



California ISO

Proxy Demand Resource – Resource Adequacy Clarifications

- Effective Flexible Capacity Value for Proxy Demand Resources – Tariff Clarifications
- Slow Demand Response – Final Proposal

April 21, 2020

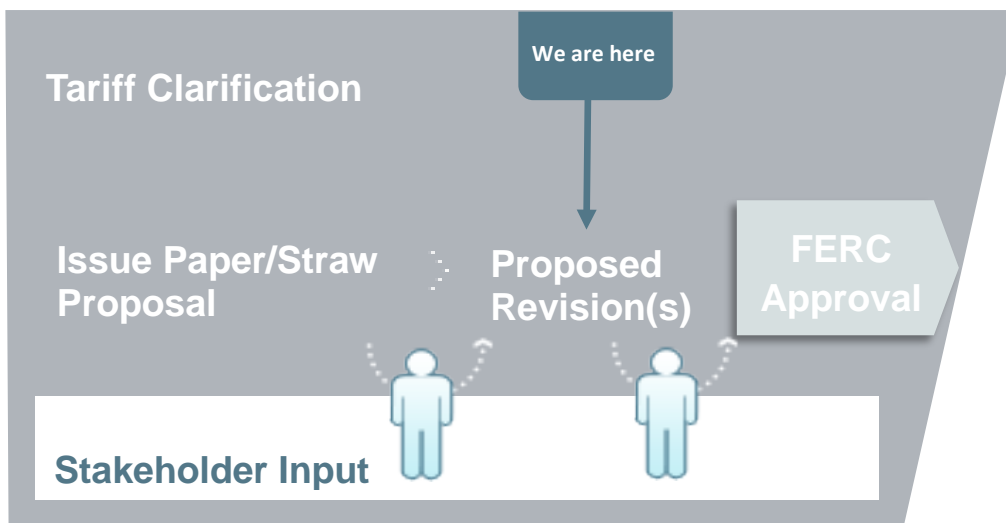
Market & Infrastructure Policy

Stakeholder Process

This initiative considers two changes to existing tariff rules for proxy demand resources (PDRs): (1) clarifications on setting the effective flexible capacity (EFC) value for PDRs; and (2) rule changes on participation of “slow” demand response resources that require longer-than-normal notification times.

The CAISO has determined that the PDR EFC part of this initiative is consistent with prior board-approved policy from the flexible capacity resource adequacy must-offer obligation (FRACMOO) initiative,¹ and, therefore, does not require board approval of proposed tariff changes. This paper serves as a notification to stakeholders of these clarifications. Proposed tariff clarifications will require FERC filing and approval, as is the case for all tariff revisions.

Figure 1: Effective Flexible Capacity Value for PDRs Initiative Stakeholder Engagement



The CAISO is at the final proposal stage in the Slow Demand Response (DR) stakeholder initiative process, having determined that the slow

¹ Decision on flexible resource adequacy criteria and must-offer obligation, Board Memorandum <http://www.caiso.com/Documents/Decision-FlexibleResourceAdequacyCriteriaMustOfferObligation-Memo-Mar2014.pdf>

demand response draft final proposal will require tariff clarifications needing CAISO Board approval.

The purpose of a final proposal is to present policy, in final form, to be ultimately adopted. The final proposal is inclusive of revisions resulting from CAISOs impact assessment and business requirements development of policy proposed in the Slow DR draft final proposal. This stakeholder process will include a window for feedback on the tariff clarification needed to implement the Slow Demand Response final proposal policy only. Figure 2 below shows the status of the publication of this paper within the accelerated stakeholder engagement process for policy development.

Slow demand response was largely stakeholdered within the RA Enhancements initiative.² During project development of the slow demand response requirements, the CAISO determined that tariff clarifications were needed regarding the settlement of slow DR, as described in more detail in the Slow DR final proposal section of this paper below. This includes a description of the settlement of slow demand response when, as proposed, it is exceptionally dispatched in the post-day ahead market, pre-contingency process described in the RA Enhancements initiative.

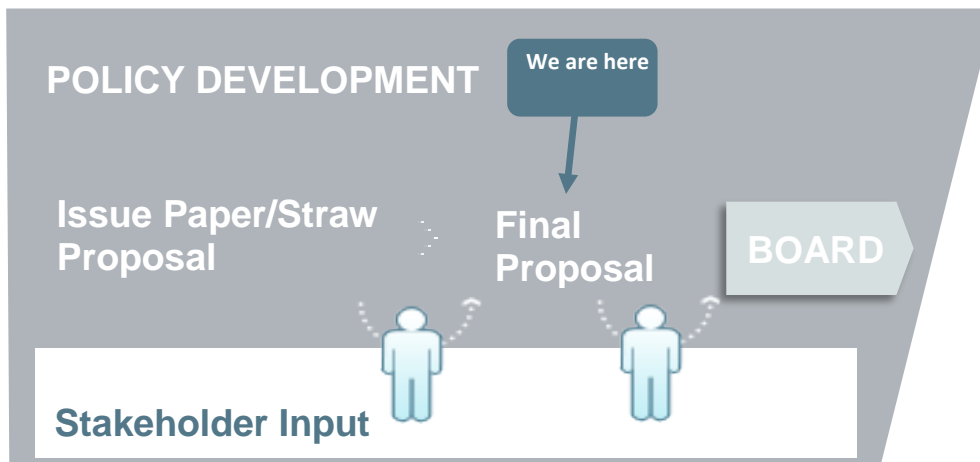


Figure 2: Proxy Demand Resource - Resource Adequacy Clarification Initiative Stakeholder Engagement

² RA Enhancements Stakeholder Initiative Webpage:
<http://www.caiso.com/StakeholderProcesses/Resource-adequacy-enhancements>

Process for Approval – Decisional Classification

For this initiative, the ISO is not seeking policy approval from the Board of Governors on the proposed effective flexible capacity value for proxy demand resource tariff clarifications. The proposed tariff change is for an implementation process change that has been determined to be within the flexible resource adequacy capacity must offer obligation (FRACMOO) policy proposal approved by the board on March 20, 2014.³ Therefore there is also no role for the Energy Imbalance Market (“EIM”) Governing Body.

For the slow demand response initiative, the CAISO plans to seek approval of the proposed tariff changes from the CAISO Board only. We believe this initiative falls outside the scope of the EIM Governing Body’s advisory role because the initiative does not propose changes to either real-time market rules or rules that govern all CAISO markets. Rather, this initiative proposes changes to the tariff that would affect resources only in the CAISO balancing authority area. Specifically, the initiative would change how the CAISO pre-contingency dispatches slow demand response resources providing local resource adequacy capacity, with the aim of clarifying these for demand response participants. This applies only to proxy demand resources providing resource adequacy, specifically local area capacity, to load serving entities (LSEs) serving load in CAISO’s Balancing Area Authority (BAA) as a supply side resource procured to serve that load. It does not apply to LSEs outside CAISO’s BAA. The CAISO welcomes stakeholder comments on this proposed decisional classification for the Slow DR initiative.

³ General session minutes, ISO Board of Governors meeting, decision on FRACMOO
http://www.caiso.com/Documents/FinalBoardGovernorsGeneralSessionMinutesMar19_2014.pdf

Effective Flexible Capacity Value for Proxy Demand Resources – Tariff Clarifications

Introduction

The CAISO began the Effective Flexible Capacity Value for PDRs initiative on March 27, 2020 with the issuance of a combined issue Paper/straw proposal that include four proposal elements: 1) changes to the current tariff requirements as to how the CAISO sets PDR effective flexible capacity values for proxy demand resources, 2) leveraging existing tariff provisions to perform unannounced testing of PDRs providing flexible RA capacity, 3) clarify that PDRs qualify for the provision of flexible resource adequacy only when they choose the 5-minute bidding option, and 4) reviewing need to include clarifications within appropriate business practice manual(s) to clearly identify how PDRs providing flexible RA meet their must offer obligation.

After publication of the issue paper/straw proposal, the CAISO hosted an April 3, 2020 conference call to review the paper, and received written comments regarding the initiative proposals presented. This paper includes a summary of stakeholder comment review of proposed initiative elements, with an affirmed conclusion that the current methodology for setting the EFC capacity value for proxy demand resources requiring a random test to establish this value should change. This change would recognize continued use of the general formula currently being effectively used in establishing these values by removing tariff subsection 40.10.4.1 (c) and amending section 40.10.4.1 to reflect the continuation of calculating PDR EFCs using 40.10.4.1(a) tariff provisions. The CAISO believes this is the appropriate methodology, having demonstrated it as an administrable and reasonable alternative for setting EFC values for PDRs along with nearly all other resource types. The CAISO has also considered this as an alternative that will have minimal overall impact on the flexible resource adequacy program.

Background

In 2019, the CAISO identified a gap in its implementation of section 40.10.4.1 regarding PDRs. Section 40.10, which includes the CAISO tariff provisions covering flexible resource adequacy capacity, became effective

in November 2014 as part of the CAISO's Flexible Resource Adequacy Criteria and Must Offer Obligations (FRACMOO) initiative.⁴ The FRACMOO tariff provisions include a requirement, under Section 40.10.4.1(c), for the CAISO to conduct random tests to set a PDR's effective flexible capacity based on its performance to that test.⁵

When the CAISO implemented FRACMOO in 2014, there were no PDRs registered and actively participating in the CAISO markets. In the absence of any PDRs with a flexible RA obligation, the CAISO did not develop the test procedures called for under section 40.10.4.1(c). The CAISO had still not developed a test procedure when the first PDRs came into the CAISO system under a resource adequacy must offer obligation.

The CAISO petitioned for and received a limited tariff waiver of section 40.10.4.1 allowing the CAISO to continue calculating the EFC values for PDRs based on the general formula instead of the random testing and performance evaluation requirement contemplated under subsection (c). Section 40.10.4.1(a) provides a general formula for setting EFC values. The formula accounts for a resource's start-up time, ramp rate, and net qualifying capacity.

The CAISO performed an impact assessment of the processes and systems needed to implement an effective random testing and performance evaluation for use in a test-based calculated EFC for PDRs as contemplated in section 40.10.4.1. The CAISO determined these changes would require costly system enhancements.

On December 31, 2019, the CAISO petitioned for an extension of the May 31, 2019 limited waiver request granted by the Commission to continue its assessment of whether to apply random tests for assessing PDR's effective flexible capacity. The CAISO requested the waiver to allow the

⁴ *Cal. Indep. Sys. Operator Corp.*, 149 FERC ¶ 61,042 (2014); *Cal. Indep. Sys. Operator Corp.*, Transmittal Letter, FERC Docket No. ER14-2574 (Aug. 1, 2014) (FRACMOO Filing). http://www.caiso.com/Documents/Aug1_2014_TariffAmendment-FlexibleResourceAdequacyCapacityRequirement_ER14-2574-000.pdf

⁵ *Cal. Indep. Sys. Operator Corp.*, Fifth Replacement Electronic Tariff section 40.10.4.1 subsection (c) <http://www.caiso.com/Documents/Section40-ResourceAdequacyDemonstration-SCs-CAISOBAAsof-Dec31-2019.pdf>

CAISO to take the time afforded by this extension to “confer with stakeholders to explore potential alternatives and any appropriate tariff amendments.”⁶ The Commission granted this second waiver on February 28, 2020, extending the previous limited tariff waiver through August 1, 2020.

Stakeholder Comments on EFC Value for PDR Issue Paper/Draft Straw Proposal

Stakeholder comments generally support the removal of the requirement to conduct tests to establish the EFC for each Proxy Demand Resource (PDR) with continuation of calculating it using the general formula under CAISO’s tariff section 40.10.4.1. Additionally these comments support and recognize the reasonableness of the proposals retention of testing at the CAISOs discretion, with suggestion that there be clarification as to when testing might be warranted.

Stakeholders also supported the clarification of the 5-minute dispatch requirement and MOO for PDRs providing flexible RA. Comments included input as to additional clarification needed and suggestion that they be included in the Business Practice Manual for Demand Response.

EFC Value for PDR Proposed Clarifications

The CAISO’s proposes changes to the following elements of a proxy demand resources provision of flexible resource adequacy capacity:

Setting of effective flexible capacity (EFC) values

The CAISO proposes to remove the text of subsection 40.10.4.1(c). This is the tariff language that establishes the existing test-based EFC for PDRs. With this text removed, PDR EFCs would be set using the default approach outlined in subsection 40.10.4.1(a). This default approach applies to resources that do not have an alternative methodology outlined in the tariff.

The CAISO continues to believe performing the tests required under tariff subsection 40.10.4.1(c) would be difficult to manage and would require

⁶ *Cal. Indep. Sys. Operator Corp.*, 170 FERC ¶ 61,173 (2020) at P 5.

costly investments in system upgrades for no measurable benefit given the limited EFC supply from PDRs. In addition, PDR offers extremely limited amounts of flexible capacity in to the CAISO's resource adequacy program. The following table reflects the amount of effective flexible capacity PDRs have provided over the last 12 months, further highlighting their minimal percentage of flexible resource adequacy contribution.

Table 1

RA Month	Flex RA from PDRs (MW)	EFC from PDRs (MW)	% of PDR EFC Shown	Total Flex RA Requirement	% of Flex RA from PDRs
May-19	35.50	1323.58	2.68%	12,983.55	0.27%
Jun-19	35.00	1968.29	1.78%	11,391.90	0.31%
Jul-19	35.00	1984.51	1.76%	10,614.09	0.33%
Aug-19	5.00	1986.46	0.25%	11,180.30	0.04%
Sep-19	5.00	1986.46	0.25%	14,272.75	0.04%
Oct-19	5.00	1986.35	0.25%	13,912.77	0.04%
Nov-19	5.00	1986.55	0.25%	14,361.57	0.03%
Dec-19	5.00	1986.55	0.25%	15,372.96	0.03%
Jan-20	0	1007.98	0.00%	18,492.98	0.00%
Feb-20	0	1009.50	0.00%	18,622.60	0.00%
Mar-20	0	1009.50	0.00%	17,702.41	0.00%
Apr-20	0	1009.60	0.00%	17,384.37	0.00%
May-20	0	1028.66	0.00%	16,444.77	0.00%

Testing for CAISO validation of Masterfile characteristics

Although the ISO is proposing that it no longer will set PDR EFC values based on a test, PDRs (whether providing RA capacity or not) still will be subject to existing tariff provisions that permit tests. For example, all resources providing ancillary services, including PDRs, are subject to

unannounced testing to confirm their capability to provide ancillary services.⁷

Additionally, the tariff requires master file information for PDRs to “be accurate and actually based on physical characteristics of the resources” and that PDRs must provide “information regarding the capacity and the operating characteristics of the . . . Proxy Demand Resource as may be reasonably requested from time to time by the CAISO.”⁸ This provision requires PDRs to offer and provide service consistent with capabilities they’ve registered. Where a PDR’s performance does not align with its registered master file values the CAISO may request further information to validate the existing master file information.

One way a PDR may be able to justify its master file parameters (e.g., ramp rate, Pmax) in response to a CAISO inquiry is to request a self-test. The results of the PDR’s performance in the self-test would indicate if changes to the master file characteristics are warranted. Where changes are appropriate, the PDR should utilize existing resource data template change processes. It will be the responsibility of the Scheduling Coordinator to facilitate the performance of the self-test utilizing the provisions of Operating Procedure 5330, section 3.5.⁹

Five-minute bidding and dispatch requirement

The FRACMOO revised draft final proposal identified that “Flexible capacity must be able to respond to five-minute dispatch instructions”.¹⁰ In 2014, when the FRACMOO initiative was stakeholdered and tariff language filed, the CAISO modeled all PDRs as resources with an ability to respond to 5-minute dispatches. In 2019, the ESDER3 initiative

⁷ CAISO Tariff section 8.9 Verification, Compliance Testing, and Auditing,
<http://www.caiso.com/Documents/Section8-AncillaryServices-asof-Aug12-2019.pdf>

⁸CAISO Tariff section 4.13.3 Identification of RDRRs and PDRs,
<http://www.caiso.com/Documents/Section4-Roles-Responsibilities-asof-Dec3-2019.pdf>

⁹ Operating Procedure 5330 Resource Testing Guidelines,
<http://www.caiso.com/Documents/5330.pdf>

¹⁰FRACMOO Revised Draft Final Proposal March 7, 2014, Section 6 p 36
<http://www.caiso.com/Documents/RevisedDraftFinalProposal-FlexibleRACriteriaMustOfferObligation-Clean.pdf>

enhanced the PDR participation model providing PDRs the ability to specify in the Master File how they will bid and be dispatched in the real-time market. These bidding options allowed PDRs to be dispatched in hourly (60-minute) blocks, 15-minute intervals, or 5-minute intervals. With the November 13, 2019 implementation of ESDER3, it is now necessary to clarify that PDRs qualify for the provision of flexible resource adequacy only when they choose the 5-minute bidding option providing the CAISO with the ability to dispatch them in real-time in the five-minute market.

Tariff section 40.10.3.6 states that imports other than pseudo-ties and dynamic resources are ineligible to provide flexible RA capacity. This existing restriction reflects the initial FRACMOO policy that resources that are not five-minute dispatchable should not provide flexible RA capacity. The ISO proposes to edit this section to clarify that PDRs that are not five-minute dispatchable are similarly ineligible to provide flexible RA capacity. Specifically, the ISO propose that section 40.10.3.6 would state (additions reflected in red underline):

Intertie resources and imports, other than Pseudo-Ties and Dynamic Scheduled resources, and Proxy Demand Resources that have elected, per Section 4.13.3, to bid and be dispatched in the Real-Time Market in Hourly Blocks or fifteen (15) minute intervals are not eligible to provide Flexible RA Capacity.

Clarification of its must offer obligation (MOO)

The last element of the proposal is to ensure that the appropriate business practice manuals (BPM) clearly identify that the PDR must meet the must offer obligation (MOO) required for provision of flexible RA under each of the categories for which it is qualified.¹¹ The CAISO will also add clarifications, or at minimum a reference to MOO clarification, in the BPM for DR¹² per request from stakeholders.

¹¹ BPM for Reliability, Section 7.4.3 outlines the must offer obligations for flexible capacity in accordance with ISO tariff section 40.10.6.

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Reliability Requirements>

¹² BPM for Demand Response

https://bpmcm.caiso.com/BPM%20Document%20Library/Demand%20Response/BPM_for_Demand_Response_V3_clean.pdf

Slow Demand Response – Final Proposal

Introduction – Slow Demand Response

For reliable operation of the grid, CAISO depends on adequate supply from resources in local areas to meet demand. Demand response resources can help support the system in local areas by reducing load, thus requiring less electricity supply when the local area is supply constrained. Certain demand response resources have limiting characteristics that challenge their usefulness as local capacity resources and how quickly and effectively the CAISO can use them to address contingencies. Specifically, “slow” demand response cannot be “started” like a generator and be ready to respond to a CAISO dispatch instruction within 20 minutes so that the CAISO can reposition the system within 30 minutes of a contingency occurring. Slow demand response resources are unique from other resources and require additional “notification time” before they can respond to a CAISO dispatch instruction.¹³

While many demand response resources can quickly deliver energy in response to dispatches, slow demand response resources may require longer lead times.. CAISO and the California Public Utilities Commission (CPUC) have been working to ensure both “fast” and “slow” demand response resources are capable of meeting local reliability requirements.

For the purposes of this paper, CAISO defines slow demand response as demand response resources that cannot respond to a CAISO dispatch instruction within 20 minutes after a contingency occurs, or when the system enters an N-1 insecure state (loss of a single critical element). CAISO must dispatch resources to return the system to an N-1 secure state within 30 minutes to minimize the risk the next contingency poses on the reliability of the system. This response time accounts for a minimal amount of time the CAISO operators have to perform their real-time assessment and react to the contingency condition. After the contingency and real-time assessment occurs, CAISO is left with approximately 20

¹³ Notification time refers to the time required for a resource to go from its Pmin (often zero for demand response) to responding to a dispatch instruction. This differs from startup time, which is the time period required for a resource to go from offline to its Pmin.

minutes for resources to provide generation or load drop within the overall 30-minute timeframe to reposition the system.

To meet local RA needs within this time requirement, resources must either:

- Be capable of responding quickly enough such that the CAISO can rebalance the system within 30 minutes of a contingency event, or;
- Have sufficient availability such that the resource can be dispatched frequently on a pre-contingency basis

By definition, slow demand response cannot respond quickly enough to satisfy the first option. However, CAISO planning studies have indicated, at DR penetration levels at the time of the study, existing slow demand response generally has the required availability to satisfy the second option. Therefore, the CAISO developed the post-day-ahead market, pre-contingency dispatch methodology described in the RA Enhancements initiative, to identify when to dispatch slow DR on a pre-contingency basis, such that the CAISO can use them to meet local needs while preserving their use as an energy-limited resource.¹⁴

Background

The CAISO published a draft final proposal on the pre-contingency dispatch methodology for slow demand response within the RA Enhancements initiative.¹⁵ During the project development of the post-day-ahead, pre-contingency dispatch methodology for slow demand response, the CAISO identified tariff changes related to the settlement of the exceptional dispatch of demand response resulting from the pre-contingency dispatch methodology. These changes are described in this final proposal below.

In the CAISO's draft final proposal on the pre-contingency dispatch methodology for slow demand response, the CAISO proposed to issue

¹⁴ <http://www.caiso.com/InitiativeDocuments/DraftFinalProposal-LocalResourceAdequacy-AvailabilityLimitedResources-SlowDemandResponse.pdf>

¹⁵ <http://www.caiso.com/InitiativeDocuments/DraftFinalProposal-LocalResourceAdequacy-AvailabilityLimitedResources-SlowDemandResponse.pdf>

exceptional dispatches to slow demand response after the conclusion of the day-ahead market to meet minimum online commitment shortfalls.¹⁶ The final proposal further clarifies how the slow DR resources will be selected for dispatch based on their economic bids into the day ahead market to reduce load the next day to ensure the CAISO is prepared in the event of a potential contingency.

Stakeholder Comments on Slow DR Proposal

Stakeholders continue to be supportive of the CAISO's efforts to integrate "slow" DR as a local capacity resource. Additionally, some commenters were supportive of the CAISO's proposal to require the Investor Owned Utility DR resources be included in their respective supply plans. Other stakeholders, in opposition to these local RA resources to being on a supply plan, maintain that the slow DR resources are available for dispatch through the markets and should not be subject to this additional requirement.

In response to these comments, the CAISO reiterates its previous statements that in order for the CAISO to have visibility into which DR resource IDs are resource adequacy and available for the CAISO to be exceptionally dispatched through its proposed methodology, they must be shown on supply plans. CAISO systems use the supply plans to identify specific resource IDs with resource adequacy capacity. Other methods of showing demand response to the CAISO, as SCE suggests, do not replace the need for demand response to be tracked in the CAISO systems as resource adequacy resources. This is the existing process for all other resource adequacy resources shown to the CAISO. Therefore, in order for this methodology to be technically feasible, resources must be shown to the CAISO on supply plans as resource adequacy capacity. The CAISO provides further discussion on why demand response should be included on supply plans within the CPUC's RA proceeding, where this issue will ultimately reach decision.¹⁷

¹⁶ <http://www.aiso.com/InitiativeDocuments/DraftFinalProposal-LocalResourceAdequacy-AvailabilityLimitedResources-SlowDemandResponse.pdf>

¹⁷ Track 2 Proposals: <http://www.aiso.com/Documents/Feb21-2020-ResourceAdequacy-Track2-Proposals-R19-11-009.pdf>, and

Slow Demand Response Final Proposal

Because the pre-contingency dispatch methodology will dispatch slow demand response through a post-day-ahead market process that occurs after the conclusion of the day-ahead market but prior to real-time bid submission deadline, the CAISO propose to exceptional dispatches for energy given in this time frame using the day-ahead market bids instead of the real-time market bids. .

Specifically, CAISO proposes to specify that exceptional dispatches that occur as a result of the post-day ahead market process for pre-contingency dispatch will settle based on the higher of the day-ahead market bid price and the resource specific, real-time fifteen minute locational marginal price.¹⁸ This is appropriate because the post-day-ahead market process will select which slow demand response to dispatch based on its day-ahead bid price and issue the exceptional dispatch prior to the operating day. Then, the resource will respond to the exceptional dispatch in real-time during the hours specified in the exceptional dispatch.

Next Steps

In this paper, the CAISO has combined the tariff clarifications for the Effective Flexible Capacity (EFC) Value for Proxy Demand Resources (PDRs) initiative and the final proposal for the Slow Demand Response (DR) initiative.

The EFC Value for PDRs initiative seeks to reconcile the tariff and business practices for setting EFC values for PDRs. The Slow DR initiative examines how to operationalize slow DR resources that have a longer lead time for delivering energy for providing local Resource Adequacy capacity, so that they can be counted on, by the CAISO, for

Track 2 Reply Comments: <http://www.caiso.com/Documents/Apr2-2020-ConsolidatedReplyComments-Track2Workshops-Proposals-ResourceAdequacy-R19-11-009.pdf>

¹⁸ The CAISO may also issue Exceptional Dispatch commitment during this same post day-ahead market process. Because they are commitments only, no exceptional dispatch energy is involved.

maintaining local reliability. Each of these initiatives will require CAISO tariff changes to effectuate implementation of proposals.

The CAISO began the process of informing demand response stakeholders to this combined initiative by introducing its scope at the March 1, 2020 ESDER4 workshop. After publication of the EFC Value for PDRs issue paper/straw paper on April 4th, 2020, a stakeholder conference call was completed. Proposals for both initiatives were discussed and stakeholders were given the opportunity to submit comments.

This paper will serve as the final step for stakeholder engagement in the development of EFC value for PDR tariff clarifications being made and a final proposal for Slow Demand Response that will require submission to the CAISO board for approval of resulting tariff changes proposed. The CAISO does not believe it is necessary for an extended stakeholder engagement on the initiative considering this proposal was largely stakeholdered previously, with only minor tariff clarifications added in this paper. Therefore, the CAISO is suggesting an abbreviated schedule that provided opportunity for stakeholders to submit comments to the stakeholder call on April 4th, 2020 and for this paper inclusive of the Slow Demand Response Final Proposal.