balancing authority area can individually meet their own load through their intertie schedules and generation. This would allow parties to bilaterally trade bid range prior to the operation month, day, and/or hour. Currently, only if a resource is a pseudo-tie would its bid range transfer between two balancing areas. In order for the bid range to transfer from one EIM balancing area to another EIM balancing area, transmission would need to be procured to ensure that the bid range is available to the receiving balancing area. The ability to transact bid range and a robust day-ahead resource sufficiency evaluation will seek to address concerns that EIM Entities rely on the extended day-ahead market and EIM to meet their energy and flexibility needs without incurring transmission charges from the source and intermediary balancing areas in the EIM.

5.7.4 Greenhouse Gas (GHG) Attribution Approach for Day-Ahead (D, 2)

The CAISO will need to review the current GHG attribution approach and develop new GHG attribution measures in order to extend the day-ahead market to EIM entities. The current GHG attribution approach ensures that load outside of the CAISO does not incur GHG costs when their load is served by generation outside of the CAISO.

5.7.5 Congestion Revenue Rights (CRR) Extended Footprint (D, 2)

Congestion revenue rights pay holders the difference in congestion between the source node and the sink node in the day ahead market. CRRs are allocated to load serving entities through an annual and monthly process. Load serving entities receive these CRRs at no cost because they pay the transmission access charge. The current market design also includes an auction where residual transmission capacity can be procured by any certified CRR bidder. The revenue collected from the auction, payments to Existing Transmission Contracts holders for the perfect hedge, and settlement difference between CRR payments and actual congestion collection are included in a balancing account which is allocated to load serving entities. This initiative will address extending appropriate elements of the CRR market design to EIM entities to address items such as accommodating long-term (i.e. monthly or longer) bilateral transactions within the expanded day-ahead market footprint, definition of load aggregation points, and modeling EIM transfers/intertie scheduling points.

5.8 Transmission Access Charge Structure Enhancements (C)

Formerly known as Review Transmission Access Charge Structure, this initiative considers possible changes to the structure of the transmission access charge. The CAISO currently applies the transmission access charge to each MWh of metered internal end-use load and exports to recover participating transmission owners' costs of owning, operating, and maintaining transmission facilities under CAISO operational control. Included in the initiative scope are questions such as: (1) whether today's purely volumetric structure should be retained, or should be changed to include other factors such as peak demand; and (2) whether the billing determinant for internal load should be modified to account for the load that is offset by the energy output of distributed energy resources.

This initiative's draft final proposal is complete and on hold pending policy development of the Extend Day-Ahead Markets to EIM Entities initiative to ensure the proposed policies have

consistent treatment for transmission cost recovery. The CAISO anticipates presenting this policy to the Board of Governors in Q2 2020.

5.9 Storage as a Transmission Asset (SATA) (D)

This initiative considers using electric storage to provide grid services as a transmission asset, with all or a portion of costs recovered through the transmission access charge. This initiative would further explore issues around electric storage resources seeking to receive cost-based rate recovery for providing certain transmission services. It is also exploring enabling SATA resources to receive market revenues for their market participation.

This initiative is currently on hold pending the completion of the *Energy Storage and Distributed Energy Resources Phase 4* policy. The CAISO anticipates restarting this initiative in Q3 2020.

5.10 Congestion Revenue Rights Auction Efficiency Track 2 (D)

The congestion revenue rights (CRR) auction revenues collected by the CAISO are persistently less than the payments that the CAISO pays to auctioned CRR holders, indicating an issue with the efficiency of the CRR auction. An efficient CRR auction should lead to auction revenues that approach the auction payments. As discussed in the Department of Market Monitoring's 2015 Annual Report, since 2012 congestion revenue rights auction revenues that are allocated to load serving entities were on average \$130 million less than the congestion payments received by entities purchasing these congestion revenue rights. Most of these congestion payments are paid to financial entities that purchase congestion revenue rights but are not engaged in serving any load or managing any generation in the CAISO market. Department of Market Monitoring recommended reassessing the component of standard electricity market design under which CAISOs auction off excess transmission capacity remaining after allocating congestion revenue rights to load serving entities.

This track will be considered after the CAISO analyzes the effectiveness of Track 1A and 1B measures and determines if any issues remain.

5.11 Hybrid Resources (I, D, 2)

As generation developers become increasingly interested in pairing energy storage with existing or proposed generation, this initiative will explore how "hybrid" generation resources will be registered and configured to operate within the ISO market, and will resolve the operational and forecasting challenges hybrid resource configurations present. The CAISO will evaluate the need for potential modifications in the following areas to further enable hybrid resource participation: metering and telemetry, forecasting, interconnection requirements, markets and systems, ancillary services, deliverability, and resource adequacy.

5.12 System Market Power Mitigation (I, D, 2)

The CAISO published an analysis of the CAISO's energy market structural competitiveness in April 2019. The CAISO's analysis determined there may be periods when the CAISO energy market may be uncompetitive at a system level within the CAISO balancing authority area. Through discussions with stakeholders and the Market Surveillance Committee, the CAISO will present its determination of appropriate measures to address CAISO balancing authority area

system-level competitiveness to the Board of Governors. If the Board of Governors approves management's recommendation, this initiative would examine potential system-level market power mitigation design measures.

5.13 Real-Time Market and EIM Refinements (C, 2)

Previously, this initiative was to examine market design changes needed to enable the 5-minute real time dispatch to perform many of the functions that are now performed by the 15-minute real time unit commitment. These functions may include real-time unit commitment, ancillary services procurement, local market power mitigation, and the EIM hourly resource sufficiency evaluation. The 15-minute market would continue to schedule interties and internal resources at 15-minute granularity but would run with a shorter lead-time. The CAISO has determined that this change is not technically feasible at this time.

This initiative will now evaluate if additional improvements to the solve time of the 15-minute real-time unit commitment timeline would allow the optimization to initialize closer to the binding interval. This would allow inputs to the market optimization to use more current forecasts. The CAISO may also consider extending the horizon of short-term unit commitment process to allow for a longer look-ahead period, enabling it to commit resources that have a start-up time longer than five hours and to more optimally commit all resources, particularly those with limited starts. The CAISO also plans to review the re-optimization of ancillary services in both the 15-minute real-time unit commitment and 5-minute dispatch. Currently, only incremental ancillary services are procured in the 15-minute market. Along with these changes, the CAISO will review the need for real-time settlement changes such as settlement charge codes, uplift payments, offsets, and loss calculations to ensure they are consistent with cost allocation principles.

5.14 EIM Governance Review Phase 2 (C, 2)

In June 2019, the Western Energy Imbalance Market (EIM) Governing Body and ISO Board of Governors jointly approved the charter for the Governance Review Committee (GRC). The purpose of this temporary advisory committee is to oversee an iterative, public process to consider possible revisions to the EIM governance structure in light of experience to date and the evolution of the EIM since its inception. The Governance Review Committee's purpose is not intended to advise or develop enhancements to other topics, such as market design or revisions to existing market rules.

The Governance Review Committee's initiative may explore the scope and nature of the EIM Governing Body's decisional authority on policy initiatives, the process and criteria for selecting members of the EIM Governing Body, how the EIM Governing Body currently performs its duties and any other potential changes to the current structure.

5.15 2020 Interconnection Process Enhancements (C)

This initiative explores addressing modifications and clarifying previous generator interconnection process policy and support changing state policy goals. Topics to be considered but not limited to, modifying the effective date of study agreements after a project has been validated; deliverability driven reliability network upgrades and associated cost reimbursement, and other potential topics received from stakeholders.

6 Discretionary Initiatives

6.1 Energy and Ancillary Services Markets

This section describes the discretionary policy initiatives that were suggested by either the CAISO or stakeholders. This category includes potential market design enhancements that impact the day-ahead and/or real-time markets. This section also includes topics such as price formation, outage management, and resource modeling.

As background, the CAISO's day-ahead market consists of the market power mitigation process, the integrated forward market and the residual unit commitment process. The structure and rules for the day-ahead market are presented in the business practice manuals for market operations and market instruments.¹²

The real-time market includes three market runs: the 15-minute granularity short-term unit commitment process, the 15-minute granularity real-time unit commitment process, and the 5-minute granularity real-time dispatch. The short-term unit commitment process and real-time unit commitment process both commit resources. The second interval of the short-term unit commitment process is used for the 15-minute market, which includes financially binding 15-minute energy and ancillary service schedules and prices. The 5-minute granularity real-time dispatch also produces financially binding 5-minute energy dispatches. For more details regarding the real-time market, refer to the business practice manuals for market operations and market instruments.¹³

The energy imbalance market (EIM) extends the real-time market to other balancing authority areas in the West. The CAISO's market minimizes overall dispatch costs across the combined footprint of all EIM entity balancing authority areas and the CAISO balancing authority area. The EIM improves reliability by increasing the operational awareness and responsiveness to changing grid conditions across its large footprint. Further, the EIM allows for more efficient integration of renewable resources by capturing the diversity benefits across a geographical dispersed footprint.

Convergence (or virtual) bidding is a mechanism whereby market participants can make self-liquidating sales (or purchases) of non-physical energy in the day-ahead market, with the explicit requirement to buy back (or sell back) that energy in the real-time market. Virtual bids improve the efficiency of the markets because they tend to make day-ahead and real-time market prices converge.

Currently, the CAISO procures four types of ancillary services products in the day-ahead and real-time markets: regulation up, regulation down, spinning reserve, and non-spinning reserve. Section 4 of market operations business practice manual describes these ancillary services.¹⁴ The CAISO introduced the real-time flexible ramping product in fall 2016 and plans to implement new market functionality and pricing modifications resulting from the *Contingency Modeling Enhancements* and *Generator Contingency and Remedial Action Scheme Monitoring* initiatives.

¹² <http://www.caiso.com/rules/Pages/BusinessPracticeManuals/Default.aspx>

¹³ Ibid.

¹⁴ <https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Operations>

6.1.1 Export Scheduling Priorities (D)

This initiative was added to the catalog by the CAISO in September 2019 and will review changes to scheduling priority rules for exports that have specified their generation as non-resource adequacy. Currently, self-scheduled exports that are served by non-resource adequacy capacity or from non-RUC capacity have the same scheduling priority as internal load.¹⁵ The market simply validates that a resource's generation capacity is participating in the real-time market. The resource's net qualifying capacity is not considered in this validation. As a result, the resource's generation capacity may not be sufficient in all 5-minute intervals to be equal to or greater than the self-scheduled export quantity. For example, assume a self-scheduled export is supported by an internal variable energy resource. The export is self-scheduled at the hourly forecast of the variable energy resource, but the resource's actual output varies within the hour. In some market intervals, the resource may generate more or below the self-scheduled export quantity. In intervals where the resource's generation output is less than the export quantity, other resources in the CAISO balancing authority area are dispatched higher in order to meet the export quantity amount. These other resources may include resource adequacy generation to meet the higher dispatch instruction. If resource adequacy resources are used to serve CAISO load, it may be more appropriate to place a higher scheduling priority over non-resource adequacy resources to meet an export quantity.

6.1.2 Transmission-Distribution Interface (D)

This initiative was added to the catalog by the CAISO in July 2019 and will review roles and responsibilities at the transmission-distribution interface and how to effectively manage the grid with a growing share of energy coming from distributed energy resources. This initiative will also investigate effective models for managing distributed resources, including the role of distribution system operators and their interaction with the CAISO.

6.1.3 Energy Storage and Distributed Energy Resources (D)

This initiative was added to the catalog by the CAISO in July 2019. This initiative would explore enhancing the ability of CAISO connected and distribution-connected resources to participate in the CAISO market, including rooftop solar, energy storage, plug-in electric vehicles, and demand response. These resources represent an increasingly important part of the future resource mix and will help lower carbon emissions and provide operational benefits.

6.1.4 Dispatch Enhancements (D, 2)

This initiative was added to the catalog by the CAISO in July 2019. This initiative covers several topics, including Decremental Market Power Mitigation, Bid Floor, Exceptional Dispatch Decremental Settlement, Export Charges, Ramp Rate Limitations, and Accurate Curtailment Response. Dispatch Enhancements would review and develop enhancements to the current obligations for resources to comply with dispatch instructions.

6.1.4.1 Decremental Market Power Mitigation (D, 2)

During the stakeholder process for *Local Market Power Mitigation Enhancements 2018*, Deseret Power raised the issue of decremental market power that was beyond the scope of the initiative.

¹⁵ CAISO Tariff, Section 34.12.1

Consequently, the CAISO added this issue to the catalog as part of the February 2019 policy initiative catalog process. Currently, the market power mitigation test does not account for instances when a supplier can seek to exercise market power in the real-time market through low price bids below marginal costs. After a supplier has received a day-ahead schedule, a scheduling coordinator can submit a new bid curve into the real-time market. If a resource is dispatched through the real-time market above its day-ahead schedule, the imbalance is paid the locational marginal price. If a resource is dispatched below its day-ahead schedule, the imbalance is charged the locational marginal price. In the event the locational marginal price is negative, the imbalance results in a payment to the scheduling coordinator. In the event that the resource must be dispatched lower to resolve congestion, suppliers who have the ability to exercise market power will submit negative priced bids below their marginal cost so that the scheduling coordinator will be paid by reducing generation. The current market power mitigation test does not test for this strategic bidding behavior. This initiative would explore solutions to prevent suppliers from strategically bidding to exert decremental market power.

6.1.4.2 Bid Floor (N, E2)

This initiative would examine lowering the CAISO's bid floor. On December 19, 2013, FERC accepted the CAISO's proposal to lower the bid floor from - \$30/MWh to -\$150/MWh under the notion of facilitating increased real-time economic bidding by variable energy resources. By lowering the bid floor, the opportunity costs of not producing for many variable energy resources could be reflected in the resource's economic bid. It also provides an incentive for resources with positive marginal costs to economically bid instead of self-schedule. Those resources can avoid negative prices in both day-ahead and real-time, for schedules above day-ahead, and generate more revenues in real-time for decremental dispatches below day-ahead. During the 2013 stakeholder initiative, it was contemplated that a further reduction to -\$300/MWh would occur at some later date.

Currently, the bid floor (-\$150/MWh) and bid cap (+\$1000/MWh) are not symmetrical. This results in under-scheduled load in the day-ahead market being potentially subject to real-time prices at the \$1,000/MWh bid cap, and for overscheduled load in the day-ahead market potentially incurring a cost of \$150 per MWh. Thus, the incentive for not under-scheduling load in the day-ahead market is not equivalent to the incentive for not over-scheduling load in the day-ahead market. Furthermore, as the supply fleet evolves towards a 50 percent renewable portfolio standard, there may be increased instances of over-supply conditions. A deeper pool of economic bids could enable the market to more efficiently manage over-supply conditions, but may require a bid floor such that resources are able to fully reflect the cost of not producing. The current bid floor of - \$150/MWh may not be sufficiently low enough to incent the procurement of downward flexible resources that will be needed as the CAISO we moves toward a 50 percent renewable performance standard. The current bid floor also may not provide accurate price signals during periods of high downward flexibility needs.

The CAISO discussed a lower bid floor with stakeholders in 2016 as part of the Bid Cost Recovery Enhancements initiative. The CAISO decided not to lower the bid floor after weighing both the benefits of a lower bid floor and the potential adverse effects of a lower bid floor, such as increased overall market costs. The CAISO decided the benefits would be limited because the market relatively infrequently curtails self-scheduled generation, indicating it rarely runs out

of economic bids under the current bid floor. CAISO will continue to monitor levels of self-schedule curtailments and other market results to determine whether a lower bid floor is appropriate.

6.1.4.3 Exceptional Dispatch Decremental Settlement (D)

This initiative would explore changes to settlement rules for decremental exceptional dispatch energy including shutdown energy (energy from minimum load to shutdown). This initiative would review how decremental energy is settled at the lower of the locational marginal price, default energy bid, or market bid. Additionally it would seek to clarify what a price is used when a resource is exceptionally dispatched to shut down from minimum load.

6.1.4.4 Export Charges (D)

This initiative would address real-time intertie liquidity by increasing the quantity of export bids in the real-time market by exempting real-time exports from transmission access and measured demand uplift charges.

6.1.4.5 Ramp Rate Limitations (D, 2)

This initiative was added to the catalog by the CAISO in July 2019. The CAISO's real-time market relies on resources, such as solar, during the afternoon to meet afternoon demand. However, renewable resource's energy can suddenly disappear from the market due to cloud cover, decrease in wind, a loss of power, etc. When these resources drop off the system, market operators dispatch ancillary services to backfill the energy needed to meet demand. Consequently, when renewable resources return to the market, they do so quickly and make it difficult for market operators to maintain a balanced system. This initiative would explore creating ramp limitations so when renewable resources return to the market, they can do so at a pace that does not jeopardize system balance issues.

6.1.4.6 Accurate Curtailment Response (D, 2)

This initiative was added to the catalog by the CAISO in July 2019. In 2018, the CAISO clarified its existing obligations for eligible intermittent resources to comply with CAISO-issued dispatch instructions under its tariff. This initiative would review and develop enhancements to the current obligations for resource to comply with dispatch instructions.

6.1.5 Use-limited Gas Resource Default Energy Bid (D, 2)

During the stakeholder process for *Local Market Power Mitigation Enhancements 2018*, Nevada Energy expressed use-limited gas resources have opportunities for bilaterally selling energy at different hub locations. The Western Power Trading Forum also expressed the opportunity cost methodology for use-limited gas resources should include daily limitations. Both issues went beyond the scope of the *Local Market Power Mitigation Enhancements 2018* initiative. Consequently, the CAISO added these issues to the catalog as part of the February 2019 policy initiative catalog process. *Commitment Cost Enhancements Phase 3* developed a default energy bid opportunity cost methodology for use-limited resources. This initiative would consider whether it is appropriate to account for bilateral energy sales at different hub locations and daily limitations in default energy bids for use-limited gas resources.

6.1.6 Multi-Stage Generator Requirements (D)

Silicon Valley Power suggested in the January 2019 policy initiative catalog process that this initiative be added to the catalog. In 2010 the CAISO implemented new market rules to accurately model the unique operational and economic parameters of combined cycle generating units and other resources that have multiple operating or regulating ranges that limit the resource to operate in only one of those ranges at any particular point in time. At the time, the CAISO was unable to include Metered Subsystems, Pumped-Storage Hydro Units, and Pumping Loads, and System Resources that are not Dynamic Resource-Specific System Resources from qualifying as Multi-Stage Generating Resources. These resources were excluded because the policy was developed to provide a method for modeling combined cycle units as required by FERC. The CAISO was unable to model all resources due to technology restraints. This initiative would explore expanding the CAISO's multi-stage resource model to include the previously exempt resources and registration process.

6.1.7 Partial Pass Proposal – Ancillary Service Performance Audits (D)

Pacific Gas & Electric suggested in the July 2018 policy initiative catalog process that this initiative be added to the catalog. Under current CAISO market rules, if a resource fails two sequential Ancillary Service (AS) tests, the resource is disqualified from providing any of its' qualified amount of AS Reserve Capacity. To pass a test, a resource must deliver at least 90 percent of an ancillary service award within 10 minutes. The CAISO can request any ancillary service amount up to a resource's Ancillary Service Reserve Capacity as part of a contingency event or unannounced test. The current pass/fail testing does not distinguish resources that provided most of the ancillary service reserve capacity (e.g. 88% of the award) from those that completely failed to perform. This initiative would examine current disqualification rules and consider what level is appropriate for a resource to pass the ancillary service test.

6.1.8 California ISO to Market Participant Relationship Enhancement (D)

Southern California Edison suggested in the July 2018 policy initiative catalog process that this initiative be added to the catalog. Currently, the CAISO relies on Scheduling Coordinators to provide information regarding the physical attributes of resources. While the CAISO has Participating Generator Agreements with resources, the CAISO does not rely on its relationship with the generator to meet the CAISO's requirements. CAISO has continued relying on Scheduling Coordinators to provide resource information, which if incorrect is ultimately the responsibility of the generator and places Scheduling Coordinators in an unnecessary intermediary role. This can lead to inefficiencies and costs due to the CAISO using unreliable data because it preferred that the Scheduling Coordinator provided data, when in fact the resource owner should have done so. This initiative would explore changing the CAISO's Participating Generator Agreement requirement from scheduling coordinators to generators.

6.1.9 Exceptional Dispatch Revenue Treatment in Bid Cost Recovery (D)

This initiative was added to the catalog by the CAISO in July 2018 and would examine exceptional dispatch revenues that are currently not included in the daily netting of revenues. Additionally, it would examine costs for both day-ahead and real-time bid cost recovery calculations and determine if these revenues should be considered when offsetting bid costs.

6.1.10 BAA Islanding of Internal Regions (D)

This initiative was added to the catalog by the CAISO in July 2018. This initiative will consider if a single balancing area authority (BAA) could island specific regions and continue to operate the market optimization dispatch for each region separately.

6.1.11 EIM Base Schedule Submission Deadline (D, 1)

This initiative was added to the catalog by the CAISO in July 2018. Current financially binding base schedules are finalized by the EIM entity Scheduling Coordinator at T-40. The final hourly resource sufficiency evaluation is performed and EIM transfers are frozen in the event the tests fail. This initiative would examine moving the final base schedule submissions closer to the operating hour, for example T-30. Assuming these changes, the CAISO may explore moving the fifteen-minute market's optimization start window to match the new base schedule submission deadline to ensure a more accurate resource sufficiency evaluation point.

6.1.12 Bid Insertion from Short-Term Unit Commitment (STUC) (D, 2)

This initiative was added to the catalog by the CAISO in August 2018. Currently, when clean bids are unavailable, the real-time market is unable to re-optimize the system. As a result, the real-time market utilizes advisory interval results from the last market optimization that had clean bids. When the horizon of advisory intervals is exhausted, a market disruption must be called. This initiative will evaluate means to continue to run the market optimization absent clean bids.

6.1.13 EIM Contingency Price Corrections (D, 1)

This initiative was added to the catalog by the CAISO in July 2018. This initiative would examine what prices should be used in the market when the CAISO is in contingency dispatch mode (RTCD). Currently, MW prices from the advisory real-time dispatch solution and contingency solution do not match.

6.1.14 Joint Owned Unit Model (D, 2)

This initiative was added to the catalog by the CAISO in July 2018. Currently, the market models physical units owned by joint utilities as separate units. This initiative would examine modeling these units as one unit and determine how costs are distinguished between owners.

6.1.15 Settlement of Non-Conforming Loads in EIM Balancing Areas (D, 1)

This initiative was added to the catalog by the CAISO in July 2018. Currently, the EIM rules require the non-conforming load responsible party to submit base schedules and updates during the hour to the EIM market. Non-conforming load is subject to EIM imbalance charges. EIM entities' Open Access Transmission Tariffs (OATT) do not allow them to pass imbalance charges through to non-conforming load, which puts a financial risk on EIM entities. This initiative would explore alternatives to administer non-conforming loads' imbalance charges if load volatility is supported by the EIM balance area authorities operating reserve during the scheduled operating time of the non-conforming load.

6.1.16 Over/Under Scheduling Load Enhancements (D, E1)

Puget Sound Energy, NV Energy, Idaho Power, Arizona Public Service Company, and Portland General Electric suggested in the 2017 policy initiative catalog process that this initiative be added to the catalog. This initiative was originally requested by NV Energy in 2016.

This initiative would examine possible improvements and enhancements to load forecasting transparency and accuracy. Items that could be discussed include changes to the existing penalty bands for EIM entities deviating from the forecast, the 1% exemption rule when an EIM entity uses the CAISO load forecast, additional situations that exempt an EIM entity when using the CAISO load forecast and actual load is off by the penalty bands. This initiative may also look at changes to the distribution of penalty revenues to balancing areas in the EIM that did not incur a penalty over the operational day. For example, allocating revenues on an hourly basis to EIM balancing areas that did not incur a penalty for that hour.

6.1.17 Limiting EIM Energy Transfer System Resource Transfers (D, 1)

Idaho Power Company suggested in the 2017 policy initiative catalog process that this initiative be added to the catalog. This initiative would explore limiting the magnitude of inter-interval changes to transfers of power dispatched by the EIM between EIM balancing areas. Idaho Power Company states that that large transfer changes between intervals has the potential to cause reliability issues.

6.1.18 Generator Modeling Enhancements (D, 2)

PacifiCorp suggested in the 2017 policy initiative catalog process that this initiative be added to the catalog. This initiative would examine the variety of different resource models within the CAISO market and potentially update them. PacifiCorp contends this would improve modeling of generating units (such as combined cycle, hydro, and coal units) and curtailable metered load, and improve the flexibility that could be offered into the market if those products were able to be modeled to better fit with the unique attributes of each type of generator.

6.1.19 Multi-Day Unit Commitment (D)

This initiative was added to the catalog by the CAISO in October 2017 and was based on the *Combined Integrated Forward Market/Residual Unit Commitment with Multi-Day Unit Commitment* initiative listed in last year's catalog. This initiative would evaluate if the day-ahead market should include a multi-day unit commitment. Having the day-ahead market look out two to three days would create more efficient commitment decisions that would better reflect whether resources are expected to run for a single day or multiple days.

6.1.20 Full Network Model Expansion – Phase 2 (C, 2)

This initiative would be the second phase of the Full Network Mode Expansion initiative implemented in fall 2014. That initiative provided reliability and market efficiency benefits by enhancing the CAISO's modeling capabilities to account for unscheduled flows and enforce intertie power flow constraints in the day-ahead market. As part of this, the full network model topology was expanded to include information on resources, load, and interchange schedules in other balancing authority areas.

Phase 2 would explore modeling imports and exports into the CAISO balancing at their actual source and sink to improve the CAISO market's modeling of actual electrical flow. Although the CAISO market currently uses an approximation of this for imports and exports to and from EIM areas, it currently models imports and exports to and from the CAISO balancing areas as point injections and withdrawals at the intertie scheduling point. Consistent modeling across the CAISO and EIM balancing areas would improve the market's accuracy. For both the CAISO and EIM balancing areas, the initiative would likely consider the potential use of "scheduling hubs" as representations of import and export sources and sinks, e-tagging or settlement rule refinements, and remapping congestion revenue rights to scheduling hubs.

6.1.21 Regional Integration (D)

The California legislature and other stakeholders continue to consider a framework for extending the CAISO balancing area and day-ahead market to multiple states. This initiative would consider modifications to the CAISO markets and associated rules to accomplish a regionally integrated market that address resource adequacy, transmission cost recovery, grid management charges, and a governance structure.

6.1.22 Frequency Response Product (I, F)

This initiative will consider the development of a frequency response product to ensure that the CAISO can schedule and position resources to meet its NERC/WECC frequency response requirements. The CAISO seeks to examine a market structure that encourages frequency response capabilities of all participating resources, enables the diverse mix of resources to provide services, and ensures CAISO meets applicable reliability criteria. Without a market mechanism for frequency response capability or provision, CAISO's support of bulk electric system security is becoming increasingly difficult as the generation mix changes to accommodate a renewable portfolio standard of 50% renewables by 2030.

6.1.23 Ancillary Services Verification, Compliance Testing, and Auditing (D)

This initiative was added to the catalog by the CAISO in October 2017. This initiative would consider revisions to the CAISO's program for ancillary services performance audits and compliance tests. Under section 8.9 and 8.10 of its tariff, the CAISO conducts both performance audits of how resources with spinning reserve and non-spinning reserve awards respond to contingency dispatches as well as unannounced compliance tests conducted by operations. Pursuant to the CAISO's operating procedures, a resource must reach 90 percent of its awarded capacity within 10 minutes to pass a performance audit or compliance test. This initiative would consider changes to the payment rescission rules associated with this program as well as eliminating the issuance of notices to regulatory authorities when resource adequacy resources do not pass an ancillary services performance audit or compliance test.

6.1.24 Fast Frequency Response (D)

This initiative would explore a potential separate market product for resources to provide automatic, autonomous fast frequency response. This would entail providing frequency response within a much shorter timeframe (i.e. within 60 cycles) than within the primary control horizon, generally within seconds provided by automatic generator response, load response (typically from

motors), and other devices that provide an immediate response based on local (device-level) control systems. This service is also referred to as synthetic inertia. CAISO procurement of this service may be needed in the future to assist in arresting frequency decay once the system has even higher levels of renewables and the system's inherent inertia is insufficient to arrest frequency decay in a timely manner.

6.1.25 Regulation Pay-for-Performance Enhancements (D)

ARES suggested in the 2017 policy initiative catalog process that this initiative be added to the catalog. The CAISO implemented a market design for a regulation market in response to FERC's directive under Order 755. In this design, the CAISO compensates resources for their performance through a mileage payment. This initiative would review and analyze the current method of compensating resources in the regulation market, potentially explore enhancements to the pay-for-performance payments, and/or explore enhancements to the CAISO's minimum performance criteria and regulation certification process.

6.1.26 Regulation Service Real-Time Energy Make Whole Settlement (D)

This initiative would examine whether rule changes are appropriate for the settlement of real-time imbalance energy when resources are providing regulation. The regulation up and regulation down products allow the CAISO to move a resource up or down, respectively, in real-time within a defined capacity range using automatic generator control. The resulting imbalance energy is settled as real-time instructed imbalance energy at the real-time price. NCPA noted the price of this imbalance energy can result in a significant net loss to a resource despite the resource performing as dispatched by the CAISO. For example, the CAISO market can schedule a resource for downward regulation and then move the unit down in real-time. If the energy price is high, this can result in the resource "buying-back" its energy schedule at a loss.

6.1.27 Fractional Megawatt Regulation Awards (D)

SDG&E proposed in a previous policy initiative catalog process that this initiative be added to the stakeholder initiatives catalog. This initiative would explore the CAISO establishing minimum thresholds for regulation awards. SDG&E has observed that certain of its automatic generation capacity capable (AGC-capable) units receive regulation awards of as little as 0.01 MW, which is not only infeasible but also removes otherwise available capacity above the regulation range from the market. An effective solution may be to enable market participants to specify a minimum regulation award quantity.

6.1.28 Multi-Stage Generator Regulation Refinements (D)

This initiative was added to the catalog by the CAISO in September 2015. When there is low hydro availability, CAISO operations is more dependent on the thermal units on automatic generation control. This requires more realistic regulation modeling for the thermal units. One advantage of the multi-stage generator model is if a plant could provide regulation at different configurations, every configuration could have its own regulation bid price and regulation ramp rate.

6.1.29 Flexible Ramping Product Enhancements (D, 2)

The Department of Market Monitoring suggested in the 2017 policy initiative catalog process that this initiative be added to the catalog. This initiative would explore enhancements to the design of the flexible ramping product. The flexible ramping product design that was implemented in fall 2016 procures and prices the appropriate amount of ramping capability to account for the uncertainty in only five-minute net load forecasts. Flexible ramping product design enhancements in this initiative include locational procurement and pricing of flexible ramping capability, deliverability, and appropriately including the impacts of dispatchable-resource uninstructed deviations into the flexible ramping product demand curve and cost allocation.

6.1.30 Allowing Convergence Bidding at CRR Sub-Load Aggregation Points (D)

WPTF suggested during a previous policy initiative catalog process that this initiative be added to the catalog. Currently convergence bidding does not allow virtual bids at congestion revenue right sub-load aggregation points. WPTF would like the CAISO to consider adding congestion revenue right sub-Load Aggregation Points to the available locations for convergence bidding.

6.1.31 Implement Point-to-Point Convergence Bids (D)

DC Energy suggested during a previous policy initiative catalog process that this initiative be added to the catalog. This initiative would examine market rules to allow market participants to bid point-to-point – a source and a sink combined with specified up to congestion price. Point-to-point up-to-congestion bids would clear as long as the specified congestion spread bid is greater than the congestion spread in the day-ahead market. Congestion spread is the difference between the sink and source’s locational marginal price in the day-ahead market. A point-to-point up-to-congestion bid will pay the difference of locational marginal price at the sink minus locational marginal price at the source in the day-ahead market and will be paid that difference in the real-time market. These price differences may be positive or negative, determining whether the market participant is paid or has to pay in either market.

6.1.32 Review of Convergence Bidding Uplift Allocation (D)

This initiative would explore a settlement rule to allocate real-time congestion offset costs to convergence bids to the extent convergence bids contribute to these costs. These offset costs can occur when the CAISO needs to adjust constraint limits downward in the 15-minute market below levels incorporated in the day-ahead market model. For instance, this occurs due to transmission de-rates or modeling inaccuracies that cause actual flows to exceed the available transmission. This can cause significant real-time imbalance offset costs currently allocated primarily to load-serving entities.

6.1.33 Enhancing Participation of External Resources (D, 1)

This initiative would investigate potential EIM enhancements to allow participation of resources in balancing authority areas that have not joined the energy imbalance market. The proposed changes will ensure that external participation is complementary and compatible with bilateral trades. In addition, the external resources will need to meet similar requirements of EIM

participating resources. Such as locational bidding of a physical resource, modeling of resource characteristics, telemetry, and metering to enable accurate modeling of physical flows, congestion management, and ensure feasible dispatches. Also, these external resources will need to be subject to market power mitigation procedures and make transmission available to exclusively accommodate its maximum bid range. Lastly, rules will need to be developed to address potential leaning by extending the resource sufficiency evaluation to external participation.

6.1.34 Potential EIM-wide Transmission Rate (D, 1)

This initiative would develop and design evaluation criteria to assess the merits of alternative transmission service rates for transmission compensation in the EIM. The CAISO would likely consider the following alternatives that were outlined in the EIM draft final proposal:

- Reciprocity in Use of Transmission Made Available by Rights-Holders
- Transmission Access Charge
- Transfer Charge as a Minimum Shadow Price
- Transmission Access Charge Applicable to Load and Wheeling¹⁶

6.1.35 Flow Entitlements for Base / Day-ahead Schedules (D, 1)

This initiative would evaluate adding this functionality if there is a material impact on the constraints within a balancing authority area in the EIM footprint from other EIM balancing authority areas or the CAISO. Currently, the real-time congestion offset is allocated based solely upon where the constraint is located. This design change would allocate a portion of a balancing authority area's real-time congestion offset to other balancing authority areas in the EIM in the event that base schedule flows exceed agreed to flow entitlement.

6.1.36 Equitable Sharing of Wheeling Benefits (D, 1)

This initiative would evaluate wheel-through transactions occurring throughout the EIM area. A wheel through is a transaction in which an EIM Entity facilitates a transfer without sourcing or sinking energy. When a wheel through occurs, the entity "in the middle" receives no direct financial benefit even though they facilitated the transfer. This initiative will also investigate the need for compensation when net wheeling occurs.

This initiative was originally considered in 2017 but it was determined at the time that all EIM Entities currently benefit more than they facilitate wheels. Therefore, because all entities receive direct financial benefit from the EIM (in comparison to net wheeling), an ex-post settlement or hurdle rate to compensate for wheels was not favorable. This item will remain in the catalog and can be revisited if it is prioritized and deemed necessary. Wheeling data will be published quarterly in the EIM Quarterly Benefits Report.

6.1.37 Third Party Transmission Contribution (D, 1)

The initiative would explore allowing third parties to contribute transmission capacity located between two EIM Balancing Authority Areas for use in the EIM. This would increase energy

¹⁶ The Energy Imbalance Market Draft Final Proposal can be found at:

<https://www.westerneim.com/Documents/EnergyImbalanceMarket-DraftFinalProposal092313.pdf>

transfer throughout the EIM area and enable the third party to receive congestion rents. This initiative was originally considered in 2017, but it was determined at that time the implementation costs may outweigh use and benefits. The CAISO agreed to keep this item in the catalog so it can be prioritized at a later date if deemed necessary.

The CAISO believes implementation of the third party transmission contribution may address concerns regarding transmission compensation for net wheeling. For example, if an EIM entity releases available transmission capacity to the EIM, this may exceed the EIM transfer in and EIM transfers out of that Balancing Authority Area needed to meet its own imbalance energy needs. The EIM entity may be concerned that other market participants are not submitting hourly base schedules for wheel transactions, but rather waiting for the EIM because the market participant knows there would be unused transmission made available such that the wheel transaction had a very high probability of flowing in the EIM and avoiding the transmission charges. The EIM entity could modify its open access transmission tariff such that only transmission necessary to meet its own imbalance is release to the EIM. This now removes the high level of certainty that the wheel transaction will flow in the EIM. The market participant now has an incentive to procure transmission and if the market participant did not want base schedule the wheel, the market participant could contribute the transmission to the EIM which would enable the wheel to flow if economic in the EIM.

6.1.38 Bidding Rules on External EIM Interties (D, 1)

Currently, the EIM design allows full discretion to the EIM entity as to whether real-time economic bidding is allowed on intertie scheduling points with balancing authority areas outside the EIM footprint. This initiative would determine the calculation of a default energy bid for intertie transactions and other issues to resolve should an EIM entity decide to allow economic bidding at its interties. *Full Network Model Expansion – Phase 2* would be a necessary precursor to this initiative so that the CAISO would model economic bids consistently between CAISO and EIM areas.

6.1.39 Hourly Bid Cost Recovery Reform (D, 2)

The CAISO implemented market changes in 2014 that separated bid cost recovery calculations and payments between the day-ahead and real-time markets. This initiative would break the bid cost recovery review horizon further in real-time which is in line with the Market Surveillance Committee's opinion on the bid cost recovery rule changes wherein it suggests that "separable decisions" should receive separate bid cost recovery. One possibility is to afford separate bid cost recovery to separate commitments of short-start units in the real-time market.

6.1.40 Inter-Scheduling Coordinator Trade Adjustment Symmetry (D)

NRG suggested in a previous stakeholder initiative catalog process that this initiative be added to the catalog. Currently, market participants engage in an Inter-Scheduling Coordinator Trade (IST) based on a forecast for a variable energy resource (VER). The CAISO then updates the VER forecast, if the revised forecast is lower than the amount in the agreed upon IST, the IST is reduced and the Scheduling Coordinator (SC) for the VER is "forced" into a Converted Physical Trade (CPT) for the difference between the previous IST and the new IST. However, if the revised CAISO VER forecast is higher than the amount in the IST, the IST is not adjusted. This creates

asymmetrical treatment in two ways: (1) by forcing the VER SC into a CPT only where the forecast is lower but never forcing the SC for the VER buyer into a CPT where the forecast is higher, and (2) creating a mechanism in which the amount of the IST can only be reduced, but never increased, by a more accurate forecast. If the CAISO VER forecast is unbiased, the IST should be allowed to go up – creating a CPT for the SC buyer – when the T-45 forecast is higher than the IST.

6.1.41 Extending the submission deadline for Real-time Inter-SC trades (D)

Boston Energy Trading and Marketing suggested in the 2017 policy initiative catalog process that this initiative be added to the catalog. This initiative would examine a mechanism to allow for inter-scheduling coordinator trades (IST) to reflect bilateral contracts transacted in the real-time. The real-time IST would allow CAISO to account for these bilateral contracts between two parties through the real-time market in its Fifteen Minute Market and Real-Time Dispatch settlements. This would reduce the Scheduling Coordinator (SC) need to perform additional transactions outside of CAISO Market while mitigating against potential double settlement both in the organized and bilateral markets. It would also examine extending the inter-SC physical trade submission deadline until some period after the hour is completed or allow Variable Energy Resources to update their inter-SC physical trade MW value some period after the hour is completed.

6.1.42 FMM Block Scheduling of Demand Response Resources (D, 2)

PG&E suggested during the 2017 policy initiative catalog process that this initiative be added to the catalog. This initiative would explore enhancements to Reliability Demand Response Resources through block scheduling to dispatch these resources in the real-time market only in the 15-minute market.

6.1.43 Marginal Loss Surplus Allocation Approaches (D)

Since the start of the CAISO's nodal market, the CAISO has allocated the marginal loss surplus based on measured demand. This methodology was accepted by FERC in its September 21, 2006 Market Redesign Technology Upgrade order. PG&E previously expressed concerns regarding the accepted methodology and suggested an alternative approach to allocate marginal loss surplus. The CAISO agreed to study alternatives and published analyses in April 2007 and October 2010 comparing its current methodology to other proposed alternatives. The April 2007 report found that allocation based on measured demand was within the bounds of alternative methodologies. Using data from the first year of operation after the start of the nodal market, the October 2010 report found that allocation based on measured demand did not lie within the bounds of alternative methodologies. Based on these results, the CAISO agreed to perform further analysis using "data covering the period after April 1, 2010, which will further inform the stakeholder process". To re-launch this stakeholder process, the CAISO would need to release an update to the October 2010 report.

6.1.44 Multi-Stage Generator Bid Cost Recovery (D, 2)

In 2014, the CAISO implemented market design changes resulting from the completed "Renewable Integration Market and Product Review" and "Bid Cost Recovery Mitigation

Measures” initiatives that separately calculates bid cost recovery for the day-ahead and real-time markets. For non-multi-stage generators, this is a straightforward calculation that clearly assigns costs to either market. However, multi-stage generators may be committed in different configurations between the day-ahead and real-time markets. This initiative would further refine the allocation of costs between the day-ahead and real-time markets for multi-stage generators committed in different configurations in the two markets.

6.1.45 Extended Pricing Mechanisms (D, 2)

This initiative would explore extended pricing mechanisms to either incorporate non-priced constraints into energy prices or to reduce uplifts. An example of an extended pricing mechanism is the Midwest ISO’s “extended locational marginal pricing (LMP).” Extended LMP, or convex hull pricing, is a pricing methodology that incorporates the costs of resource commitment and dispatch in energy clearing prices. LMPs only capture generator dispatch costs based on incremental energy bids and do not directly account for unit start-up or transition costs, minimum load costs, and impact of discontinuous minimum and maximum generation physical parameters. These additional costs are typically incurred by fast start or fast response resources such as gas turbines and demand response. Extended LMPs aim to better reflect the full cost of satisfying demand.

6.1.46 Integrated Optimal Outage Coordination – Phase 2 (D)

This initiative would examine including economic criteria for approving or rejecting planned outage repair requests. In an effort to improve and expedite outage management studies and decisions on system-wide level, the CAISO is developing an analysis engine capable of solving the short-term integrated optimal outage coordination. The “Integrated Optimal Outage Coordination” application is intended to provide a comprehensive support for the operation engineers and outage coordination groups in their evaluation and approval process of both transmission and generation outages in an integrated system-wise and optimal manner.

Using the Integrated Optimal Outage Coordination application, the CAISO will have the ability to consider physical characteristics of resources, system and network constraints in addition to the constraints associated with independent and dependent repairs. The Integrated Optimal Outage Coordination application will provide an optimal outage schedule while ensuring reliable system operation. In the first phase, the resulting outage schedule will be optimal in the sense that it can minimize bid-in costs while taking into account physical constraints of generating and transmission assets and maintaining power system reliability requirements.

6.1.47 Rescheduled Outages (D)

Currently, section 9.3.7 of the CAISO tariff describes the process by which the CAISO may cancel or change an approved maintenance outage if it is “required to secure the efficient use and reliable operation of the CAISO-Controlled Grid.” Section 9.3.7.3 describes what compensation will be paid to a participating transmission owner or participating generator as the result of the cancellation of an approved maintenance outage. Stakeholders have indicated that they believe this may not adequately consider their situations and would like to re-examine these rules to ensure that they result in the most efficient operation of the grid and their resources and ensure fair compensation.

6.1.48 Aggregated Pumps and Pumped Storage (D)

This initiative would include enhancements to participating load that would improve participating load's ability to participate more fully in the market. Since the implementation of the CAISO's nodal market in 2009, participating load's functionality has been limited to providing non-spinning reserves. State Water Project recommends that the CAISO conduct a study on what improvements could be made to participating load functionality that would provide system benefits and conforms to pumping load/pumping storage limitations. For instance, SWP believes that the ability for participating load to bid demand in the real-time market would greatly reduce the current barriers to participating load's participation in wholesale demand response and possibly improve system reliability during over-generation periods. Also, by allowing participating load to change its demand bid in the real-time market, participating load could potentially better respond to ramping needs by shifting demand during critical ramping periods when water conditions permit.

6.2 Congestion Revenue Rights

This section describes potential enhancements to the CAISO's rules and systems related to congestion revenue rights (CRRs), including both short-term (*i.e.*, one-year seasonal and monthly) CRRs, as well as long term CRRs. The CAISO allocates CRRs to load serving entities in the CAISO balancing area and makes them available to all market participants through auction. Further details are available in the business practice manual for CRRs.

6.2.1 Long-Term Congestion Revenue Rights (D)

This initiative would explore potential long-term CRR products, as well as refinements to the long-term CRR products. These would include some or all of the following items:

- A multi-period optimization algorithm for long-term CRRs. When the CAISO performed the initial release of long term CRRs for the period 2008-2017, the simultaneous feasibility test optimization treated the entire 10-year time horizon as a single time period (for each combination of season and time of use period) with respect to network model assumptions. A multi-period algorithm may result in a more optimal allocation of long term CRRs because it would reflect different assumptions for each year regarding the availability of grid capacity for CRRs, in particular the known expiration of previously released long term CRRs, existing transmission contracts, and converted rights.
- Flexible term lengths of long-term CRRs. FERC's July 6, 2007 Order on CRRs encouraged the CAISO to consider future flexibility to allow: (1) long-term CRRs in excess of 10 years; (2) annual CRRs with guaranteed renewal rights up to year 10; or, (3) long term CRRs with terms ranging from 2 to 9 years. FERC notes that any subsequent change in the available term lengths would have to respect the rights of the holders of any outstanding 10-year CRRs. This initiative could modify the annual CRR process to allow market participants in subsequent auctions to submit bids/offers for any remaining months in the current year, as well as any block of months in the current year.

- A long-term CRR auction. The CAISO's January 29, 2007 compliance filing on long term CRRs noted that several parties wanted the CAISO to implement an auction process for long term CRRs, which the CAISO agreed to consider for a future release. FERC's July 6, 2007 order on CRRs encouraged the CAISO to initiate a stakeholder process and file tariff language to implement an auction for residual long term CRRs in a future release of the new market. If the CAISO and the stakeholders decide to move forward with a long-term CRR auction, the ability to sell CRRs in the auctions would be included in the scope of that effort.

6.2.2 Congestion Revenue Rights Revenue Sufficiency (D)

This initiative would also evaluate various improvements to revenue sufficiency which would include some or all of the following items:

- Improved Requirements for Transmission Outage Submission. DC Energy proposed in a previous catalog process that this initiative be added to the catalog. According to the Outage Management Business Practice Manual, "requests for planned outages of Significant Facilities must be submitted to CAISO Outage Coordination at least 30 days prior to the start of the calendar month for which the outage is planned to begin". The "30-day rule" is intended to improve the fidelity of the Monthly CRR network models, however the current construct does not include an incentive mechanism for adhering to the rule. That is, the rule is advisory only and there is no implication for schedules submitted inconsistent with the rule's timeline. Adhering to the rule has numerous important benefits since outages on Significant Facilities significantly impact the amount of CRR network capacity offered and the resultant CRR revenue adequacy. In addition, it promotes the transparency of high impact outages, which can help rationalize CRR clearing prices and foster CRR price convergence.

DC Energy proposed a similar initiative in the 2017 catalog process, requesting the CAISO post information related to CRR modeling on its market participant portal and address advanced notification changes to congestion management, requiring entities to submit transmission outages so they can be included when submitting nomination in the CRR market model, and expanding the definition of significant entities to possibly include 100kV elements.

- CRR Allocation. CDWR requested this initiative in a previous catalog process that the CAISO introduce revise the Counter-flow CRR methodology used for allocating CRRs sourced at the trading hubs. CDWR believes that the current methodology contributes to revenue imbalance of the CRR balancing account and is counterproductive to the stated purpose for CRRs.

6.3 Resource Adequacy

The CAISO works closely with local regulatory authorities to develop and implement resource adequacy policies, processes, and rules that ensure sufficient capacity exists in the balancing area in the right places and with the right capabilities. While the CAISO does not take the lead role in establishing system resource adequacy requirements, the CAISO does have specific and

essential responsibilities in most all resource adequacy related functions, including establishing local and flexible resource adequacy capacity needs.

6.3.1 Multi-Year Resource Adequacy (D)

This initiative was added to the catalog by the CAISO in July 2019 as a placeholder to address changes needed in the CAISO's resource adequacy provisions to accommodate multi-year resource adequacy program and its potential application to CAISO market participants as necessary and appropriate.

6.4 Interconnection

This section includes discretionary policy initiatives related to interconnection.

6.4.1 Sunset Reimbursement of Network Upgrades (D)

Pacific Gas and Electric suggested in the 2018 policy initiative catalog process that this initiative be added to the catalog. In 2003, FERC Order No. 2003 established standard procedures and agreements for interconnection of generators larger than 20 megawatts. The order also required Interconnection Customers reimbursement of costs associated with Network Upgrades within a five-year period. Within the CAISO, reimbursement of Reliability Network Upgrades has been limited to \$60,000 per MW since Cluster 5. This initiative would explore suspending the policy where generators within the CAISO balancing area authority are reimbursed for the funds provided for the design, permitting and construction of Reliability Network Upgrades and for Local Delivery Network Upgrades.

6.5 Deletions

This section includes initiatives that were deleted from this version of the catalog.

6.5.1 Exceptional Dispatch Scheduling for Pipeline Inspections (D)

Reason for deletion: CAISO determined that the energy market should not cover fuel costs above those compensated by the CAISO market's locational marginal costs. Alternatively, these costs should be borne by natural gas end users.

Previous Description

Pacific Gas & Electric suggested in the July 2018 policy initiative catalog process that this initiative be added to the catalog. As California's gas-fired generation mix changes, the need and value of remaining gas-fired generators continues to increase. However, mandated scheduling of in-line inspections, regulated by the U.S. Department of Transportation (DOT) and the California Public Utilities commission (CPUC), has remained constant. This initiative would explore the creation of exceptionally dispatching a generator to allow market participants to comply with in-line inspections of their gas pipelines. It would also explore bid cost recovery rules for exceptionally dispatching generators to accommodate pipeline inspections.

6.5.2 Must Offer Obligation and Resource Adequacy Availability Incentive Mechanism for Weather Sensitive Distributed Resources (D)

Reason for deletion: CAISO is addressing this topic in Energy Storage and Distributed Energy Resources Phase 4.

Previous Description

Southern California Edison during the suggested in the 2018 policy initiative catalog process that this initiative be added to the catalog. Pending the California Public Utility Commission's determination of weather sensitive distributed resources and its' resource adequacy rules, this initiative would explore the value of weather sensitive distributed resources capacity, must offer obligations, and calculation attribution of resource adequacy availability incentive mechanism.