

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

California Independent System
Operator Corporation

Docket No. ER16-1483

**INFORMATIONAL REPORT OF THE CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION**

Pursuant to the Commission's directive, the California Independent System Operator Corporation (CAISO) submits this informational report on the status of its efforts to explore the development of market-based payments for frequency response.

I. Introduction

In September 2016, the Commission accepted, subject to condition, tariff revisions to help the CAISO comply with requirement 1 of North American Electric Reliability Corporation (NERC) Reliability Standard BAL-003-1.1 - *Frequency Response and Frequency Bias Setting*.¹ These tariff revisions clarify requirements for participating generators with governor controls and authorize the CAISO to procure transferred frequency response from other balancing authorities in the Western Interconnection. In connection with these tariff revisions, the CAISO committed to examine a mechanism for market-based payments for frequency response in a stakeholder initiative. As part of its *September 2016 Order*, the Commission directed the CAISO to file an informational report on the status of its efforts.²

¹ *Cal. Indep. Sys Operator Corp.*, 156 FERC ¶ 61,182 (2016) (*September 2016 Order*), as modified on rehearing by *Cal. Indep. Sys Operator Corp.*, 158 FERC ¶ 61,129 (2017).

² *September 2016 Order* at P 50.

II. Background

On April 21, 2016, the CAISO submitted tariff revisions to facilitate compliance with NERC Reliability Standard BAL-003-1.1. Requirement 1 of Reliability Standard BAL-003-1.1 requires each balancing authority to achieve an annual frequency response measure that equals or exceeds its frequency response obligation. A balancing authority's frequency response obligation is determined each year by NERC and reflects its proportionate share - based on generation and load - of the interconnection's frequency response obligation. NERC calculated the Western Interconnection's frequency response obligation as a whole based on an event involving the loss of two units at the Palo Verde Nuclear Generating Station.

Reliability Standard BAL-003-1.1 does not require a balancing authority area to achieve a specified level of performance with respect to any single disturbance event within a compliance year. Rather, the standard requires a balancing authority area to demonstrate that its median performance satisfies its individual frequency response obligation. In the case of the CAISO, NERC will evaluate the CAISO's performance and compliance with requirement 1 of BAL-003-1.1 by selecting the median value of the CAISO's performance during sampled events over the course of the compliance year.

Based on an observed deterioration of frequency response performance from within its own balancing authority, the CAISO tariff revisions refined the requirements for participating generators with governor controls. The revisions require resources to coordinate controls from their generator turbine through each level of plant controls to include frequency bias term in the load controls to enable governor response, and not inhibit response by any means that would override response except for controls needed

to manage operational constraints or regulatory considerations. The CAISO's tariff revisions also allow the CAISO to procure transferred frequency response from other balancing authority areas in the Western Interconnection. This procurement will permit the CAISO to claim credit for frequency response that a counterparty balancing authority area supplies to the Western Interconnection as measured by the requirements of BAL-003-1.1. As part of its initiative, the CAISO committed to examine the development of market-based payments for frequency responses in a second phase.

III. The CAISO is working with stakeholders to explore development of market-based payments for frequency response

On December 16, 2016, the CAISO published an issue paper to examine a market structure for frequency response procurement and compensation.³ The issue paper describes market design issues in connection with the CAISO's ability to position its fleet to provide sufficient frequency response during contingency events. The paper also examines mechanisms to incentivize and compensate resources for frequency response. On December 22, 2016, the CAISO held a web-conference to discuss its issue paper. Stakeholders submitted comments on its issue paper on January 12, 2017.⁴

On February 9, 2017, the CAISO held a working group meeting with stakeholders to discuss the scope of its initiative and obtain stakeholder views on approaches to

³ A copy of the CAISO's issue paper is available on its website:
http://www.aiso.com/Documents/IssuePaper_FrequencyResponsePhase2.pdf

⁴ Stakeholder comments are available on the CAISO's website at the following page:
<http://www.aiso.com/informed/Pages/StakeholderProcesses/FrequencyResponsePhase2.aspx>

ensure that the CAISO balancing authority secures sufficient frequency response.⁵ The CAISO provided an overview of mechanisms to ensure adequate frequency response as well as a survey of different approaches employed by grid operators, including those outside North America.

The California Energy Storage Association also provided a presentation regarding obtaining frequency response through a market mechanism and how electric storage resources can provide primary frequency response.⁶ The CAISO discussed its own analysis of how diverse technologies can provide frequency response corroborating the position of the California Energy Storage Association that there is no technical barrier to electric storage resources providing frequency response. Finally, the CAISO reviewed frequency control product specifications with the working group.⁷ Stakeholders submitted comments on the topics discussed at the working group meeting on February 23, 2017. The CAISO has scheduled the next working group meeting to occur on March 24, 2017.

Potential market-based payments for frequency response could involve an annual competitive bid and solicitation process or a clearing process using the CAISO's market processes. Regardless of the approach, the CAISO will need to operationalize

⁵ A copy of the agenda and presentation for the working group meeting is available at the following website: <http://www.caiso.com/Documents/AgendaandPresentation-FrequencyResponseWorkingGroupMeeting.pdf>

⁶ A copy of the California Energy Storage Association presentation is available at the following website: <http://www.caiso.com/Documents/CESAPresentation-FrequencyResponseWorkingGroupMeeting.pdf>

⁷ A copy of the frequency control product specifications the CAISO discussed with stakeholders is available at the following website: http://www.caiso.com/Documents/FrequencyResponsePhase2_DraftControlProductSpecifications.docx

the frequency response secured by any market-based payments. This effort will involve positioning resources through the day-ahead and real-time market processes to ensure that the CAISO has sufficient frequency response.

The CAISO's stakeholder process will examine a number of issues before the CAISO proposes any tariff revisions to provide market-based payments for frequency response services. Among other issues, the CAISO and its stakeholders must define a market product(s) and its performance expectations. For example, in order to enhance the CAISO's ability to provide sufficient frequency response within the first 52 seconds of a frequency disturbance event, the CAISO, with its stakeholders, has identified that there may be advantages to procure either a primary frequency response service, a secondary frequency response service, or a combination of both primary and secondary frequency response services.. In addition, the CAISO will need to ensure that both synchronous and non-synchronous resources, as well as demand side management resources, have the opportunity to provide this service(s). The CAISO also needs to ensure that any market-based payments provide a price signal to incentivize performance.

The CAISO recognizes that the Commission's *September 2016 Order* reflects an expectation that the CAISO would file any proposed solution involving market-based payments for frequency response in the first half of 2017.⁸ Based on the issues identified to date, the CAISO does not anticipate filing a proposed solution during 2017. The CAISO will continue to discuss a policy framework with its stakeholders and will seek approval from its Board of Governors of any proposed approach for market-based

⁸ *September 2016 Order* at P 50.

payments for frequency response. Thereafter, the CAISO will request Commission review of any tariff revisions to implement this initiative and propose an implementation date.

IV. Conclusion

The CAISO appreciates the Commission's support as the CAISO and its stakeholders examine mechanisms to comply with NERC Reliability Standard BAL-003-1.1. The CAISO will continue to explore market-based payments for frequency response through the phase 2 of frequency response stakeholder initiative. Once it completes the policy development phase of this initiative, the CAISO will request Commission authority to implement market rule changes.

Dated: March 15, 2017

Respectfully submitted,

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CERTIFICATE OF SERVICE

I certify that I have served the foregoing document upon the parties listed on the official service list in the captioned proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, California this 15th day of March, 2017.

/s/ Grace Clark

Grace Clark