

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

Essential Reliability Services and the  
Evolving Bulk-Power System –  
Primary Frequency Response

Docket No. RM16-6

**Comments of the California Independent System  
Operator Corporation**

**I. Introduction**

The California Independent System Operator Corporation (CAISO) submits these comments in response to the Federal Energy Regulatory Commission's notice of inquiry concerning primary frequency response.<sup>1</sup> The Commission's notice solicits comments on a number of topics, including (1) potential modifications to the *pro forma* large generator interconnection agreement and small generator interconnection agreement to mandate primary frequency response requirements for new resources; (2) new primary frequency response requirements for existing resources; and (3) the requirement to provide and compensate for primary frequency response. The CAISO commends the Commission for undertaking this inquiry because it will inform balancing authorities how best to comply with the requirements of Commission-approved

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<sup>1</sup> See *Essential Reliability Services and the Evolving Bulk-Power System—Primary Frequency Response*, Notice of Inquiry in Docket RM16-6, 154 FERC ¶ 61,117 (2016) (Notice of Inquiry).

Reliability Standard BAL-003-1.<sup>2</sup> As the Commission develops and considers the record in this proceeding, it should continue to permit regions to develop tariff rules and practices to ensure sufficient frequency response capability is available and provided in response to frequency deviations that occur on the bulk electric system.

**II. The CAISO supports requirements for all newly interconnecting resources to provide frequency response capabilities**

Among the questions the Commission asks in its notice of inquiry is whether it should revise the *pro forma* large generator interconnection agreement and small generator interconnection agreement to include certain frequency response requirements for all newly interconnecting generating resources, including non-synchronous resources.<sup>3</sup> The CAISO supports a requirement that all newly interconnecting resources install the capability to provide frequency response as a condition of interconnection. The requirement should apply to synchronous and non-synchronous resources, including electric storage. The increased proportion of renewable resources operating in the CAISO's balancing authority area underscores the importance of all resources having the capability to provide frequency response. In particular, without a uniform requirement for new resources, there may not be sufficient frequency responsive capacity online when the system has high renewable output and low load levels.

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<sup>2</sup> *Frequency Response and Frequency Bias Setting Reliability Standard*, Order No. 794, 146 FERC ¶ 61,024 (2014).

<sup>3</sup> Notice of Inquiry at PP41-45.

The CAISO is examining mechanisms to comply with Reliability Standard BAL-003-1 through a stakeholder initiative.<sup>4</sup> On April 21, 2016, the CAISO filed tariff revisions to implement near-term strategies to comply with Reliability Standard BAL-003-1.<sup>5</sup> The CAISO will start a second phase of this stakeholder initiative to examine, among other issues, whether to require resources to have frequency response capabilities as a condition of interconnection. The CAISO hopes to leverage information submitted by parties to this proceeding in its stakeholder initiative with respect to the cost and any physical, technical, or operational limitations/concerns that may prevent all new interconnecting resources from installing frequency response capabilities.

**III. Existing resources with frequency response capabilities should not inhibit governor or other frequency responsive controls except under limited circumstances**

In its notice of inquiry, the Commission has also solicited comments on whether all existing resources should be required to provide frequency response capability.<sup>6</sup> Although existing resources without governors or other frequency response controls may not be able to provide frequency response service without undertaking potentially expensive retrofits, the Commission should encourage uniform rules for resources with those controls to ensure they can provide frequency response. As part of its April 21, 2016 tariff amendment to implement

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<sup>4</sup> More information about the CAISO's stakeholder initiative is available at the following website: <http://www.caiso.com/informed/Pages/StakeholderProcesses/FrequencyResponse.aspx>

<sup>5</sup> CAISO tariff revisions to help ensure near-term compliance with BAL-003-1, filed on April 22, 2016 in Commission Docket ER165-1483. <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14212241>

<sup>6</sup> Notice of Inquiry at PP46-52.

near-term strategies to secure primary frequency response, the CAISO proposed tariff revisions to incorporate maximum governor deadband and droop settings consistent with the reliability guideline related to primary frequency control approved by the North American Electric Reliability Corporation's operating committee on December 15, 2015.<sup>7</sup>

In its April 21, 2016 tariff amendment, the CAISO also proposed to prohibit resources from inhibiting primary frequency response controls except under certain operational constraints such as ambient temperature limitations, outages of mechanical equipment, or regulatory considerations. This clarification is important so participating resources with governor controls understand their obligations not to inhibit governor performance. Blocking the governor of a generator unit can result in system instability because fewer units will be capable of reacting to system frequency deviations, which may impede restoring system frequency following a disturbance. Again, the CAISO proposes to align its requirements with NERC's reliability guideline and require resources to coordinate controls from their generator turbine through each level of plant controls to enable governor response.<sup>8</sup> NERC's reliability guideline explains that "in order to provide sustained primary frequency response, it is essential that the prime mover governor, plant controls and remote plant controls are coordinated."<sup>9</sup> The lack of coordination between governor and load control

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<sup>7</sup> Reliability Guideline: Primary Frequency Control v1.0 Final at 9. [http://www.nerc.com/comm/OC/Reliability%20Guideline%20DL/Primary\\_Frequency\\_Control\\_final.pdf](http://www.nerc.com/comm/OC/Reliability%20Guideline%20DL/Primary_Frequency_Control_final.pdf)

<sup>8</sup> Reliability Guideline: Primary Frequency Control v1.0 Final at 4-5.

<sup>9</sup> *Id.* at 4.

systems can reduce primary frequency response and allow additional control systems to countermand the primary frequency response and reverse the action of the governor.<sup>10</sup> By incorporating NERC's reliability guideline into a tariff rule that applies to all participating generators with governor controls, the CAISO will strengthen the system's capability to respond to frequency deviations.

In the context of its notice of inquiry, the Commission should examine what uniform rules should apply to resources with governors or other frequency responsive controls so such resources do not inhibit frequency response capabilities.<sup>11</sup> To the extent exceptions exist to this rule, the Commission should examine what criteria best serve to support such an exception. The CAISO believes NERC's guideline appropriately recognizes that some limited exceptions do exist.

#### **IV. The Commission should allow regional approaches to compensate for frequency response services**

In its notice of inquiry, the Commission asks whether there is a need to establish or modify procurement and compensation mechanisms for primary frequency response.<sup>12</sup> As part of the CAISO's stakeholder initiative examining frequency response, several stakeholders asked the CAISO to explore long-term solutions to comply with the new frequency response requirement through a

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<sup>10</sup> *Id.*

<sup>11</sup> If and when a liquid market for frequency response service exists, it may be feasible to design a means to permit resources to elect not to participate in that market and install controls to inhibit a resource's response to frequency deviations. The CAISO will explore this topic as part of the second phase of its stakeholder initiative addressing frequency response.

<sup>12</sup> Notice of Inquiry at PP 53-54.

market mechanism. In the second phase of its stakeholder initiative, the CAISO will evaluate a market mechanism to ensure it has sufficient primary frequency response performance over the long-term in order, at a minimum, to comply with Reliability Standard BAL-003-1.

The CAISO urges the Commission to consider regional approaches to the development of compensation and market mechanisms for the provision of frequency response service. Although some organized markets may not require a market product for frequency response, the CAISO may require a market mechanism to ensure it can obtain sufficient frequency response service to comply with Reliability Standard BAL-003-1 over the long-term. The CAISO plans to leverage the record of this proceeding and examine different approaches to compensate resources for the provision of frequency response service, including electric storage and demand response resources. At this time, to the extent the CAISO develops a compensation approach for frequency response service, the CAISO believes that mechanism would compensate resources for providing frequency response and reflect either a decreased maximum operating level for generating resources or increased minimum operating level for resources such as storage. Under any market-based approach, the CAISO expects that it will continue to apply specific technical requirements to resources providing the service, including verifying that a resource has configured its governor or equivalent control system to provide the service and actually responded to a frequency event.

## V. Conclusion

Based on the record it receives, the CAISO encourages the Commission to consider measures that will enhance the frequency response capabilities, including adopting interconnection requirements for newly interconnecting resources, as well as rules to ensure existing resources with frequency response capabilities do not inhibit their governor or frequency response controls. Finally, the Commission should continue to recognize that appropriate regional differences exist and allow regions to explore compensation structures for frequency response service.

Respectfully submitted,  
**By: /s/ Andrew Ulmer**

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Dated: April 25, 2016

## CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service lists in the above-referenced 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 25<sup>th</sup> day of April 2016.

*Is/ Anna Pascuzzo*

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